

Doctor of Education

**School of Education
Leicester University**

**Approaches to learning
adopted by students
undertaking a Diploma of
Higher Education in Nursing
programme**

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1999

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Abstract.

Pleasance P.I. Approaches to learning adopted by students undertaking a Diploma of Higher Education in Nursing Programme

Nursing education has undergone radical change during the last decade. All nursing programmes are now based in Institutions of Higher Education. While many aspects of the implications of these changes have been investigated, little research has been published concerning the approaches to learning adopted by student nurses. The Approaches and Study Skills Inventory for Students (ASSIST) is a tool designed to investigate preferences for different approaches to learning. It was administered to 296 students undertaking the Diploma of Higher Education in Nursing programme of De Montfort University, Leicester.

The responses provided by the students were analysed using the constructs of the original authors (deep, surface and strategic approaches). The data was then subjected to factor analysis. There was found to be a high level of consistency between the original constructs and the factors extracted, and it was thus concluded that the inventory was probably a valid tool for use with the sample population.

The approaches to learning favoured by various subgroups of the population were examined. Thus comparisons could be drawn between male and female students, between younger and more mature students, between students with different previous academic qualifications, and between students undertaking different nursing branch programmes.

It was found that deep approaches to learning were most favoured overall, and that there was no change in approach as the students progressed through the course. Older students showed an increased preference for deep approaches when compared to younger students, and male students showed similar preferences when compared to female students. It was also found that students undertaking the adult nursing branch programme were more likely than other students to favour surface approaches to learning. Some of the implications for nursing education are discussed.

Acknowledgements.

All of the following are due my enormous gratitude for their help, support and encouragement:

Mark Lofthouse
Ken Fogelman
David Winspear
My wife, Valerie, and family

Thank you.

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Introduction

The context of nursing education.

Prior to the implementation of the New Preparation for Practice recommendations (UKCC, 1986) nurse training / education had been based largely upon an apprenticeship model. There had been increasing dissatisfaction with this approach since it was perceived (Judge, 1985; UKCC, 1986) that it placed an undue emphasis upon learning largely psychomotor skills in an unquestioning way without providing the appropriate range of opportunities for students to obtain the theoretical and professional underpinnings for their role.

The implementation of the 'review' of nursing education (what was to become known as 'Project 2000'), and the introduction of the higher education preparation of nurses, was one attempt to deal with these issues. As well as the greater academic depth of the course, there was to be an alteration in the balance of the 'theoretical' and 'practical' components therein so that 50% of the course would be devoted to each of learning in practice based and non-practice based environments. It was envisaged that this would provide better opportunities for students to develop a stronger theoretical foundation upon which to build their practice. Through all of this, the intention was that nurses would be better able to integrate theory and practice, to transfer learning from one clinical situation to another, to question and analyse, to provide better and more appropriate care to patients and also to develop the skills required to continue learning throughout their professional lives. In summary, it was argued that nurses would be better equipped to adapt more efficiently to the changing health care and nursing needs of society (UKCC, 1986).

Links between nursing and higher education were resisted traditionally by assumptions that learning 'by doing' in an apprenticeship scheme was the best way of learning nursing. Such assumptions have been refuted by the argument that competent, professional nursing skills acquisition needs to be based upon sound principles and research (the concept of evidence-based practice) if client-sensitive, creative and reflective practitioners are the goals of initial education. Doubts had also been placed on the realities of the benefits of an apprenticeship form of nursing education given findings that only 2% of ward activity was devoted to discrete

student education (Reid, 1985) and that students spent half of their clinical time working alone (Jacka and Lewin, 1987). There was also a persistent perception that the graduate nurses, who were the product of the existing higher education preparation programmes, possessed academic knowledge at the expense of clinical skills. However Fitzpatrick, While and Roberts (1993) concluded that the follow-up studies undertaken in relation to the career development of these degree prepared nurses completely refuted earlier fears that these graduates would be over promoted, show minimal commitment to client care and/or would leave clinical practice prematurely.

The nature of the curriculum in the traditional apprenticeship style of nurse education was geared towards the superficial acquisition of facts, passing largely factually orientated examinations and the development of mechanical skills (Judge 1985; Pleasance, 1987). This fostered an approach to learning and studying that was predominantly of a superficial nature - a 'surface' approach (to use the dichotomy described by Marton and Säljö (1984)). Ramsden (1988) demonstrated that 'deep' approaches to learning lead to the type of learning that teachers and future employers expect students and practitioners to exhibit. However there is little evidence that there has been sufficient modification of the curriculum (in its widest sense - including styles of teaching and the expectations of the teachers) actually to effect this change.

Since the full implementation of the recommendations of 'Project 2000: a new preparation for practice' (UKCC, 1986), all pre-registration nursing education in the United Kingdom has been at the minimum academic level of Diploma of Higher Education. Literature relating to many aspects of the implications of this development has been analysed elsewhere (for example, Pleasance and Sweeney, 1994), but one important aspect of the education of nurses that has received minimal attention is the depth of approach to learning (Marton and Säljö, 1984) adopted by students undertaking the courses based upon the higher education model.

The proposed research aims to begin to redress this imbalance. A variety of ways of measuring approach to learning have been developed and tested (*inter alia* Marton and Säljö, 1984; Entwistle and Ramsden, 1983; Biggs, 1987a) many of which are discussed in detail in Chapter 2. However, following detailed evaluation, the decision was made to utilise the Approaches and Study Skills Inventory for Students (ASSIST) as developed by

Entwistle and the team of researchers at the University of Edinburgh Centre for Research on Learning and Instruction (Tait, Entwistle and McCune, 1997). Tait et al. (1997), the authors of the ASSIST Inventory, identified that it would be valuable to explore the validity of the tool with different groups of students, and there is little evidence in the literature of students of nursing in the UK being involved (Cowman (1998) employed an earlier version in his study with Irish nurses). Thus it was concluded that the validity and internal reliability of the ASSIST inventory, and its underpinning constructs, should be tested in relation to a specific sample, namely Diploma of Higher Education in Nursing Students in the School of Nursing and Midwifery at De Montfort University. Dependent upon the outcome of that assessment, the attempt would be made to assess the approaches to learning adopted by those nursing students at various stages of their DipHE Nursing programme. Gibbs (1992) also concluded in his major Council for National Academic Awards funded research that students developed a sophisticated understanding of what the individual components of a course demanded and adopted strategies designed specifically to meet those demands. A legitimate question to ask would therefore be: do students undertaking a Pre-registration Diploma of Higher Education in Nursing do the same? In this context the aims of the proposed research are:

The aims of the proposed research:

- a. To enhance the knowledge base related to the approach to learning chosen by nursing students,
- b. To begin to develop an understanding of the impact of the DipHE Nursing curriculum on the approaches to learning adopted by students,
- c. Ultimately to progress towards an understanding of how the DipHE Nursing curriculum can be developed in order to facilitate the deployment of deep approaches to learning.

The Research questions:

- a. Does the approach to learning adopted by students undertaking the DipHE Nursing programme at De Montfort University vary as the programme develops?

- b. When used with students undertaking the DipHE Nursing programme, is there an empirical justification for the groupings and subscales built into the Approaches and Study Skills Inventory for Students (ASSIST)?
- c. Is the approach to learning adopted by students affected by other variables such as age, gender, branch programme selected or previous academic achievements?

Various authors have suggested that there is significant evidence (for example, Meyer and Muller, 1990; Gibbs, 1992; Eklund-Myrskog, 1997) that there is a relationship between the curriculum (in its broadest sense) and the approach to learning adopted by students. It is argued, therefore, that it is important for the School of Nursing and Midwifery of De Montfort University to assess the approaches to learning that are being utilised by students at various stages of their studies in order to develop further the evaluation of the implications of the curriculum.

Literature Review

Depth of Approach to Learning

The concept of the depth of approach to learning originated in Gothenberg, Sweden, with the work of Marton and Säljö (1976). They set out to attempt to explore qualitatively their theory that:

"The most obvious explanation of the differences [between individuals] in outcome [of learning] should derive from a description of the differences in the process that led to the different outcomes"

(Marton and Säljö, 1984; p36)

Their research design was based upon the fundamental assumption:

"If the outcome of learning differs between individuals, then the very process of learning which leads to different outcomes must also have differed between individuals." (Marton and Säljö, 1984; p36)

Thus they asked a group of students, who had been forewarned that they would be tested on it, to study a comparatively straightforward article. In addition to questions about what the students could remember about the content of the article, they were asked questions designed to ascertain how they had approached the task of studying. For example:

'Could you describe how you went about reading the text?'

'Was there anything that you found difficult?'

'Did you find it interesting or not?'

'While reading, was there anything that struck you as particularly important?'

After detailed analysis, Marton and Säljö (1984) concluded that the main difference in the process of learning concerned whether the students focused on the facts in the text or on what the text was about, for example the author's intentions, the main points, the conclusions to be drawn. Thus they differentiated between 'shallow processing' (concerned with facts and recollection) and 'deep processing' (about meanings and context etc.) amongst their university students. Marton and Säljö (1984) addressed the question and confirmed in their research that the conclusions that were reached in relation to the students' focusing on a specific article would probably hold true for their approach to their studies in general (what they refer to as 'normal studies'). Marton and Säljö (1976a) also found

that the deep approach was associated with better recall of detail, particularly after a five week period.

Marton and Säljö went on to explore a range of related issues that warrant some brief discussion since those issues have continued to occupy a variety of researchers since that time (for example: Entwistle, Hanley and Hounsell, 1979; Entwistle and Waterston, 1988; Biggs, 1987b). They investigated whether the teacher could influence or change the approach to learning adopted by the student; if the teacher, for example, gave clues to the student of how to go about studying or of what was expected of them by way of learning outcome, could this induce a deep approach? The results of these studies (Marton and Säljö, 1984) suggested that there was not a simple answer; whilst it appeared that the teacher could influence the approach to studying and learning, it was not clear that the style adopted by the students demonstrated all the characteristics of the desired 'deep' approach. Rather it appeared that the students adopted an approach based upon what they perceived the teacher was trying to elicit from them. This, they felt, had some, but not necessarily all, of the desired characteristics of a deep approach to learning. These insights were clearly important and arguably were the foundation for the recognition of an approach to learning, complementary to the 'deep' and 'shallow' approaches, described as 'strategic' (Entwistle, Hanley and Hounsell, 1979; Entwistle and Ramsden, 1983).

Marton and Säljö (1984) linked their findings to the parallel work of Fransson (1977) which addressed the respective influences upon depth of approach to learning of motivation, both intrinsic motivation (what the student is actually interested in and wants to do) and extrinsic motivation (the sense of threat - anxiety and the fear of 'making a fool of oneself'). The presence of intrinsic motivation and the absence of extrinsic motivation universally resulted in the adoption of a deep approach to studying and learning; the absence of intrinsic motivation and the presence of extrinsic motivation led to surface approaches.

Marton and Säljö (1984) discuss a further point that had a direct bearing on the development of the Approaches and Study Skills Inventory for Students (ASSIST) (Tait, Entwistle and McCune, 1997). The Gothenburg researchers concluded that some of the differences in behaviour of students appeared to be irrespective of all of the influencing factors discussed above. The additional variable, they concluded, was the perception of what

the context of learning actually meant to the individual students. Thus, if the working definition of learning of the student tended towards concepts such as 'increase in knowledge' or 'memorization' then the student involved would be disposed to adopt a surface approach, but if the working definition of the student tended towards concepts such as 'abstraction of meaning' or 'understanding reality' then the student would be inclined to adopt a deep approach.

Svensson (1984) utilised some of the same data produced by the qualitative research of Marton and Säljö to undertake a complementary analysis. Out of this analysis, two concepts were described. These were:

- holistic approach, where the student seeks to organise the content into an organised whole, and
- atomistic approach, where the student simply seeks to order and group parts.

The 'holistic' approach very closely mirrors the 'deep' approach, whilst the 'atomistic' very closely mirrors the 'surface' approach. Marton and Säljö (1984) described the difference in epistemology in terms of their dichotomy (deep / surface) being related to the students' search for meaning or not, whilst that of Svensson (holistic / atomistic) is related more to the ways in which the students organised the information content of the work being studied.

Cust (1996;p258) provides a useful synopsis of all of these points when s/he points out that when deep and holistic approaches are employed by students, they are likely to be utilising learning activities such as reading widely, reflecting, looking for the main points and key arguments, questioning and critiquing ideas, making inferences, devising analogies, gathering evidence to support conclusions, examining the logic of arguments, interrelating concepts by linking new ideas to previous knowledge and experience, and (particularly relevant to the education of professional nurses) applying classroom ideas to professional practice. As Marton and Säljö (1984) conclude:

"We are not arguing that the deep / holistic approach is always 'best'; only that it is the best, indeed the only, way to understand [sic] learning materials"

So what does a student utilising deep approaches do differently from a student utilising surface approaches? Richardson (1994;p311) has distilled

what he refers to as "the defining characteristics" of these two main approaches to learning (adapted from Entwistle, 1987):

Deep Approaches

- Intention to understand
- Vigorous interaction with content
- Relate new ideas to previous knowledge
- Relate concepts to everyday experience
- Relate evidence to conclusions
- Examine the logic of arguments

Surface Approach

- Intention to complete task requirements
- Memorise information needed for assessments
- Failure to distinguish principles from examples
- Treat tasks as an external imposition
- Focus on discrete elements without integration
- Unreflectiveness about purpose or strategies

The work of the early researchers in this field has been developed and replicated over the subsequent twenty years in a range of centres and with students from a range of specialities (for example: Entwistle, Hanley and Hounsell, 1979; Entwistle and Waterston, 1988; Biggs, 1987b; Gibbs, 1992). Some of these developments will be discussed. In 1976 a five year Social Science Research Council research programme was commenced at the University of Lancaster. Entwistle and Ramsden (1983) argue that this research confirmed the importance of the deep / surface dichotomy (or 'meaning' and 'reproducing' to which they referred) in students in all the academic disciplines that they studied (nursing was not included). Factor analysis of the data confirmed that the 'achieving' or 'strategic' approach was also comparatively consistent. Interestingly, their work suggested that science students demonstrated slightly different orientations in approach when compared to humanities or social science students. It was also confirmed that, in order to facilitate understanding, it had been helpful to divide each of the main two approaches "depending on the degree of activity, attention, and involvement shown by the student" (Entwistle, 1988). The four resultant categories were described as 'deep passive', 'deep active', 'surface passive' and 'surface active'.

Entwistle and Ramsden (1983) report that their study demonstrated concurrence with all the major insights gained by Marton and Säljö (as reported by Marton and Säljö (1984)) and described above. However they also highlight the significance of the work of Pask in relation to 'learning style' as an additional dimension to be taken into account when the attempt is made to describe how students learn. Pask (1976) describes 'comprehension learners' and 'operation learners'. Comprehension learners (Pask, 1976;p133):

"readily pick up an overall picture of the subject matter..... [they] are able to build descriptions of topics and to describe the relation between topics..... Their cognitive repertoire includes effective, though individually distinctive, description building operations...."

whereas operation learners (Pask, 1976;p133):

"pick up rules, methods and details, but are often unaware of how or why they fit together. They have, at most, a sparse mental picture of the material..... His [sic] cognitive repertoire includes accessible or effective *procedure building* operations."

Pask emphasised the importance of students using both styles of learning in order to reach full understanding. He coined the terms 'Globetrotting' to describe the situation when the student relies exclusively on comprehension learning (and does not pay sufficient attention to detail) and 'Improvidence' to describe excessive emphasis on operation learning (leading to a failure to perceive significant links and relationships). Laurillard (1984) usefully attempts to relate Pask's work to that of Marton and Säljö. She suggests that a deep / holistic approach is likely to incorporate a synthesis of both of Pask's styles at the global level (which, she says, "involves integration of the descriptions into a theoretical framework" (p141)), while surface / atomistic approaches tend to be reliant upon limited comprehension and operation but at the local level (which implies no such integration).

The pivotal contribution made by Biggs to the understanding of student learning processes should also be discussed. Biggs, like the Lancaster / Edinburgh researchers, sought to develop essentially quantitative inventory-type research tools designed to explore the approaches to studying and learning adopted by students. Out of his work came the Learning Process Questionnaire [LPQ] (designed for use in secondary schools) and the Study Process Questionnaire [SPQ] (designed for use with

university students). Factor analysis techniques were again used in the attempt to make more useable the rather unwieldy early versions of the SPQ. It was from this exercise that Biggs identified "interestingly congruent motive-strategy combinations." (Biggs, 1993;p5). Thus arose the motive-strategy congruence theory upon which the SPQ was based (Biggs, 1978), and which usefully encapsulated the work of Fransson (1977) related to extrinsic and intrinsic motivation. Murray-Harvey (1994) provides a very clear working of this theory based upon Biggs intention to relate his work also to the surface / deep / achieving dimensions originating out of Marton and Säljö's conceptualisation:

Surface Approach

Motive	To meet requirements minimally; a balancing act between failing and working more than is necessary
Strategy	To limit target to bare essentials and reproduce them often through rote learning

Deep Approach

Motive	Intrinsic interest in what is being learned; to develop competence in academic subjects
Strategy	To discover meaning by reading widely, inter-relating with previous relevant knowledge

Achieving Approach

Motive	To enhance ego and self-esteem through competition; to obtain high grades, whether or not material is interesting
Strategy	To organise time and working space; to follow up suggestions, schedule time, behave as a 'model' student

Murray-Harvey (1994) also points out that the student may experience conflict between new or acquired motives and the kinds of strategies that they tend to employ. This is similar to the incongruence that a student experiences when their approach to learning does not match with what appears to be expected in the department in which s/he is studying. The way that a student attempts to deal with this is the foundation of the 'relational' theorists (for example, Ramsden, 1987). The approach to learning is not seen necessarily as an intrinsic characteristic of the student; rather that the approach is a description of how the student relates to the task, how it is presented and whether it is assessed (Biggs,

1993). Students thus adapt their approach according to how they perceive what the situation demands or offers.

In 1992 the Council for National Academic Awards funded a research project aimed at improving student learning in Higher Education. The conclusions reached by Gibbs (1992) provide a relevant framework for summarising this section of the review of the literature. He found that:

1. The surface approach is very common.

The evidence would seem to suggest that it is more common for students to adopt surface approaches to learning and studying than deep approaches (Biggs, 1987b). Gibbs found that the surface approach was not the exclusive preserve of poor students or poor courses. It may also be that it is more common amongst male students; for example, Watkins and Hattie (1981) found that, all other variables being taken out of the equation, females were more likely than males to:

"show interest in their course and to adopt a deep-level approach to their work" (p.392).

2. Students on different courses reveal very different patterns of learning.

This finding was consistent even when the approaches adopted by the same students on different courses were assessed. Sutcliffe (1993), albeit that her research was concerned with learning style as opposed to approach, confirmed this with nursing students pursuing different subjects. Entwistle and Ramsden (1983) showed also that students studying different academic specialities, in different university departments adopted different approaches to learning. This was supported by the findings of Watkins and Hattie (1981) which showed that Arts students were relatively more interested in their studies and were more likely to adopt deep approaches to their work. Science, Rural Science and Economics students were found to be more likely to adopt surface approaches. Initially somewhat confusingly, Watkins and Hattie linked the vocational orientation of the latter groups of students to their tendency towards surface approaches. A range of authors (for example, Watkins and Hattie, 1981; Richardson, 1994 (citing Harper and Kember, 1986) and Entwistle and Waterston, 1988) make a distinction between intrinsic motivation arising from simply studying for pleasure/interest and the vocational motivation that leads people to engage in study because they want to pursue a career such as nursing.

Entwistle and Tait (1990) also found that in departments where there existed a consensus among the students that there was little student choice and a heavy workload, there was a higher proportion of students adopting surface approaches. The corollary of this (or maybe the cause) is highlighted by Entwistle and Ramsden (1983) when they observe that students may be attracted to different academic subject areas according to their own preferred learning styles.

3. Individual differences in approach are very wide.

Notwithstanding the impact of some of the curriculum-based variables, Gibbs found that students, even those on the same course, can adopt widely different approaches to learning from each other.

4. Students' approaches to studying can be very volatile.

The approach to learning can change markedly over a comparatively short time period. Other studies (for example Meyer and Dunne, 1991; Entwistle and Tait, 1990) would appear to suggest, however, that some students do have a favoured, or 'default' approach to learning and studying which, whilst not impenetrable, is not automatically adjusted to suit the curricular intentions. This suggestion is supported by the work of Murray-Harvey (1994) in which she utilised the Study Process Questionnaire (Biggs, 1987a) to obtain data relating to approach to learning from 400 Australian university students. With a test and re-test, one year apart, she found that their approach to learning was relatively stable.

5. Changes in student approach and student age.

Gibbs (1992) found that differences between students were not simply due to differences in age. Neither did he find that older students necessarily tended to favour deeper approaches. Gow and Kember (1989) showed with their university students in Hong Kong that deep motivation and the use of deep strategies declined from the first year to the final year of the course, as did achieving motivation and achieving strategies. Surface motivations and surface strategies increased as the students progressed through the higher education course. This finding was consistent with the earlier research of Biggs (1987b). In relation to the education of nurses, if a similar finding were to emerge, one factor that may predispose to this occurrence is that Miller, Jones and Tomlinson (1994) found that students felt insufficiently supported and helped whilst in their practice placements and that their confidence was reduced as a result.

In relation to age *per se*, other researchers (for example Biggs, 1987b; Watkins and Hattie, 1981; Clennell, 1987; Gow and Kember, 1989; Richardson, 1995; Sadler-Smith, 1996) have demonstrated that mature students are less inclined to adopt surface approaches to learning and more likely to adopt a deep approach to learning. It would seem reasonable to consider that this observation, if not due to the maturation process itself, most probably arises out of the intrinsic motivation that has brought the mature student to the classroom in the first place. Other possible explanations are considered by Richardson (1994). Firstly it has been suggested that the curriculum at school, which the younger student has been subjected to immediately prior to entry to university, is fundamentally concerned (in content and assessment) with surface approaches to learning. The younger student therefore has learned to adopt this approach. Richardson (1994) noted, however, that more recent trends in school education probably eliminate this as a reason. Secondly, as Biggs (1985) observed, the normal activities of adult life - planning, prioritising and decision making seem to foster the skills necessary to adopt a deep approach to learning.

6. Most students are capable of adopting either a surface or a deep approach.

Gibbs found that most students developed a sophisticated understanding of what the individual components of a course demanded and adopted strategies designed individually to meet those demands. Such decisions were often based upon the student's conceptualisation of learning and how that conceptualisation dovetailed with the learning context. He concluded that among the non-nursing students studied:

"the vast majority of students, however, seemed perfectly capable of taking either [surface or deep] approach and many described quite a different approach on a course parallel to that being studied" (p164).

This supports the relational theory of approach to learning (Ramsden, 1987) which concludes that students adapt their approach to learning according to how they perceive what the situation demands or offers. Marton and Säljö (1984) demonstrated this effect when their students were given questions prior to reading an article. Simply put, factual type questions tended to engender a surface approach; questions related to understanding tended to encourage a deep approach to the task.

An interesting perspective is supplied by Biggs (1993) who believes that only the deep approach to learning and studying is naturally occurring. The surface and achieving approaches are, he says:

"institutional creations - sanctions and rewards shifting the focus from the task itself to ways of maximising the rewards and minimising the sanctions associated with successful or unsuccessful completion of the task" (p7).

7. It is possible to change students' approach

Gibbs argued that this was the most profound finding from his study - that changes to course design and teaching/learning method could significantly improve the quality of learning. Biggs (1993) urged caution, however, when he pointed out that this could not be achieved by simply delivering a package of 'deep strategies'. Any such attempt would be outweighed by other curricular influences that would lead a student to adopt surface or strategic approaches.

8. It is easier to change students' approach early in a course than towards the end.

Marton and Säljö (1976b) suggested that students adopt a 'default mode' of either surface or deep approaches as a result of expectations derived from engagements with the learning experience which occur very early in the course. Gibbs (1992) found the same in his study; students in the third year were much more resistive to change than first year students who were comparatively easy to encourage into deep approaches.

9. Intrinsic motivation is crucial.

Students who are studying because they want to, and because they enjoy it and are interested in the subject, will tend to adopt deep approaches to learning. This does not apply to students whose motivation is primarily extrinsic (fear of failure or desire to pass); such students tend to adopt strategic or surface approaches. The importance of the role of the teacher (including the demonstration of characteristics such as enthusiasm, commitment and concern for students' understanding of the subject) in enhancing and maintaining intrinsic motivation has been discussed by various authors (for example, Entwistle and Ramsden, 1983). It might also reasonably be assumed that students undertaking a professional pre-registration nursing course should have a high degree of intrinsic motivation (with or without the, often, curriculum-inspired extrinsic motivation). This must be seen, however, within the context of the

suggestion that vocational motivation might not have the same effects as pure intrinsic motivation (Watkins and Hattie, 1981; Entwistle and Waterston, 1988).

10 Assessment dominates students' thinking to a considerable extent, and

11 Some assessment systems clearly reward a surface approach.

What Gibbs was reporting here was his finding that assessment was more defining than other aspects of the curriculum in the students' perception of the need for surface or deep approaches to studying. This is arguably true whether the assessment is perceived to require a deep or surface approach to learning. He also emphasised the implications of the point that it is quite possible to design an assessment that specifically rewards surface approaches. Entwistle and Ramsden (1983) confirmed that:

"... the most apparent effects are negative - students are pushed towards surface approaches by forms of assessment which seem to invite, and reward, reproductive answers." (p202)

Worthy of repetition, however, is the observation from the same authors that students utilising deep approaches tend to work and study longer, gain much more by way of interest and satisfaction (see also Biggs, 1987b; Entwistle and Entwistle, 1991), and are more likely to pass the examinations/ assessments.

12 Successful innovations may have only local or short-lasting impacts.

Again re-emphasising the finding that the approach adopted by students is highly context dependent, Gibbs (1992) found that innovations in one course that led to the students demonstrating deep approaches would not cause the same students to adopt similar approaches on parallel or subsequent courses. Herein is an implicit danger in the discrete modular design that is the basis of the Diploma of Higher Education in Nursing programme.

13 It is possible to have a pervasive impact on students.

Despite the pessimism implicit in 12 above, Gibbs found that if the effort was consistent and broad enough and over a sufficient period of time, students could be encouraged to adopt more or less permanent deep approaches. However, this creates some ethical dilemmas that warrant brief consideration. For whilst there are very persuasive arguments to suggest that deep approaches are usually the most beneficial, most engaging, most rewarding and most satisfactory, it should be borne in mind, as Entwistle (1988) asserts, that "there can be no single 'right' way to study". In a

similar context, "if teachers adopt too extreme a method of teaching ... one group of students will find the approach alien to their way of learning". Murray and Chambers (1990), when comparing the characteristics of nursing students on different types of course, argued persuasively that consideration should be given to providing curricular options designed to meet the needs of all students and that curriculum innovation should be sensitively handled so as to ensure that no students are effectively excluded.

14 The appropriate focus of attention in improving the quality of student learning is course design and process rather than teaching and content.

Gibbs (1992;p9) postulates that you can summarise much of the approaches to learning research in the following way. He suggests that course characteristics associated with a surface approach are:

- A heavy workload
- Relatively high class contact hours
- An excessive amount of course material
- A lack of opportunity to pursue subjects in depth
- A lack of choice over subjects and a lack of choice over the methods of study
- A threatening and anxiety provoking assessment system

He goes on to provide a useful set of criteria by which courses can be evaluated when he suggests that deep approaches are likely to be fostered by strategies that focus upon:

- Independent learning
- Personal Development
- Problem-based learning
- Reflection
- Independent group work (interaction between students)
- Learning by doing
- Developing learning skills
- Project work

Gibbs concludes by confirming that teachers are well placed to implement and evaluate their efforts to nurture meaningful learning in their students by focusing on the skills associated with facilitating the integration of this range of activities into the curriculum.

Development of the Approaches and Study Skills Inventory for Students (ASSIST)

Entwistle and his colleagues, originally at the University of Lancaster, later at the University of Edinburgh, created a quantitative research tool using as its fundamental theoretical foundation, the essentially qualitative work of researchers such as Marton and Säljö (1976a&b) and Svensson (1977) (as described above); this is the school of theory that Biggs (1993) describes as the SAL - 'student approaches to learning' school. The original tool, very similar in conception, to Biggs' Study Process Questionnaire, was called the 'Approaches to Studying Inventory' - ASI (Entwistle and Ramsden, 1983).

The inventories were developed from research into students' approaches to learning and studying. Tait et al. (1997) suggest that the ASI originally had two aims. First, it aimed to examine the interrelationships between study habits and the various constructs that had recently appeared in the literature. Thus items were written which were based upon the following concepts:

- the deep, surface and strategic approaches to studying (Marton and Säljö, 1976a; Entwistle and Ramsden, 1983)
- the holistic / atomistic approaches to learning, described by Svensson (1984)
- the different forms of extrinsic and intrinsic motivation (Fransson, 1977)
- the comprehension and operation learning styles, and the related constructs of 'globetrotting' and 'improvidence' described by Pask (1976)

Second, the ASI was designed as a tool to measure and describe the different ways that students carry out their academic tasks. Entwistle and Waterston (1988) claim that the wording of the questions was based mainly upon the comments made by students which had formed "the defining features of the three approaches found in the qualitative analyses" (p.259). The format of the ASI was that the students were asked to respond to a series of statements using a five-point Likert scale (5 = 'agree' through to 1 = 'disagree') with items scored all in the same direction.

The concepts of reliability and validity of the inventory have been widely discussed in the literature. Entwistle and Ramsden (1983) analysed their data from the theoretical perspective of the three main approaches to

studying identified earlier - deep (or meaning), surface (or reproducing) and strategic (or achieving). Two of these orientations showed a high level of consistency in the data:

"Repeated factor analysis of successive versions of the approaches to studying inventory confirmed the importance of the meaning and reproducing orientations in all the academic disciplines we investigated". (Entwistle and Ramsden, 1983;p193)

The third main dimension, the 'strategic', in order to be able to demonstrate an acceptable level of consistency, had to be divided into positive and negative components - described as 'achieving' and 'non-academic' (originally labelled as 'styles and pathologies'). These approaches then were the four main orientations to studying into which "approaches to learning, styles of learning, and associated forms of motivation merged" (Entwistle and Waterston, 1988;p259). They are characterised as:

- **Achieving** - with components covering strategic approach, hope for success and vocational motivation,
- **Meaning** - deep approach and intrinsic motivation,
- **Reproducing** - surface approach and fear of failure
- **Non-academic** - disorganised study methods, negative attitudes, and social motivation.

Entwistle and Ramsden (1983) argued that, with the sample population under investigation, the internal consistency of these orientations (as measured using Cronbach's alpha) was at an acceptable level. However amendments to the inventory were still required to take account of inconsistencies found by its use in other centres. The final research version of the ASI comprised questions which, through factor analysis, could be grouped into a series of subscales related to the overall orientations. Thus, for example, as part of the Meaning Orientation there were subscales identified called:

- Deep approach
- Relating ideas
- Use of evidence
- Intrinsic motivation

Each of these subscales would be built up from a series of statements. For example, the 'Deep approach' subscale of the 'Meaning' orientation would be indicated by the following statements (which would be interspersed amongst

the total collection of statements) to which the student is asked to indicate her/his level of agreement:

- a I generally put a lot of effort into trying to understand things which initially seem difficult
- b I often find myself questioning things that I hear in lectures or read in books
- c I usually set out to understand thoroughly the meaning of what I am asked to read
- d When I'm tackling a new topic, I often ask myself questions about it which the new information should answer

Richardson (1990) points to a slightly different perspective in relation to validity and reliability when he considers what he calls 'replicability' of the ASI; that is, whether the original constituent structure of the inventory can be reconstructed from subsequent applications. There is a widespread acceptance in the literature (for example, Clarke, 1986; Meyer and Parsons, 1989; Stiernborg, Guy and Tinker, 1997; etc.) of the validity of two of the three (or four) study orientations originally identified by Entwistle and Ramsden (1983). The two orientations that are consistently present are the Meaning (deep approach) and Reproducing (surface approach) orientations. The other two orientations are not strongly supported. At a more detailed level of analysis, Meyer and Parsons (1989) in their study in South Africa concurred with Entwistle and Ramsden (1983) that the application of the techniques of factor analysis alone did not support the separation of all of the subscales in the original ASI (examples of which are given above for the 'meaning' orientation). The suggestion is that the qualitative data obtained by Entwistle and his colleagues was needed to support all of those classifications. Meyer and Muller (1990) suggest that this leaves the inventory open to criticism since it puts some doubt on the validity of some of the subscales - a point acknowledged by the authors and which encouraged them further to develop the ASI into a shortened version that incorporated only those subscales which could be empirically supported (see, for example, Richardson, 1990). None of this invalidates the full inventory, but it does underline the suggestion made by Tait *et al.* (1997), the authors of the ASSIST Inventory, that it would be valuable to explore the validity of the tool with different groups of students. Other than a recent (Cowman, 1998) study using the ASI (as opposed to the ASSIST) in the Republic of Ireland and Northern Ireland, there appears to be no evidence in the literature of students of nursing in the UK being involved.

Tait et al. (1997) conclude that the ASI had historically been used for several purposes for which it had not specifically been designed, namely:

- to identify students who were approaching their studying inappropriately,
- to monitor the success of teaching innovations using a test/re-test design, and/or
- to monitor the effects of teaching on students' approach to studying.

With the exception of the test/re-test design, the team at the University of Edinburgh set out to revise the ASI in a way that would attempt to satisfy the other two uses to which it had tended to be put. As a result of this the Approaches and Study Skills Inventory for Students (ASSIST) was eventually produced which contained 52 items constituting three main orientations (approaches) and 13 subscales (see Appendix I). These orientations and subscales are summarise below:

1. Deep Approach.

Subscales:	Seeking meaning
	Relating ideas
	Use of evidence
Related subscale:	Interest in ideas

2. Strategic Approach.

Subscales:	Organised studying
	Time management
	Alertness to assessment demands
Related subscales:	Achieving
	Monitoring effectiveness

3. Surface Apathetic Approach.

Subscale:	Lack of purpose
	Unrelated memorising
	Syllabus-boundness
Related subscale:	Fear of failure

Tait et al. (1997) report on the validity and internal reliability of the new ASSIST, data for the analysis having been collected from a sample of 1231 university students (mainly first year) who had been drawn from six different universities. The universities were selected to reflect the full

spectrum of types of university in the United Kingdom (from ancient traditional, through to new). A range of disciplines were also included, mainly from the arts, social sciences, science and engineering. Cronbach's alpha was used as a measure of the degree of internal reliability of each of the thirteen subscales and of the main scales both including and excluding the 'related subscales' identified above. The value for Cronbach's alpha computed ranged between .80 and .87 for the main scales, and between .54 and .76 (with a median value of .62) for the subscales. Thus they demonstrated that all scales and subscales exceeded the generally accepted minimum value for alpha of .5.

The data was also submitted to factor analysis, using a variety of appropriate techniques in the attempt to provide clarity. A three factor pattern, explaining 60% variance, was found to represent the most consistent and conceptually interpretable factor pattern (clearly reflecting the approaches / orientations identified). Overall, Entwistle (1997) concludes that the first three subscales in each approach are most consistently related to each other and can therefore be combined with confidence. Testing has shown that the subsequent subscales (referred to above as Related Subscale(s)) are not so consistently correlated. As such their relationship would need to be tested for each sample used.

Additionally, within the ASSIST, there are three further sections; the first is designed to ascertain what the concept of 'learning' means to the student. This is based on the conceptions of learning described by Marton and Säljö (1984). The second is tailored to determine what are the students' preferences for different types of course and teaching. Tait et al. (1997) report on the results of analyses using data which incorporates the students' responses to these additional sections. They were able to differentiate between types that 'Support Understanding' and which were consequently shown to be related to a deep approach to learning, and types of course and teaching that are about 'Transmitting Information' (related to a surface approach). The third and final additional section asks the respondent to rate their performance in assessed work on the course thus far.

Nursing Education and Approaches to Learning:

There are various features of nursing education that potentially make it an interesting area for research in relation to the approaches to learning adopted by its students. Not least among these is the fact that it could be argued that one of the implicit intentions of the recommendations that led to the implementation of DipHE Nursing Programmes (UKCC, 1986) was the perceived need for nurses to be able to adopt a perspective based upon deeper levels of learning. It would appear, however, that there has been very little research in this field with students of nursing (Cowman, 1998; Meyer and Dunne, 1991; Stiernborg et al., 1997; Lapeyre, 1992; Eklund-Myrskog, 1997 being exceptions). Seen within this context, the summary from Gibbs (1992;p9) of the characteristics of a curriculum that tends to lead to a surface approach to learning make salutary reading for nurse educators:

- A heavy workload
- Relatively high class contact hours
- An excessive amount of course material
- A lack of opportunity to pursue subjects in depth
- A lack of choice over subjects and a lack of choice over the methods of study
- A threatening and anxiety provoking assessment system

Lapeyre (1992) compared the approaches to studying demonstrated by a group of undergraduate nursing students and a group of traditional nursing students. He found that there was no significant difference between the approaches adopted by the two groups of students and that they both employed 'good' methods. However there is still the concern that in some respects students of nursing tend towards 'surface' approaches. Lapeyre (1992) argued that this could be the result either of the fact that nursing courses still tended to be heavily examined, or of the fact that students tend to adopt the depth of approach of their teachers (who in the United Kingdom have predominantly come from non-university education backgrounds). Similarly students who have an external locus of control prefer to accumulate facts through passive didactic learning methods (Alexander, 1984; Ostmo et al., 1984). There is some evidence that this preference historically was reinforced by the traditionally hierarchical structure of nursing and nursing education (Clinton, 1982; Clinton 1983) in which teacher / student relationships were often formal and characterised by the maintenance of social distance (Stephenson, 1984).

Mitigating against these concerns, there are a range of issues associated with nursing education that might suggest a slightly more optimistic picture. Gibbs (1992;p10) also summarises the factors that are likely to foster a deep approach to studying:

Motivational context

Learner activity

Interaction with others

A well structured knowledge base.

The fact that nursing education has a vocational aim tends to ensure that there is a higher degree of motivation than might be the case in some other students. The fact that the students are interested in the subject can help to enhance intrinsic motivation also. Cust (1996) analyses the characteristics of nursing students with their special set of vocational, personal and academic orientations (after Gibbs, Morgan and Taylor, 1984). S/he asks whether these orientations effect the way that the students interact with the learning experience because they represent potentially different reasons for going to university. S/he concludes:

"Unsurprisingly, this strong interest is manifested in deep study methods, positive attitudes to their studies and a preference for teaching that challenges." (Cust, 1996;p260)

Similarly, all pre-registration nursing education programmes are 50% practice-based, so there is retained a high level of opportunity to apply theory to practice and practice to theory. During that practice experience, the students have excellent opportunities to interact with both other students and professionally qualified practising nursing staff. In summarising the work of a range of researchers Gibbs (1992) suggests that all of these features have the potential to facilitate the development of strategies for learning based upon 'deep' approaches.

Stiernborg *et al.* (1997;p126) sought to analyse the value of the Approaches to Study Inventory - ASI (forerunner to the ASSIST Inventory) for nursing students in an Australian University. They concluded that the tool was a robust instrument for use in the field of nursing education in the context of the two main study orientations (deep and surface). They also make the observation that:

"Ideally, nursing education should provide an impetus to increase nurses' deep level learning and reduce their surface level learning as they progress through the three year training."

However they found that their nursing students demonstrated no such change. They and other authors (for example, Cust, 1996; Gibbs, 1992) make the point that, in part, the significance of the issue of depth of approach to learning lies with the fact that one of the functions of education might be considered to be to encourage students to adopt deep approaches to learning in order to foster self-directed learning in their continuing education.

On a related subject, the concepts of Reflective Learning and Reflective Practice are worthy of brief consideration; they have received considerable recent coverage in the nursing press (for example Atkins and Murphy, 1993; Burnard, 1995; Burrows, 1995; Baker, 1996; Reece Jones, 1995; Shields 1995). A useful working definition of the concept of Reflective Learning which appears to be widely accepted is provided by Boyd and Fales (1983):

"..... the process of internally examining and exploring an issue of concern, triggered by an experience, which creates and clarifies meaning in terms of self, and which results in a changed conceptual perspective."

The phrase "... changed conceptual perspective." has been effectively interpreted and operationalised by Boud et al. (1985) as "... new understandings and appreciations."

These definitions would arguably be describing many aspects of the concept of the 'deep approach to learning' but with the added dimension, as suggested by Boyd and Fales (1983) of the learning being "triggered by an experience". Reflection is therefore seen as a method of learning which aids the integration of theory and practice and as a means of enhancing the quality both of learning and, ultimately of professional practice (though Reece Jones (1995) suggests that the subject of the effect on professional practice for qualified nurses is not without its controversy). Notwithstanding, the concept has become enshrined in national guidelines for both the pre-registration and continuing education of nurses (UKCC 1986, ENB 1991, WNB 1991). Arguably the prominence given to reflection was stimulated by the work of Schön (1983 and 1987). He asserted that schools involved in the preparation of professionals were failing to produce people who were competent to deal with the real world of professional practice, a deficit which could be remedied, in part, if the education were centred upon developing the ability of the practitioners to reflect. The objective would be to ensure that each new experience faced by the student could, through reflection, become a real learning opportunity.

Schön (1987) distinguishes between two types of reflection. The first of these, and the form which he argues is the most effective strategy, he describes as "Reflection-in-action" whereby the practitioner is encouraged to reflect whilst the action is actually taking place, and without interrupting the action. The second he describes as "Reflection-on-action" where the practitioner effectively holds a personalised 'postmortem' after the event. An attempt is made to learn about, and from, the event, and to analyse how the actions taken by the individual and others affected the event, all in the light of the actual outcomes which occurred. It is interesting to note that despite Schön's assertion of the additional value of reflection-in-action, the majority of the literature on the subject focuses on the second, alternative model of reflection-on-action. Atkins and Murphy (1993) provide an explanation of this from Schön's (1991) own work and point out that, by definition, whilst the practitioner is consciously aware of the knowledge that s/he is using whilst reflecting-on-action, this may not be the case when reflecting-in-action; such knowledge might not therefore be usefully articulated and studied. What Atkins and Murphy (1993) do deduce from the literature, however, is that there is a range of 'skills', the development of which can be facilitated and which are again closely allied to the skills described by students who are engaged in deep approaches to learning and studying. The skills identified are: self-awareness, description, critical analysis, synthesis and evaluation.

These observations are also supported by Shields (1995) who concluded that in relation to her/his students, reflection (albeit that it is reflection-on-action that is most commonly described) had led to behaviour change, problem-solving and an increase in personal and professional awareness. Shields (1995) also found that the teacher can help to facilitate the process of the development of reflective learning skills by, inter alia, encouraging journal writing, mental previewing (as a form of preparation for the experience that the student is to be encouraged to reflect upon) and debriefing after the event by providing the student with opportunities to discuss the outcome of the reflection but taking full account of the moral and ethical considerations of such debriefing.

Influencing the approach to learning in students.

Reference has already been made, in several parts of this chapter to the ways in which the teacher / lecturer, the department and indeed the curriculum can influence (positively or negatively) the approach to learning and studying adopted by students. It is appropriate, in concluding this literature review, to provide an overview of those observations and ideas.

Rogers (1983) developed a model for adult education based upon the concept of student-centredness which, he argued, facilitates the kind of learning outcomes which are commensurate with deep processing. In his model the teacher shuns the authoritarian 'fount of all knowledge' approach and seeks to adopt a facilitative mode in which the teacher creates an environment of genuineness, mutual trust and understanding. The teacher then seeks to ascertain the individual learning needs of the students and helps the student to utilise effectively the learning resources that are needed to meet those needs - which could, of course, include the knowledge that the teacher her/himself has. In his earlier work, Knowles (1978) developed a model of adult learning which complements and may usefully be incorporated into the work of Rogers. Knowles (1978) postulated a Theory of Androgogy which is based upon at least four principles about how adults, as opposed to children, learn and which, implicitly, will enhance the likelihood of the student engaging in deep approaches to learning as opposed to surface approaches. These are, firstly, that whereas children tend to be dependent on others, adults have a strong need to be self-directing; secondly, that because of the greater amount of life experience that an adult has compared to a child, the adult learns best when the learning is related to his/her past experiences. A third characteristic of adult learners involves their increased readiness to learn so long as the learning can be perceived to be relevant to their everyday lives and problems; and fourthly the learning material should be of a problem-solving nature. In relation to Knowles' first feature of androgogy, it should be noted that it perhaps can no longer be safely argued that this can only apply to more mature students. As Pennington and O'Neil (1994) point out many students coming direct from secondary education have already been exposed to curricula in schools and colleges which incorporate the acquisition of personal transferable skills, student-centred learning and self-managed learning.

The arguments postulated by authors such as Rogers (1983) and Knowles (1978) have been supported by more recent research into student learning

and good teaching practice (Entwistle, 1992; Ramsden, 1992). Pennington and O'Neil (1994) summarise these findings and suggest that, in order to encourage deep processing, teachers should promote active and long-term engagement with learning tasks not least by concentrating on meaning, relevance and the implications for the students of the material. This may be manifested both by the material which is 'delivered' but also by the perceived degree of triviality of the questions which are asked of the student by way of the evaluation of learning (both formatively and summatively). Teachers need to demonstrate that students are expected to engage in the processes associated with deep approaches to learning. Students should also be provided with opportunities for independence in studying and allowed to exercise elements of realistic personal choice in relation to methods and contents of study. In summary:

"...teaching which involves a shared responsibility on the part of tutors and their students in seeking meaning and in cultivating an autonomous and questioning approach" (Pennington and O'Neil, 1994;p15)

Pennington and O'Neil (1994) went on to summarise recent research and literature and identified eight important principles which characterise the foundations of effective teaching designed to encourage deep learning in university students. Such teaching, they argue, should be planned to:

1. Enhance students' general capabilities and work-related skills.
2. Use the student experience as a learning resource.
3. Encourage active and co-operative learning.
4. Promote responsibility in learning
5. Engage with feelings, values and motives as well as with intellectual development
6. Foster open, flexible, reflexive and outcomes-based assessments
7. Evaluate teaching and learning
8. Establish congruence between teaching and learning activities

These are valuable benchmarks which make a clear link between teaching activities and learning approaches. But those teaching activities are only part of the total context in which education takes place, a theme taken up and further developed in research by, for example, Meyer and Muller (1990) and Eklund-Myrskog (1997). Reference has already been made to the relational view of learning which acknowledges the impact of all the aspects of the environment - the 'curriculum' (in its broadest sense) on learning. The approach to learning adopted by the student has been shown to be not simply an inherent characteristic of the student but, in many cases,

to result from the relationship that is perceived by the student between the nature of the task and the learning context (Laurillard, 1984; Meyer, Parsons and Dunne, 1990; Biggs, 1993). It is argued that students adapt their approach according to how they interpret the situation and what it demands or offers. Ramsden (1984) makes the point that it is the students' perceptions of assessment, teaching, and courses, not those of the teacher that are important.

"At the most general level, the atmosphere of the academic department affects students's study orientations and ultimately their approach to specific academic tasks". Ramsden (1984;p147).

Since all students are different and cannot therefore be guaranteed to perceive and interpret the curriculum in similar ways, and since also students have individually favoured approaches to learning (Entwistle and Ramsden, 1983), it is clear that it would be inappropriate to make all learning opportunities the same (Cust, 1996). Variety is indeed the appropriate spice of life.

Entwistle and Tait (1990) confirmed in their study some earlier assumed outcomes. They concluded, amongst other things that:

"Generally speaking, students who adopt meaning or reproducing orientations also prefer the methods of teaching and assessing which encourage those approaches to learning" (p188)

This is an encouraging observation within the context of nursing education, especially if the findings of Vaughan (1990) are supported across the wider student base. His research was concerned with the attitudes and preferences of nursing students towards the range of teaching / learning methodologies to which they were exposed during their studies. Despite the fact that the lecture and discussion were by far the most common methodologies used, Vaughan found that the students showed a significant predisposition towards student-centred approaches. These, arguably, are much more likely to facilitate reflection and deep approaches to learning.

The approach to studying and learning adopted cannot be separated from the quality of the learning outcome achieved. Because of the unique role and function of the nurse, it is argued that the approach to studying and the learning achieved by nursing students are of the highest importance. Patient welfare is dependent upon it. No more recent research has refuted the original conclusions arrived at by Marton and Säljö:

"The conclusion that can be drawn from this experiment is that if we want to promote a deep approach, we should above all keep in mind the students' own interests at the same time as we should try to eliminate the factors that lead to a surface approach (irrelevance, threat and anxiety)." Marton and Säljö (1984;p52)

Methodology

The methodological approach adopted for the study is commonly described as a survey, the objective of which is to gather data at a particular point in time "with the intention of describing the nature of existing conditions, or identifying standards against which existing conditions can be compared" (Cohen and Mannion, 1994;p83). A useful descriptor that may also be applied to the study is the concept of 'developmental research' (Cohen and Mannion, 1994) since there will be an attempt made to account for differences that may occur over time in relation to the approaches to learning adopted by students as they progress through their studies. The Approaches and Study Skills Inventory for Students (ASSIST) was developed at the University of Edinburgh Centre for Research on Learning and Instruction (Tait, Entwistle and McCune, 1997). This self-completion questionnaire (a sample is shown in Appendix I) was utilised for the research, permission to do so having been obtained from the The Centre (see Appendix II). The specific information that this questionnaire seeks to elicit relates to the preferences of the respondents for different approaches to learning and studying. The decision was therefore made to invite students at different stages of study on the Diploma of Higher Education in Nursing programme of De Montfort University to complete it.

The research project has two main purposes. The first is to test the validity and internal reliability of the Approaches and Study Skills Inventory for Students (ASSIST) in relation to a specific sample (DipHE Nursing Students at De Montfort University). The second main purpose is to endeavour to determine the approach to learning adopted by nursing students at various stages of their DipHE Nursing programme and thereby, through analysis of their responses, to attempt to draw some preliminary conclusions about the impact of the curriculum.

After detailed consideration of different research design approaches (see following discussion) the decision was made to invite all the students in three different cohorts to complete the inventory. A first year group, a second year group and a third year group were selected. Specifically at the time of measurement the groups had completed:

8 months of the programme (September 1997 intake),
1 year and 8 months of the programme (September 1996 intake), and
2 years and 8 months of the programme (September 1995 intake).

Design Approach.

The inventory was administered once to each of the students included in the research - thus capturing the approach to learning favoured by different student cohorts at varying stages in their studies. It is acknowledged that this design approach is not without controversy within the context of the stated aim to assess the impact of the curriculum on the approach to learning adopted by students. The argument had to be considered that it would be preferable to adopt a 'follow-up' or 'cohort' study design that could have measured the approaches to studying and learning adopted by the same students as they progressed through their course. The first, and perhaps most persuasive, argument against the use of a 'follow-up' design comes from the authors of the inventory themselves. They have suggested (Tait *et al.*, 1997) that the nature of the inventory precludes its use in a test/re-test or experimental design. However, the fact that one specific approach is unacceptable does not of itself allow the conclusion that the approach adopted was appropriate. Consideration must be given to the various influencing factors. Implicit within the methodological decision to compare the approaches to learning adopted by *different* cohorts is the assumption that the approach demonstrated by, for example, a senior group of students is the same as the approach that will be demonstrated by a junior group when they reach the same level of seniority as the first group. This assumption is probably valid since it might reasonably be assumed that one group would not be significantly different from any of the other groups in relation to the following identified criteria:

- a. The curriculum to which they have been, and will be, exposed. The curriculum in use was first implemented with the intake occurring in September 1995 (the most senior cohort utilised for this study). No major change was made to the curriculum for the two subsequent intakes utilised for the study. This observation refers to the syllabus that is delivered and all other aspects of the curriculum such as progression and award regulations and stipulations. Neither have there been any major changes in staff. Therefore it may be anticipated that there would be no curriculum related factors that could of themselves cause one cohort to react differently (compared to other cohorts) in relation to

the approaches to learning that they adopt. In other words, it is assumed that any change that does occur over time occurs as a result of the curriculum rather than changes in the curriculum. Thus, it is argued, each group (everything else being 'equal') will change in the same way.

- b. Employment prospects after completion of the course. The DipHE Nursing is primarily a vocational programme designed to prepare students for a future career in nursing practice. Clearly there are competitive elements to gaining employment that could and probably do influence students to adopt a strategic approach to their studies, geared towards gaining a competitive edge over their peers. This is an acknowledged variable in the study. It would be a major concern if, over the period of the respondents' studentship, there had been a change in future employment opportunities and options since that could clearly influence one cohort to adopt a different approach to learning from another group. There was no discernible change in employment prospects between the commencement of the most senior group (September 1995) and the date of data collection (May/June 1998). It was therefore assumed that 'future employment prospects' was not a significant variable affecting one cohort of students more than any other.
- c. The branches of nursing for which the students are preparing. There are four branches available in nursing: Adult nursing, Mental Health nursing, Learning Disabilities nursing and Childrens' nursing. The characteristics of these various branches would suggest that it would not be surprising if students on different branches adopted different approaches to study and learning (compounded by the fact that different teachers are involved in the different branches). This could mean that the results from using different cohorts of students could show different 'trends' than if the same cohort were examined at three different times. It can be confirmed that all three groups comprised students studying the same three branches (adult, mental health and learning disabilities nursing) in approximately the same proportions. There was, however, an increase in intake size between September 1995 and September 1997 affecting the adult nursing and mental health nursing branches.
- d. Age and gender distribution and academic entry qualifications profile. There was no reason to expect that there would be significant

differences between the cohorts utilised with respect to age distribution, gender and academic entry qualifications. In relation to age distribution and academic entry qualifications, it was found that one group (a different group for each variable) did show statistically significant differences from the other two groups. Though this did create unexpected problems, it was ultimately concluded that it did not preclude the proposed research design since, when appropriate, the potential effects of those variables could be taken into consideration and isolated in the analysis.

- e. Career and course aspirations. As suggested by these identified points, there was no reason to suspect that the career and course aspirations would differ from one cohort to another. Had the first intake, for example, been one of the earliest cohorts recruited to the DipHE Nursing (which replaced the earlier apprenticeship-style registered nurse course) then this may have presented a problem (Murray and Chambers, 1990; Neill and Barclay, 1989). This is because the students may have been expecting the traditional course - an effect which presumably would have reduced with subsequent intakes. However higher education programmes had been operating in Leicestershire for four years prior to the commencement of the most senior cohort, so it may be assumed that this effect had been eliminated over time or, at least, would not be any different for the three cohorts utilised for the study.

It is argued, therefore, that the potential variables identified do not preclude the use of the research design adopted. However the fact that there may be other variables at play that have not been identified should be taken into consideration when analysing the findings. The point should be reiterated that a test/re-test design could not be selected (Tait et al., 1997) for use with the ASSIST Inventory. This point is made because there is one major weakness in the design that was adopted which would not apply if a follow-up design had been chosen. It is appropriate that this is acknowledged and steps taken to minimise the effects that this has on the results. It is a fact of academic life that there is a gradual loss of students through attrition as students progress through their course. Thus in the third year group a greater proportion is likely to have been lost than is the case for the first year group. Some attrition will have been for personal / social reasons and some will have been because of academic failure - both of which types could theoretically be related to the

approaches to learning the students pursued. Since the design adopted was a cross-sectional 'snap-shot' - it cannot take into account students who have previously discontinued; there is no way of knowing whether those that left were deep, surface or strategic learners. Therefore, it is unlikely that firm conclusions could be made about changes in depth of processing as students progress unless there is a very marked difference between junior and senior students. However steps were taken to attempt to measure the implications of this issue by a further piece of data collection. Approximately nine months after completing the inventory, the students who had subsequently discontinued from the three cohorts were identified. Their responses in the inventory were reviewed to ascertain whether there was a significant difference between them and the other students who had not subsequently discontinued.

Further considerations specific to students undertaking the DipHE Nursing programme must also be borne in mind, irrespective of whether a follow-up or cross-sectional design is adopted. For example, it is important to note that there is a small but significant number of students transferring in from other universities. This occurs at the end of Part 1 of the course, at the end of 18 months of study. Thus the second and third year cohorts contained several students who did not undertake the first part of their course at De Montfort University. Whilst these were still invited to participate in the study (4 students in the third year group, and 8 in the second year group), their results were eliminated from the analysis since there could be no implied relationship between the impact of the specific curriculum on their preferences for different approaches to study.

Qualitative Component of Data Collection.

The concept of triangulation involves the use of more than one research design, method, data collection technique or investigator and can be a means of enhancing both internal and external validity in a research study. In this research, triangulation involved the collection of both quantitative and qualitative data concerning issues around the approaches to studying and learning of the students. The original ASSIST Inventory was designed to collect exclusively quantitative data. However the decision was taken early in the process of this research design that it would be appropriate to collect some qualitative data also. There were two main reasons for this decision:

1. The ASSIST Inventory implicitly assumes that the respondents are undertaking a purely academic programme, in that there are no

questions or statements relating to professional dimensions of study. Students undertaking the Diploma of Higher Education in Nursing programme are studying, not only for the academic award, but also for professional registration as a nurse. The professional aspects of the course are at least as important as the academic (and to some students possibly more so). It was thus felt that the students should be provided with the opportunity to express qualitatively their opinions; this with the assumption that professional aspects would be an issue.

2. It was felt that it would be useful, from a triangulation point of view to attempt to determine whether qualitative data supported the findings of the quantitative aspects of the research.

It was not a specific objective of this study to undertake a detailed evaluation of the component parts of the curriculum with a view to assessing their impact upon the students' approaches to learning. Thus NO ATTEMPT WAS MADE TO OBTAIN A BALANCED APPRAISAL OF THE CURRICULUM from the students, rather they were provided with opportunities to make comments upon the issues that seemed most important to them. It is acknowledged that this tends to result in data that might be biased towards the negative - no less meaningful and helpful, but just not a 'total' picture. With this in mind, qualitative data was collected in two ways, one fairly formal and structured, and the second very informal (with the objective of achieving a degree of spontaneity in the students' response):

- a. Respondents were invited to write their personal comments after each section of the inventory. This was not structured in any way, and students were not informed of any of the constructs underpinning the design of the inventory, nor the educational theory behind it (other than in a very general sense in the letter inviting them to participate). It was thus anticipated that any comments submitted would be based upon their feelings about the statements that they had been asked to respond to quantitatively.
- b. Informal small group discussions were held. In these, students were invited to express verbally their feelings and orientations relating to the ways in which they approach learning and studying on the programme. This was not an attempt to hold formal 'focus group' discussions, rather that groups of students, whilst undertaking activities associated with the course, were asked what they were doing, and why. Such descriptions were followed up with exploratory questions from the researcher, arising out of the students' responses, and geared towards encouraging the students to express their opinions,

values, concerns, fears and pleasures associated with approaches to learning. Obviously only students who had been invited to complete the inventory were invited to provide qualitative data.

Pilot Study.

The ASSIST Inventory represents the latest stage in the development and refinement of a tool to measure the approach to learning adopted by students (Tait *et al.*, 1997). It has been extensively tested and evaluated with a range of university students (for example, Entwistle, Hanley and Hounsell, 1979; Entwistle and Waterston, 1988; Entwistle, 1988; Cowman, 1998). As such it might be argued that no formal piloting of the use of the inventory was required. However there has been little or no work undertaken in relation to the use of this latest version of the inventory with university students undertaking nursing programmes. Furthermore, minor amendments had to be made to the inventory in order to:

- personalise it for De Montfort University nursing students,
- ensure that the points in it fitted with the actual course that the students were undertaking,
- ensure that the use of language was consistent and appropriate for the setting of De Montfort University (courses, modules, programmes etc.), and
- add in the provision for students to add qualitative comments if they wished.

It was decided, therefore, that the slightly modified tool should then be piloted with a small group of students. The inventory assumes that respondents have prior experience of Higher Education. Thus twelve volunteers who had had such experience were recruited to complete the inventory as a pilot study. These students were selected from groups who were not to be part of the main study (there are two intakes per year). The pilot study showed that the amendments that had been made were appropriate and the respondents reported that the inventory made cultural sense to nursing students and that the instructions were clear and unequivocal. They also found that it took approximately 20-25 minutes to complete.

Sample Population.

The total population that might have been used for the research would have been all of the students enrolled on the DipHE Nursing programme of the School of Nursing and Midwifery of De Montfort University. This would have included all the following cohorts:

- September 1995 cohort
- January 1996 cohort
- September 1996 cohort
- January 1997 cohort
- September 1997 cohort

(The January 1998 cohort would have had to be excluded since they would have had insufficient experience of the university course to be able to respond as required).

This would have involved approximately 500 respondents which, it was argued, would have been manageable since the data was largely quantitative in nature. However the School of Nursing and Midwifery decreed that only three cohorts could be approached. Thus the decision was made to involve the three September cohorts:

September 1995 cohort (3rd year):	79 students
September 1996 cohort (2nd year):	96 students
September 1997 cohort (1st year):	<u>121 students</u>
Total:	296 students

Initial consideration was given to simple random sampling or to stratified sampling (based upon appropriate representation of various age groupings, gender or nursing speciality). Ultimately the decision was made following an examination of the implications, to include all the students from these three groups rather than sampling; as stated earlier the largely quantitative nature of the data meant that this was realistic.

Method of Administration.

After obtaining appropriate permission from the School Research Committee, administration of the Approaches and Study Skills Inventory for Students (ASSIST) was undertaken during a scheduled classroom session during May and June 1998. It was felt that this would engender a better response rate than if the questionnaire was simply distributed for the students to complete and return in their own time. Every student in the three intakes was written to (a copy of the letter is found in Appendix III); the purpose of the letter being to:

- a. invite them to participate
- b. describe and explain the research
- c. explain that their participation is totally voluntary

- d. explain the confidentiality aspects of the research
- e. explain possible benefits of participation for the respondents

Access to appropriate half-hour classroom periods was negotiated by the researcher who undertook to facilitate the process of administering the questionnaires himself. Bogden and Bicklen (1992) argue persuasively against researching in one's own institution on the bases of potential preconceptions and biases and personal concerns on the part of the researcher. This advice had to be overruled on this occasion. Had the focus of the research been staff then the existing relationship between the researcher and those staff would have made it very difficult to retain a reasonable degree of objectivity on either side. It was still important, however, to recognise throughout the study that there were additional potential biases resulting from the fact that the researcher did work in the organisation, a fact that may have encouraged students to say what they believed the researcher wanted to hear rather than their own perceptions of reality. It was important to try to reduce such effects by making the students feel comfortable and 'safe'. These factors also had to be taken into account in the analysis of the data and the discussion of the findings. Simpson and Tuson (1995;p3) argue that it is possible, and indeed essential, to:

"detach yourself from you own personal automatic interpretation of what is going on, and to try to see events from different perspectives."

In addition to the letter that was distributed to each student, care was taken verbally to try to ensure that no student felt forced to comply with the invitation to complete the inventory. Students who were not present in the classroom session when the ASSIST Inventory was administered (but not those who had been present but had declined to participate) were sent a copy of the questionnaire by post to their home address along with a written explanation and invitation to participate. No further follow-up invitations or requests were issued.

The Inventory and Data Analysis.

The ASSIST inventory comprises five sections:

1. Biographical and background information.
2. A section entitled 'What is Learning' in which the respondent is asked to grade, using a Likert-type scale (from 5= 'very close' through to 1= 'very different') how close each of a series of

'definitions of learning' are to their own way of thinking about learning.

3. A section entitled 'Approaches to Studying' in which the respondent is asked to indicate, using a Likert scale, their relative agreement or disagreement with comments about studying.
4. A section entitled 'Preferences for different types of course and teaching' in which the respondent is asked to grade, using a Likert-type scale (5 means 'definitely like' through to 1 means 'definitely dislike') their preferences for different types of course and teaching.
5. A section where students are asked to grade using a 9 point scale (from 1 = 'rather badly' through to 9 = 'very well') how they have been performing on assessed work on the course thus far.

The authors of the inventory have provided a validated (Tait *et al.*, 1997) 'marking scheme' which codes and groups the responses for each student to each of the questions, and categorises them into various approaches to studying - deep approaches, surface approaches and strategic approaches. They also identify a range of sub-categories for each approach to learning based upon former applications. This allows relationships within categories to be explored.

Following on from this primary analysis, it was felt that the objectives of the study would best be pursued in the following ways:

- a. All the data was analysed against the original constructs which underpinned the inventory design and marking scheme.
- b. The whole of the data from section b. 'Approaches to studying' was submitted to factor analysis in the attempt to determine whether there was empirical justification for the approaches and subscales provided by the inventory's authors when it is used with these nursing students.
- c. The factor analysis was supplemented by performing tests of internal reliability and consistency. Cronbach's Alpha test, based upon average inter-item correlations, was used.
- d. The aforementioned analyses were performed on the data cohort by cohort and for all the students combined. The significance of other variables, such as age, gender, branch speciality and previous academic achievements was also assessed.
- e. The outcomes of these analyses were used to determine whether there was a pattern in the stated approach to learning adopted by the groups of students and whether there were changes in their approach to learning

and studying as the course progressed. This led to a discussion on the ways in which the curriculum (in its broadest sense) might influence the approaches to learning favoured by the students.

Ethical considerations:

There is a range of ethical issues surrounding this research that need to be considered.

1. Coercion to participate. This is perhaps the most significant issue in this research. Student involvement was explicitly by invitation, was voluntary and with no intentional pressure to participate being brought to bear. However it has to be acknowledged that the relationship of the researcher with the students (programme leader) could potentially have caused students to feel under an obligation to participate. From an ethical standpoint, it was necessary to evaluate the positives and negatives of the chosen methods of administration. Inviting the students to complete the questionnaire in classroom time would help to ensure a good response rate, but students probably would feel that the presence of the researcher in the room puts pressure on them to complete it. The fact that it was in classroom time might also make students feel that they had to comply. To balance this, students were given advanced warning (in general terms) of what they were going to be invited to do at the set time and place. Students who felt strongly about not wishing to participate could have chosen not to attend. It is also acknowledged that utilising alternative methods of administration, for example postal distribution and collection, introduces bias since not all categories of respondent are equally likely to return the questionnaire (Richardson, 1995).

In addition to the distribution of the letter (Appendix III) and verbal reinforcement of the voluntary nature of participation, the researcher took several steps to try to minimise the possible perception of coercion. Firstly, each student was given a copy of the questionnaire - they were not expected to ask for it. Secondly the researcher stayed at the front of the lecture theatre and did not walk around. In this way students who chose not to complete the questionnaire could not be identified or feel that they were being identified. Thirdly, after completion, students were asked to pass their questionnaire (whether they had written in it or not) to the end of the row, again so that non-completers could not be identified. Fourthly all students were given the

choice of using a confidential identifier or leaving the identifier space blank. A sufficient number of students chose the latter option to ensure that the researcher could not identify those students who had opted not to participate.

2. Informed Consent. Whilst it may be argued that in this study there was no physical risk or danger involved for the participants, it is acknowledged that in any research where there is an element of self-disclosure, there are definite and potentially quantifiable psychological risks. Frankfort-Nachmias and Nachmias (1992) suggest that:

"Participants should know that their involvement is voluntary at all times, and they should receive a thorough explanation beforehand of the benefits, rights, risks and dangers involved..."

Whilst it was not considered necessary or appropriate to obtain a signature as evidence of informed consent, the researcher took all reasonable steps to ensure that those criteria (plus providing the opportunity to have any further questions answered) were provided in the written and verbal information given to all students.

3. Anonymity and Confidentiality. Student anonymity was assured in relation to publication and dissemination of results. Total anonymity was guaranteed if that was the student's choice. However it was identified that there could be benefits of knowing who individual respondents were in as much as counselling could then be offered to participants (at the participant's initiation) regarding their own approach to learning. This was achieved through a cross-referenced but voluntary name / random code list whereby only the individual student would know what was their code identifier. Thus the student could ask for feedback if s/he wished. This offer and explanation was given to the students both in writing and verbally "That way your anonymity is ensured unless you want to discuss your approaches to studying and learning with me". Whilst the students were given a full explanation of why this may be useful to them personally, they were also reassured that under no circumstances would the name of the students or the cross-referenced list of names against codes be entered into the data analysis software.
4. Access issues. As a member of academic staff of the university, access to students was not considered to be likely to be a problem. A full and

detailed research proposal was required and was submitted to the School Research Committee. The proposal was accepted and access granted. Minimal disruption of student class time was caused since there were ample opportunities to take advantage of scheduled classroom time that was not specifically needed for teaching. It was acknowledged that permission to publish the outcome of the research rests with the Head of School of Nursing and Midwifery and De Montfort University. The guarantee was given that all guidance from the University relating to sensitivity of data would be strictly adhered to.

5. Gender issues. The male gender of the researcher, and the predominance of females in the student population (85%) means that this has to be considered. The students knew the researcher personally so his gender could not be withheld. A range of authors (for example, Richardson, 1993; Sadler-Smith, 1996) have highlighted the potential implications of experimenter gender, but it has been argued that this is less serious in the collection of quantitative data through questionnaires or inventories. It is acknowledged that there could be an issue in relation to those qualitative data collection activities that were based upon discussion between researcher and respondent. The researcher can, and did, make every effort to minimise any implications, especially in a situation such as this when there is no realistic alternative strategy.
6. Respect for Participants. Every effort was made to ensure that the students did not perceive that their contribution was taken for granted. They were, of course, thanked for agreeing to participate and they were promised feedback in relation to the study overall (including details of future publication). A discussion also took place on the subject of the ways in which their combined contributions could provide useful data for future curriculum planning.

CHAPTER 4

Biographical Details.

Introduction

As previously stated, the three cohorts of students undertaking the Diploma of Higher Education in Nursing programme are identified as follows:

September 1995 cohort (3rd year):	79 students	77 responded
September 1996 cohort (2nd year):	96 students	87 responded
September 1997 cohort (1st year):	<u>121 students</u>	<u>111 responded</u>
Total:	296 students	275 responded

Once transfers in and people who have had an interruption (and therefore by implication had originally started a different curriculum) have been excluded the numbers of valid cases is:

September 1995 cohort (3rd year):	73 valid cases
September 1996 cohort (2nd year):	79 valid cases
September 1997 cohort (1st year):	<u>111 valid cases</u>
Total:	263 valid cases

Unless otherwise stated, all the results reported in this section relate just to this latter set of figures; that is, any student who transferred in to De Montfort University or who commenced a different curriculum is specifically excluded.

In some subsequent tables and analyses, these three cohorts will be referred to by their group code, these are:

- 9509 - commenced 9th month of 1995 - hence September 1995 cohort
- 9609 - September 1996 cohort
- 9709 - September 1997 cohort

Part of the justification of the research design that suggested that the utilisation of three different cohorts was an acceptable alternative to a longitudinal design that measured the approaches to learning of one cohort as they progressed through the course, was based upon the premise that there was no reason why there should be a significant difference between intakes in relation to a range of biographical criteria. In reality, as was discussed in the previous chapter, statistically significant differences

were found in relation to age and previous academic attainments, but the nature of the difference meant that potentially influencing variables could be isolated from the analysis when appropriate.

Age

As indicated earlier, age appears to be an important consideration when reviewing the approaches to learning adopted by students. A range of researchers (for example Biggs, 1987; Watkins and Hattie, 1981; Clennell, 1987b; Gow and Kember, 1990) have demonstrated that mature students are less inclined to adopt surface approaches to learning and more likely to adopt a deep approach. So the ages of the students in this sample population should be analysed. In order to review the age breakdown of the three cohorts in a meaningful way, it is helpful to 'correct' the ages of the students in the 1st and 2nd year cohorts as if they were at the same stage in their programme as the 3rd year cohort. Thus for the purposes of this exercise, 1 year was added to the recorded chronological age of the 9609 cohort and 2 years were added to the recorded chronological age of the 9709 cohort. Table 4.1 shows the mean, median, mode, standard deviation from the mean and range of corrected ages for the three cohorts.

Table 4.1: Corrected age of respondents

Group	Valid	Missing	Mean	Median	Mode	S.D.	Minimum	Maximum
9509	73	0	26.42	24	21	6.80	21	47
9609	79	0	29.53	28	21	8.25	20	49
9709	106	5	27.25	23.5	21	7.84	20	50

The mode age is identical for each group, and the range apparently very similar. The 9609 cohort has a noticeably higher median and mean age than the other two. Consistent with this is the standard deviation from the mean age for each cohort as shown in the table. Table 4.2 shows the results of a one way ANOVA to test the significance of the variations in the means of the ages of the three groups of students (again, this analysis has been performed using 'corrected' ages and student transfers in to the groups have been excluded).

Table 4.2: ANOVA of mean ages of the groups.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	405.646	2	202.823	3.427	0.034
Within Groups	15093.255	255	59.189		
Total	15498.775	257			

This result would indicate that, contrary to expectations, there is a statistically significant ($p=0.034$) difference in relation to age distribution between the three groups of students. There is no obvious reason for this difference (for example that had not been any targeting of more mature applicants prior to the September 1996 intake). The visual impression that it is the 9609 cohort that is significantly different in relation to age distribution from the other two groups was tested by a series of independent sample T-tests. These showed:

9509 and 9709 -	no statistically significant difference between groups in relation to age ($p=0.469$)
9509 and 9609 -	statistically significant difference (at the $p=0.05$ level) between groups in relation to age ($p=0.013$)
9609 and 9709 -	no statistically significant difference between groups in relation to age ($p=0.057$)
9509+9709 and 9609 -	statistically significant difference (at the $p=0.05$ level) between groups in relation to age ($p=0.012$)

It was thus concluded that it is, indeed, the second year group (9609) who differed significantly in relation to the age distribution within the group. The fact that age has been postulated as a factor affecting depth of approach to learning means that this difference between groups will have to be taken into consideration in later analyses. As previously indicated, the conclusion that there is no difference between two of the groups (9509 and 9709) means that valid deductions can be made by, where necessary, eliminating the 9609 cohort from some analyses.

Gender Distribution

Table 4.3 shows the percentage of females and males across the total sample population.

Table 4.3: Gender distribution across total population.

	Number	Percent
Female	221	84.03%
Male	42	15.97%
Total	263	100.0%

Table 4.4 shows the corresponding breakdown of gender distribution for each of the three cohorts in the study, showing a range of distribution from 82%

females for the most junior group through to 87.7% females for the most senior group.

Table 4.4: Gender distribution in each of the three groups in the study.

Group	Gender	Number	Percent
9509	Female	64	87.7%
	Male	9	12.3%
	Total	73	100.0%
9609	Female	66	83.5%
	Male	13	16.5%
	Total	79	100.0%
9709	Female	91	82.0%
	Male	20	18.0%
	Total	111	100.0%

Table 4.5 demonstrates that the variation in gender breakdown between the three groups is not statistically significant in that, using Chi-square analysis, with a value of $p=0.582$ it is highly likely that the null-hypothesis (that there is no real difference in the gender distribution in the different cohorts) is supported.

Table 4.5: Chi-square analysis of the distribution of male and female students in the 3 different cohorts.

	Value	df	Sig.
Chi-Square	1.082	2	0.582
Number of valid Cases	263		

(0 cells have expected count less than 5. Minimum expected count is 11.66)

Branch Programme Speciality

Table 4.6 shows the selected branch programme speciality across the total sample population. It should be noted that at the time of the data collection, the 9709 cohort were still undertaking the common foundation programme and had not, therefore, commenced the branch programme. The data relating to the actual branch programme that they commenced was entered retrospectively.

Table 4.6: Selected Branch speciality across all cohorts

	Frequency	Percent
Adult Nursing	169	66.5%
Mental Health Nursing	64	24.3%
Learning Disabilities Nursing	24	9.1%
Missing*	6	2.3%
Total	263	100.0%

* The missing cases are attributable to 6 students in the 9709 cohort who chose not to identify themselves in any way. Students in the other cohorts (who were already in the branch programme) specified their branch even if they wished to remain totally anonymous.

As has been identified earlier, the overall size of the three cohorts was considerably different - this being due to an increasing contract size (in relation, at least, to Adult Nursing and Mental Health Nursing). As has been previously stated, all students who transferred in to the second and third year groups have been specifically excluded from these findings since the fact that they undertook their common foundation programme at another university precludes their inclusion in any assessment of the impact of the De Montfort University curriculum on their approach to learning .

Taking all of this into account, the breakdown of the speciality of the students by cohort (excluding the missing cases) is shown in Table 4.7.

Table 4.7: Numbers of students in each speciality in each cohort

	9509	9609	9709	Total
Adult Nursing	48	51	70	169
Mental Health Nursing	16	20	28	64
Learning Disabilities Nursing	9	8	7	24
Total	73	79	105	257

By subjecting this data to a Chi-square analysis, it can be shown that there is no statistically significant difference between the three cohorts in relation to the breakdown of the numbers of students in each of the three specialities ($p=0.739$)

The breakdown of the mix of male and female students across the three branches may be important in later analyses, since it is popularly perceived that there is a greater proportion of male students in some branches of nursing (for example, mental health nursing). Table 4.8 shows the breakdown:

Table 4.8: Numbers of male and female students in each branch speciality

	Gender		Total
	f	m	
Adult Nursing	156	13	169
Learning Disabilities Nursing	22	2	24
Mental Health Nursing	37	27	64
Total	215	42	257

Table 4.9 shows that the difference in distribution of male and female students across the three branches of nursing is statistically significant ($p=0.00$).

Table 4.9: Chi-square analysis of the distribution of male and female students in the 3 different branch specialities.

	Value	df	Sig.
Chi-Square	41.644	2	0.000
Number of valid Cases	257		

(1 cell has expected count less than 5. Minimum expected count is 3.92)

Visual inspection of the data in table 4.8 would appear to suggest that the distribution of male and female students within the adult nursing and learning disabilities nursing branches is very similar, but that it is the mental health nursing branch where there is a real difference. This impression is, of course, supported by chi-square analysis which shows ($p=0.913$) that there is no statistical difference between the adult and learning disabilities branches in relation to gender distribution.

Academic Entry Qualifications

The minimum statutory academic entry qualifications for nursing programmes in the United Kingdom is 5 GCSE's/GCEs (at grades A, B or C) or their equivalent. A range of other academic qualifications have been identified as fulfilling the academic entry requirements for such courses and, of course, many applicants exceed the minimum. It was therefore important to analyse the qualifications at entry of the three cohorts of students used in the research in order to be able to identify whether there is a statistically significant difference between the three groups. To this end the academic achievements previously attained by the students were obtained from university records and are summarised here (students will be classified according to the 'highest' level of qualification claimed):

- Classification 1 = Possession of a previously obtained degree,
- Classification 2 = Possession of two or more pass grades at A' level (or internationally recognised equivalent),
- Classification 3 = Possession of a University Diploma or Certificate (includes HNC and HND),
- Classification 4 = Possession of a BTEC qualification that satisfies entry to nursing courses (National Certificate or Diploma),
- Classification 5 = Possession of 5 GCSEs / GCE's at grades A,B or C (or CSEs grade 1) (or internationally recognised equivalent). Note that students in this category may also possess one A' level (and/or AS level) at pass grade, but not the two passes that would see them in classification 2 instead,
- Classification 6 = Possession of NVQ level 3 (or above) or Advanced GNVQ (both of which satisfy statutory entry criteria),
- Classification 7 = Possession of a pass in the 'DC Test'. This is a rigorously administered test that is approved by the United Kingdom Central Council for Nursing, Midwifery and Health Visiting as satisfying the minimum academic entry requirement for nursing and midwifery courses. It is available to applicants not in possession of the 5 GCSEs / GCE passes normally required,
- Classification 8 = Possession of a Pass in an approved and kitemarked 'Access to Higher Education' course.

Table 4.10: Frequencies of Entry Qualifications by classifications (see above) - ALL STUDENTS

Classification	Frequency	Percent	Valid Percent
1	8	3.0	3.2
2	42	16.0	16.7
3	4	1.5	1.6
4	34	12.9	13.5
5	118	44.9	46.8
6	15	5.7	6.0
7	16	6.1	6.3
8	15	5.7	6.0
Total	252	95.8	100.0
Missing	11	4.2	
Total	263	100.0	

The data for entry qualification by group is as follows:

Table 4.11: Frequencies of Entry Qualifications by classifications (see above) - BY COHORT

Entry quals Classification	9509		9609		9709	
	Count	%	Count	%	Count	%
1			4	5.1%	4	3.9%
2	16	22.9%	11	13.9%	15	14.6%
3			1	1.3%	3	2.9%
4	16	22.9%	7	8.9%	11	10.7%
5	29	41.4%	36	45.6%	53	51.5%
6	2	2.9%	4	5.1%	9	8.7%
7	5	7.1%	8	10.1%	3	2.9%
8	2	2.9%	8	10.1%	5	4.9%

Analysis of this data by use of the Chi-Square test shows that there is a significant difference (at the $p=0.05$ level) between the three groups in relation to the students' academic qualifications at entry ($p=0.033$).

A visual inspection of the data would appear to suggest that it is the most senior group (9509) that is significantly different from the other two groups. A Chi-squared analysis of the academic entry qualifications for just the 9609 and 9709 cohorts supports this impression ($p=0.369$). So it has to be concluded that the 9509 cohort is statistically significantly different from the other two groups in relation to the highest previous academic qualifications achieved. A review of the recruitment and selection procedures in use for all three intakes confirms that the policies and procedures were identical throughout the three year period in question; there were also no apparent differences in the marketing, promotion and advertising strategies adopted during this time. It is hard to find a convincing argument that the difference is due to demographic changes. The conclusion may be drawn that, despite the statistical significance of the difference in entry qualifications, the difference is in fact due either to chance, or to the effect of attrition from this cohort (an interesting theory for further research since data is not available to test it here). It will, however, be important to review whether these perceived differences have any impact on the findings relating to the approaches to learning adopted by the various groups. If there is a significant difference in the approach adopted by the 9509 cohort (as opposed to that adopted by 9609 and 9709) it will be necessary to attempt to analyse whether that difference is due to the curriculum or whether the previous academic achievements have had an impact.

CHAPTER 5

Presentation of Findings.

ASSIST Inventory Section A: What is Learning?

Students were asked to infer how closely (5 = very close, 1 = very different) certain 'definitions' of the concept of learning relate to their own perceptions. Three of the 6 definitions (in the hierarchical order stated) relate to the surface approach:

Statements C, A and D

and the other three relate to the deep approach (again in the hierarchical order stated):

Statements E, F and B

Table 5.1: Student responses to various conceptual definitions of learning (SURFACE APPROACH)

Group		Statement C	Statement A	Statement D	Overall
9509	Mean	4.5205	3.6438	4.5342	4.2328
	Mode	5	4	5	
	N	73	73	73	
	Std. Dev.	.6035	1.1349	.6684	
	Minimum	3	1	2	
	Maximum	5	5	5	
9609	Mean	4.6456	3.5385	4.2949	4.1596
	Mode	5	4	5	
	N	79	78	78	
	Std. Dev.	.5782	1.0774	.7913	
	Minimum	3	1	2	
	Maximum	5	5	5	
9709	Mean	4.6389	3.9143	4.4112	4.3214
	Mode	5	4	5	
	N	108	105	107	
	Std. Dev.	.5712	.8334	.7262	
	Minimum	3	1	2	
	Maximum	5	5	5	
Total	Mean	4.6077	3.7227	4.4109	
	Mode	5	4	5	
	N	260	256	258	
	Std. Dev.	.5828	1.0123	.7340	

Table 5.2: Student responses to various conceptual definitions of learning (DEEP APPROACH)

Group		Statement E	Statement F	Statement B	Overall
9509	Mean	4.4110	4.1096	4.1781	4.2329
	Mode	5	4	4	
	N	73	73	73	
	Std. Dev.	.7423	.8090	.5855	
	Minimum	2	1	3	
	Maximum	5	5	5	
9609	Mean	4.2564	4.0649	4.1667	4.1627
	Mode	5	4	4	
	N	78	77	78	
	Std. Dev.	.7802	.8482	.7282	
	Minimum	2	2	2	
	Maximum	5	5	5	
9709	Mean	4.2381	3.9906	4.2095	4.1460
	Mode	4	4	4	
	N	105	106	105	
	Std. Dev.	.8148	.9411	.8168	
	Minimum	1	1	1	
	Maximum	5	5	5	
Total	Mean	4.2930	4.0469	4.1875	
	Mode	5	4	4	
	N	256	256	256	
	Std. Dev.	.7847	.8755	.7276	

These findings as presented are far from clear cut. It might be expected that students would tend towards either the 'deep' definitions (E, F and B) or the 'surface' definitions (C, A and D). In fact there is a very close similarity of mean scores for each group of students towards the two types of classification. The inference is that students have placed almost equal weighting on the majority of the definitions. However there are some trends that warrant brief discussion; firstly it is the most junior students who identify slightly more closely with the surface approach, and the most senior students who identify slightly more closely with the deep approach. This is interesting, but should be seen within the context of the suggestions of statistical significance shown by Chi-square analysis (tables 5.3 and 5.4) which fail to show statistically significant differences (at the $p=0.05$ level) between the responses of the three groups to the various statements. Perhaps worthy of note is the comparison of the responses of the three groups to statement E for which the significance of the difference approaches the $p=0.05$ level ($p=0.059$):

Table 5.3: Chi-square analysis of responses of groups in relation to surface orientated statements.

	Chi-square	df	Sig.
Statement C	3.244	4	0.518
Statement A	12.866	8	0.116
Statement D	4.486	6	0.611

Table 5.4: Chi-square analysis of responses of groups in relation to deep orientated statements.

	Chi-square	df	Sig.
Statement E	14.993	8	0.059
Statement F	5.595	8	0.693
Statement B	9.433	8	0.307

This analysis tallies with the remarkably consistent mode scores awarded by the students in each of the groups to the various conceptual definitions of learning. The only definition for which there was a different modal score was Statement E (the statement claimed by the authors of the inventory to be that most closely associated with the deep approach). The mode score for this was 4 from the most junior cohort but 5 from the other two groups (and indeed the overall total student population). This perhaps supports, but by no means conclusively, the earlier contention that the more junior students tend towards the surface approach whilst the more senior students tend towards a deep approach. It will be necessary to review whether this picture is consistent with the findings from the major part of the inventory (section B).

It is interesting to note that the authors of the inventory suggest that previous findings have revealed a hierarchy from statement C through to D (for the surface approach) and E through to B (for the deep approach). In the findings here, in both cases, and for all three groups, it is the middle statement that receives the lowest level of agreement (and the highest figure for standard deviation). Otherwise, with the exception of 9509's responses to the surface categories, the hierarchical relationship is consistently shown.

ASSIST Inventory Section C: Preference for different types of course and teaching.

In section C students were asked to identify their personal preferences for different types of course and teaching. The students were asked to grade a series of 8 statements (annotated here as Type A through to Type H) on a scale of 1 to 5. A score of 5 means 'definitely like' and 1 means 'definitely dislike'. The respondents were not made aware that four of the statements (randomly placed in the sequence) were concerned with types of course and teaching that supported the gaining of understanding (and which are thus related to a deep approach to learning). The other four statements were concerned with types of course and teaching where the emphasis was upon transmitting information (and which were thus related to a surface approach to learning).

The results of a descriptive analysis of the student responses for this section of the inventory are found in tables 5.5 (deep approach statements) and 5.6 (surface approach statements).

Table 5.5: Student Responses for Preferences for different types of course and teaching (DEEP APPROACH)

Group		Type B	Type C	Type F	Type G	Overall
9509	Mean	4.4521	3.9861	3.5616	4.1233	4.0307
	N	73	72	73	73	
	Std. Dev.	.8172	1.0457	1.2961	1.0267	
	Minimum	2	1	1	2	
	Maximum	5	5	5	5	
	Mode	5	4	4	5	
9609	Mean	4.3418	3.6582	3.5823	4.0380	3.9051
	N	79	79	79	79	
	Std. Dev.	.6959	1.1081	1.0814	.8979	
	Minimum	2	1	1	2	
	Maximum	5	5	5	5	
	Mode	4	4	4	4	
9709	Mean	4.4505	3.8018	3.4364	3.8000	3.8722
	N	111	111	110	110	
	Std. Dev.	.7102	1.0856	1.1615	1.0820	
	Minimum	2	1	1	1	
	Maximum	5	5	5	5	
	Mode	5	4	4	4	
Total	Mean	4.4183	3.8092	3.5153	3.9618	3.8402
	N	263	262	262	262	
	Std. Dev.	.7362	1.0871	1.1670	1.0201	
	Minimum	2	1	1	1	
	Maximum	5	5	5	5	
	Mode	5	4	4	4	

Table 5.6: Student Responses for Preferences for different types of course and teaching (SURFACE APPROACH)

Group		Type A	Type D	Type E	Type H	Overall
9509	Mean	3.7123	3.3889	3.8767	4.3014	3.8198
	N	73	72	73	73	
	Std. Dev.	1.2854	1.3061	1.0534	.9232	
	Minimum	1	1	1	2	
	Maximum	5	5	5	5	
	Mode	4	4	4	5	
9609	Mean	3.7722	3.4937	3.6076	4.3797	3.8133
	N	79	79	79	79	
	Std. Dev.	1.1203	1.0727	1.2134	.7035	
	Minimum	1	1	1	2	
	Maximum	5	5	5	5	
	Mode	4	4	4	4	
9709	Mean	4.2818	3.9459	4.2613	4.6126	4.2754
	N	110	111	111	111	
	Std. Dev.	.9966	1.1187	.9974	.6898	
	Minimum	1	1	2	2	
	Maximum	5	5	5	5	
	Mode	5	4	5	5	
Total	Mean	3.9695	3.6565	3.9582	4.4563	4.0101
	N	262	262	263	263	
	Std. Dev.	1.1476	1.1827	1.1130	.7747	
	Minimum	1	1	1	2	
	Maximum	5	5	5	5	
	Mode	4	4	4	5	

The picture that emerges is interesting. Firstly it should be noted that, as in the previously discussed 'definitions of learning' section, there is not a clear polarisation on the part of students towards the deep or surface approach to learning (as manifested by their reaction to the types of course and teaching described). The mode score for all groups in response to all statements / types is 4 ('like to some extent') or 5 ('definitely like'). The overall average score for all students is higher (at 4.0101) for the surface related types than that for the deep related types (3.8402) suggesting an overall tendency towards a preference for surface type approaches. However some caution is required here since that result is skewed by the larger 9709 cohort (representing 42.2% of the total sample population) who, as a group, mirror that tendency.

Individual groups have demonstrated different tendencies. As can be seen, the most senior group (9509) have given a greater average score (4.0307) for the deep approach related types than for surface approach related types (3.8198). The converse is true for the most junior group (9709) who gave a higher average score for the surface approach (4.2754) than the deep approach (3.8722). The intermediate group (9609) demonstrated the same

preference as their more senior colleagues but to a less well-defined extent (3.9051 as opposed to 3.8133).

Closer observation of the data would appear to suggest that there are two statements that significantly alter the overall results. These are statement F in the deep approach related types:

'Courses where we're encouraged to read round the subject a lot for ourselves',

and statement H in the surface approach related types:

'books which give you definite facts and information which can easily be learned'.

Statement F achieved the lowest average score for all groups of students, the equal widest range of responses and the highest overall standard deviation (1.1670). At the opposite extreme, statement H achieved the highest average score for all groups of students, the equal narrowest range, and the lowest overall standard deviation (0.7747). Seen in the context of the pressure that students on the DipHE Nursing programme are under to submit assignments and sit and pass examinations, the question has to be asked whether the responses to these statements reflect the need to adopt a strategic approach to ensure success. In the case of type F, does this demonstrate some kind of dissonance between wanting to adopt a deep approach but many students being forced by the pressure to achieve rather than read? The strong and very widespread preference for type H may also demonstrate the fact that students need to find ready made solutions to assessments that perhaps focus on recall of facts and information rather than the processes derived from deep approaches to learning.

Given the possible skewing of the results occurring from the students' responses to statements F and H, tables 5.7 and 5.8 show the same data as tables 5.5 and 5.6 but with statements F and H (and their effect on the other data) omitted.

Table 5.7: Student Responses for Preferences for different types of course and teaching OMITTING STATEMENT / TYPE F (Deep Approach)

Group		Type B	Type C	Type G	Overall
9509	Mean	4.4521	3.9861	4.1233	4.1871
	N	73	72	73	
	Std. Dev.	.8172	1.0457	1.0267	
	Mode	5	4	5	
9609	Mean	4.3418	3.6582	4.0380	4.0126
	N	79	79	79	
	Std. Dev.	.6959	1.1081	.8979	
	Mode	4	4	4	
9709	Mean	4.4505	3.8018	3.8000	4.0174
	N	111	111	110	
	Std. Dev.	.7102	1.0856	1.0820	
	Mode	5	4	4	
Total	Mean	4.4183	3.8092	3.9618	4.0631
	N	263	262	262	
	Std. Dev.	.7362	1.0871	1.0201	
	Mode	5	4	4	

Table 5.8: Student Responses for Preferences for different types of course and teaching OMITTING STATEMENT / TYPE H (Surface Approach)

Group		Type A	Type D	Type E	Overall
9509	Mean	3.7123	3.3889	3.8767	3.6593
	N	73	72	73	
	Std. Dev.	1.2854	1.3061	1.0534	
	Mode	4	4	4	
9609	Mean	3.7722	3.4937	3.6076	3.6245
	N	79	79	79	
	Std. Dev.	1.1203	1.0727	1.2134	
	Mode	4	4	4	
9709	Mean	4.2818	3.9459	4.2613	4.163
	N	110	111	111	
	Std. Dev.	.9966	1.1187	.9974	
	Mode	5	4	5	
Total	Mean	3.9695	3.6565	3.9582	3.8614
	N	262	262	263	
	Std. Dev.	1.1476	1.1827	1.1130	
	Mode	4	4	4	

This new analysis has several effects. Firstly, it reverses the implication of the overall mean for each approach. There is now a slight preference for deep approach related types (4.0631) over surface approach related types (3.8614). Secondly, it accentuates the preference for the most senior group (9509) for deep approaches over surface approaches (4.1871 compared to 3.6593). Thirdly it has a similar, if not more profound, effect on the results for the intermediate group; and finally it minimises the converse effect in relation to the preference for surface approach related types of the most junior group (9709).

In order to attempt to assess whether there was any significant difference between the three groups, the results of their stated preferences for various types of teaching and learning were subjected to a series of Chi-square analyses (the primary data being ordinal). The results are shown in tables 5.9 and 5.10.

Table 5.9: Chi-square analysis of results of students' preferences for different types of courses and teaching (DEEP APPROACH)

Statement		All groups	9609 / 9709	9509 / 9709	9509 / 9609
B	Chi-square	7.333	2.536	2.907	6.204
	df	6	3	3	3
	Sig.	p=0.291	p=0.469	p=0.406	p=0.102
C	Chi-square	11.184	3.498	6.965	6.426
	df	8	4	4	4
	Sig.	p=0.192	p=0.478	p=0.138	p=0.169
F	Chi-square	10.192	3.445	6.275	5.517
	df	8	4	4	4
	Sig.	p=0.252	p=0.486	p=0.180	p=0.238
G	Chi-square	14.242	4.278	9.823	4.836
	df	8	4	4	3
	Sig.	p=0.076	p=0.370	p=0.044	p=0.184

Table 5.10: Chi-square analysis of results of students' preferences for different types of courses and teaching (SURFACE APPROACH)

Statement		All groups	9609 / 9709	9509 / 9709	9509 / 9609
A	Chi-square	21.063	15.409	11.270	2.943
	df	8	4	4	4
	Sig.	p=0.007	p=0.004	p=0.024	p=0.567
D	Chi-square	23.276	16.450	9.273	7.111
	df	8	4	4	4
	Sig.	p=0.003	p=0.002	p=0.055	p=0.130
E	Chi-square	26.135	20.681	12.071	2.686
	df	8	4	4	4
	Sig.	p=0.001	p=0.000	p=0.017	p=0.612
H	Chi-square	15.421	10.289	6.992	3.966
	df	6	3	3	3
	Sig.	p=0.017	p=0.016	p=0.072	p=0.265

Here it can be seen that, in relation to those statements that relate to the deep approach to learning, there is no statistical significance (at the $p=0.05$ level) in the responses recorded by the three groups of students when all three are compared to each other. There is still less difference (in statistical terms) when the results of the 9609 and 9709 cohorts are compared. However there is arguably a slightly greater (though still not statistically significant at this level) difference between 9509 and the other two groups. The one statistically significant result (at the $p=0.05$

level) is seen in the comparison between the level of preference expressed by 9509 and 9709 in relation to statement G ($p=0.044$).

In relation to those statements that relate to surface approaches to learning, the results are very different. There is a very high degree of probability that there is a real difference between the preferences expressed by the three groups of students. When all three groups are viewed together the results are statistically significant ($p<0.05$) for each of the four statements. The probability of real difference increases when the results of 9609 and 9709 are examined together, but decreases when the preferences of 9509 are compared to those of the other two groups. The markedness of the differences between the three groups might appear surprising when considered in the light of the results of tables 5.5 to 5.8, which show means and modes that are apparently quite close together. The explanation is that the chi-square analysis takes account of all aspects of the frequency distribution across all the responses (the effect of which may be minimised by more descriptive analyses).

ASSIST Inventory Section D: Self assessment of personal progress in assessed work.

Students were invited to rate themselves, as objectively as possible, on how they felt they were achieving in relation to their performance in assessed work. They were asked to grade themselves on a scale from 1 = 'rather badly' to 9 = 'very well' according to the grades that they had been achieving thus far.

Table 5.11: Frequency Distribution of self-assessment scores on personal progress in assessed work.

Score	1		2		3		4		5		Continued
	N	%	N	%	N	%	N	%	N	%	
9509	0	0	0	0	0	0	4	5.5	28	38.4	
9609	0	0	0	0	2	2.5	6	7.6	28	35.4	
9709	1	0.9	0	0	3	2.7	7	6.3	28	25.2	
Total	1	0.4	0	0	5	1.9	17	6.5	84	31.9	

Score	6		7		8		9			
	N	%	N	%	N	%	N	%		
9509	16	21.9	19	26.0	5	6.8	1	1.4		
9609	17	21.5	24	30.4	1	1.3	1	1.3		
9709	9	8.1	38	34.2	11	9.9	6	5.4		
Total	42	16.0	81	30.8	17	6.5	8	3.0		

Table 5.12: Student responses to self assessment on personal progress in assessed work.

	9509	9609	9709	All Students
Mean	5.9452	5.7848	6.2136	6.0039
Mode	5	5	7	5
N	73	79	103	255
Std. Dev.	1.1290	1.1510	1.5317	1.3206
Minimum	4	3	1	1
Maximum	9	9	9	9

There would appear to be real differences between the ways in which the various cohorts of students have assessed their personal progress. This impression is supported by a chi-square analysis of this ordinal data which suggests that this difference approaches statistical significance at the 95% confidence level ($p=0.053$). It is interesting that the most junior group (9709) has the widest spread of scores in the self assessment and the highest figure for standard deviation. There are, however, possible explanations for this. This group completed the inventory during the eighth month of their modular and semesterised course, at a point where they had completed one semester and were approaching the completion of the second. They had thus only received summative feedback on two pieces of assessed work (related to the two modules completed in semester 1). Of these, one is a practice based module assessed as 'pass' or 'fail' and the second is a module assessed by a multiple choice objective test - a kind of test that tends to result in fairly widely polarised mark / grade allocations. Thus these students would have had to assess themselves almost exclusively on this module. The other, more senior groups, would have completed the same module at an earlier date, but their assessment of their personal overall performance would have been moderated by subsequent assignment and examination grades. In support of this observation, if the same chi-square analysis is undertaken, but this time excluding the 9709 cohort from the test, then the probability is very high ($p=0.488$) that there is no real difference between the remaining two groups in relation to the results of the personal assessment of academic progress. Conversely, if the results of the self-assessment of the 9709 students are independently compared to those of the 9609 and 9509 students, then statistically significant differences are observed between the groups ($p=0.047$ for the 9509 / 9709 comparison, and $p=0.026$ for the 9609 / 9709 comparison).

Presentation of Data from Section B of the Inventory.

Section B of the inventory is subtitled 'Approaches to Studying' and requires the student to provide a response on a Likert scale (5 = Agree through to 1 = Disagree) to a range of 52 statements which the authors have previously demonstrated relate to three specific approaches to studying. These approaches are classified as:

Deep approach (Marton and Säljö, 1976a)
Surface apathetic approach (Marton and Säljö, 1976a), and
Strategic approach (Entwistle and Ramsden, 1983).

It should be noted that the statements relating to the various approaches are apparently randomly mixed up within the inventory, and the respondent has no way of determining which statements relate to which approach. Entwistle (1997) provided a 'Marking Scheme' for the Inventory which, in relation to this section, was based upon the author's analysis of the data derived from previous applications. Thus they divided the 52 statements, not only into the three approaches to studying mentioned, but to a range of sub-scales to which have been added interpretive labels. These subscales are:

Deep Approach:	Seeking Meaning
	Relating Ideas
	Use of Evidence
	Interest in Ideas
Strategic Approach:	Organised Studying
	Time Management
	Alertness to Assessment Demands
	Achieving
	Monitoring Effectiveness
Surface Apathetic Approach:	Lack of Purpose
	Unrelated Memorising
	Syllabus-boundness
	Fear of Failure

Entwistle (1997) claims that the first three subscales in each named approach "are most consistently related to each other, and can be combined with confidence" (p1). The first three in each will hereafter be referred to, therefore, as the 'primary subscales' for each approach. He further concludes that the subsequent subscales (4th and 5th) are less consistently

related for all sample populations and should therefore be checked for each particular sample population used. These subscales will therefore be referred to as 'related subscales'.

Subscale Correlations.

The objective of this exercise was to begin to validate the inventory authors' original subscales for the DipHE Nursing student population. The data from all the students were organised according to the aforementioned approaches and their respective subscales. The student responses were then subjected to the Spearman Rank Correlation analysis (Spearman's rho (r_s)) which test was chosen in preference to the Pearson Product Moment Correlation test because the data for this section was non-parametric ordinal.

Spearman Rank Correlation Analysis

For each subscale, within each overall approach, Spearman's rho (r_s) was calculated. It should be noted that, although the correlations may have been statistically significant the absolute value of the correlation coefficient was not usually exceptionally high (r_s typically having a value of between 0.200 and 0.400). The implications of this will be considered in a later section when consideration will have to be given to the question of whether or not such a correlation matrix can be meaningfully submitted to factor analysis.

Deep Approach - Primary Subscale 1: Seeking Meaning

All four statements correlated positively with each other very well, all the correlations being highly statistically significant ($p \leq 0.01$ in each case). When reviewing the correlation between the four statements and the rest of the primary subscale statements, it was noted that one statement (b43) did not show a statistically significant (at the level of $p=0.05$) positive correlation to one other statement (b11). Similarly b43 did not show a statistically significant correlation to one on the related subscale statements (b52). In all other aspects, the matrix showed positive correlations with a probability of statistical significance at least at the level of $p=0.05$ (in many cases less than $p=0.01$). It was thus concluded that, on the basis of this analysis, this subscale was probably valid for the current population.

Deep Approach - Primary Subscale 2: Relating Ideas

All four statements correlated positively with each other. In all but one

case (b11 with b46 ($p=0.093$)) the probability of the correlation being statistically significant was at least at the level of $p=0.01$. In relation to the correlations between these four statements and the other statements in the deep approach, 43 of the 48 correlations were statistically significant (at least at the level of $p=0.05$ (in many cases less than $p=0.01$)). Only 5 of the 48 correlations failed to achieve statistical significance at this level and, of these, two were correlations between the statements of this subscale and those of the related subscale. It was thus concluded that, on the basis of this analysis, this subscale was valid for the current population.

Deep Approach - Primary Subscale 3: Use of Evidence

All four statements correlated positively with each other. In all cases the probability of the correlation being statistically significant was at least at the level of $p=0.01$. In relation to the correlations between these four statements and the other statements in the deep approach, 47 of the 48 correlations were statistically significant (in 45 cases, the probability was less than $p=0.01$, in the other two it was less than $p=0.05$). Only 1 of the 48 correlations failed to achieve statistical significance at this level (though the correlation was still positive). It was thus concluded that, on the basis of this analysis, this subscale was valid for the current population.

Deep Approach - Related Subscale 4: Interest in Ideas

All four statements correlated positively with each other. In all cases the probability of the correlation being statistically significant was at least at the level of $p=0.01$. In relation to the correlations between these four statements and the other statements in the deep approach, 46 of the 48 correlations were statistically significant (in 42 cases, the probability was less than $p=0.01$, in the other four it was less than $p=0.05$). Only 2 of the 48 correlations failed to achieve statistical significance at this level (though the correlation was still positive). It was thus concluded that, on the basis of this analysis, this related subscale was valid for the current population.

Strategic Approach - Primary Subscale 1: Organised Studying

All four statements correlated positively with each other. In most cases the probability of the correlation was statistically significant at least at the level of $p=0.01$ (in the other cases the significance was less than $p=0.05$). In relation to the correlations between these four statements and

the other statements in the Strategic approach, 50 of the 64 correlations were statistically significant at least at the level of $p=0.05$. Only 14 of the 64 correlations failed to achieve statistical significance at this level, and of these 11 were correlations between the four statements of this subscale and those of strategic approach - primary subscale 3. It was thus concluded that, on the basis of this analysis, this primary subscale was valid for the current population.

Strategic Approach - Primary Subscale 2: Time Management

All four statements correlated positively with each other. In all cases the probability of the correlation being statistically significant was at least at the level of $p=0.01$. In relation to the correlations between these four statements and the other statements in the Strategic approach, 56 of the 64 correlations were statistically significant at least at the level of $p=0.05$. Only 8 of the 64 correlations failed to achieve statistical significance at this level, and all 8 were correlations between the four statements of this subscale and those of primary subscale 3. It was thus concluded that, on the basis of this analysis, this primary subscale was valid for the current population.

Strategic Approach - Primary Subscale 3: Alertness to Assessment Demands

All four statements correlated positively with each other. In all but one case (b15 with b41 ($p=0.097$)) the probability of the correlation being statistically significant was at least at the level of $p=0.01$. In relation to the correlations between these four statements and the other statements in the Strategic approach 29 out of 64 correlations were not statistically significant at the level of $p=0.05$. In some cases (particularly with respect of b28 and b41) the correlation was negative. There was an equally high level of non-correlation between the statements of this subscale and those of the primary and related subscales. It was thus concluded that, on the basis of this analysis, this primary subscale was NOT valid for the current population.

Strategic Approach - Related Subscale 4: Achieving

All four statements correlated positively with each other. In all cases the probability of the correlation being statistically significant was at least at the level of $p=0.01$. In relation to the correlations between these four statements and the other statements in the Strategic approach, 58 of the 64 correlations were statistically significant at least at the level of $p=0.05$. Only 6 of the 64 correlations failed to achieve statistical

significance at this level, and of these 5 were correlations between the four statements of this subscale and those of strategic approach - primary subscale 3. It was thus concluded that, on the basis of this analysis, this related subscale was valid for the current population.

Strategic Approach - Related Subscale 5: Monitoring Effectiveness

All four statements correlated positively with each other. In all cases the probability of the correlation being statistically significant was at least at the level of $p=0.01$. In relation to the correlations between these four statements and the other statements in the Strategic approach, 61 of the 64 correlations were statistically significant at least at the level of $p=0.05$. Only 3 of the 64 correlations failed to achieve statistical significance at this level, and of these 1 was a correlation between the four statements of this subscale and those of strategic approach primary subscale 3. It was thus concluded that, on the basis of this analysis, this related subscale was valid for the current population.

Surface Approach - Primary Subscale 1: Lack of Purpose

All four statements correlated positively with each other. In all but one case the probability of the correlation being statistically significant was at least at the level of $p=0.01$. In the remaining case (b3 and b42) the correlation was not statistically significant ($p=0.094$). In relation to the correlations between these four statements and the other statements in the Surface approach, only 25 of the 48 correlations were statistically significant at least at the level of $p=0.05$. 23 of the 48 correlations failed to achieve statistical significance at this level, and of these 16 were correlations between the four statements of this subscale and the statements of the other primary subscales (7 were correlations with the related subscale). On the basis of this analysis, it was thus concluded that this primary subscale was probably NOT valid for the current population.

Surface Approach - Primary Subscale 2: Unrelated Memorising

All four statements correlated positively with each other. In all but one case the probability of the correlation being statistically significant was at least at the level of $p=0.01$ (in the other cases the significance of the correlation was at the level of $p<0.05$). In relation to the correlations between these four statements and the other statements in the Surface approach, 36 of the 48 correlations were statistically significant at least at the level of $p=0.05$. Only 12 of the 48 correlations failed to achieve

statistical significance at this level, and of these 6 were correlations between the four statements of this subscale and those of surface approach - primary subscale 1 (which, it has been concluded, is not valid for this population). It was thus concluded that, on the basis of this analysis, this primary subscale was probably valid for the current population.

Surface Approach - Primary Subscale 3: Syllabus-boundness

All four statements correlated positively with each other. In all cases the probability of the correlation being statistically significant was at least at a level of $p=0.01$. In relation to the correlations between these four statements and the other statements in the Surface approach, 30 of the 48 correlations were statistically significant at least at the level of $p=0.05$. 18 of the 48 correlations failed to achieve statistical significance at this level, and of these 8 were correlations between the four statements of this subscale and those of surface approach - primary subscale 1 (which, it has been concluded, is not valid for this population). Though this situation is not clear cut, it was thus concluded that, on the basis of this analysis, this primary subscale was probably valid for the current population.

Surface Approach - Related Subscale 4: Fear of Failure

All four statements correlated positively with each other. In all cases the probability of the correlation being statistically significant was at least at the level of $p=0.01$. In relation to the correlations between these four statements and the other statements in the Surface approach, 35 of the 48 correlations were statistically significant at least at the level of $p=0.05$. 13 of the 48 correlations failed to achieve statistical significance at this level, and of these 7 were correlations between the four statements of this subscale and those of surface approach - primary subscale 1 (which, it has been concluded, is not valid for this population). It was thus concluded that, on the basis of this analysis, this related subscale was probably valid for the current population.

Estimation of Internal Reliability of Approaches to Learning Scales

Cronbach's Alpha is a test of internal reliability and consistency based upon the average inter-item reliability within a group of variables. As such, in a Likert response inventory, it may be seen as an estimate of the extent to which a group of items are assessing the same factor or attribute. Reliability coefficients, like correlation coefficients can

range from -1 to +1 with the expectation that the higher the coefficient, the greater the internal reliability of the class or group. Thus in support of the previous section, it seemed appropriate to subject the data to analysis using Cronbach's Alpha.

Table 5.13: Alpha analysis of the total student population responses to the inventory using the approaches to learning and subscales identified.

	Cronbach's Alpha
DEEP APPROACH:	
All statements	.8406
All primary statements only	.7792
Subscale 1: Seeking Meaning	.5018
Subscale 2: Relating Ideas	.5575
Subscale 3: Use of Evidence	.5414
Subscale 4: Interest in Ideas	.6528
STRATEGIC APPROACH:	
All statements	.8639
All statements excluding Subscale 3	.8621
All primary statements only	.7655
Subscale 1: Organised Studying	.5575
Subscale 2: Time Management	.7822
Subscale 3: Alertness to Assessment Demands	.5089
Subscale 4: Achieving	.7505
Subscale 5: Monitoring Effectiveness	.5985
SURFACE APPROACH:	
All statements	.7948
All statements excluding Subscale 1	.7867
All primary statements only	.7316
Subscale 1: Lack of Purpose	.6138
Subscale 2: Unrelated Memorising	.5391
Subscale 3: Syllabus-boundness	.6553
Subscale 4: Fear of Failure	.7756

Since a value of .5 for Alpha is the generally accepted minimum for conclusions about internal reliability, it may be observed that there is a comparatively high degree of internal reliability in the overall approaches and subscales. As can be seen from this table, the analysis would appear to support a range of conclusions:

1. That the main approaches categorised by Entwistle (1997) hold true for this population in terms of the internal reliability of the main scales of Deep, Strategic and Surface approaches to learning. This conclusion is drawn from the value of Alpha being close to or exceeding .8 in relation to the analysis when all the statements in each approach are included.
2. That the related subscales appear to be valid for use with this student population. This is derived from the fact that, for each of the three

approaches, the value of Alpha when all the statements are included exceeds the value of Alpha when only the statements of the primary subscales are included.

3. In the strategic approach, the value of Alpha when the subscale 3 is excluded from the analysis is slightly greater than when it is included. This partly supports the earlier conclusion that Strategic Approach subscale 3 is probably not valid for this sample population. It is also noted that the value of Alpha for this subscale 3 is lower than the other subscales.
4. The same point cannot be made in relation to the exclusion of Subscale 1 from the Surface Approach. Although the value of Alpha is greater in the situation when subscale 1 is omitted compared to the value of Alpha for just the primary subscales combined, this is not the case when that value is compared to Alpha when all the subscales are included. However, it should be noted that internal reliability is not conceptually quite the same as correlation and this finding does not, of itself undermine the decision to exclude this subscale from the comparisons of means.
5. Whilst the values of Alpha for each overall approach would appear to demonstrate a high level of internal reliability in relation to the 3 main approaches, this is not always the case for the subscales. Although none of the values of Alpha fall below .5, there are some reliability coefficients (perhaps those in the .5 to .6 range) related to individual subscales that raise some doubts as to the reliability of those subscales themselves. Exploratory factor analysis may lead to the identification of factors that have a higher level of internal reliability.

Comparison of Means using different categorisation.

It was felt that, in addition to the primary exploratory factor analysis carried out on the DipHE Nursing data, it may provide valuable insights if the data were analysed against the approaches and scales provided by the authors of the inventory. This has been done by dividing the sample population into different groupings to see whether any difference can be detected in the approaches to studying adopted by students in these various groupings. For the purpose of this exercise, the groupings selected were:

- a. By cohort:- To determine whether there was any difference in the approaches to learning and studying adopted by the three groups. Notwithstanding the previously demonstrated

statistically significant differences between these groups in relation to age and previously achieved entry qualifications, this may help to demonstrate some aspects of the impact of the curriculum on students as they progress through the programme.

- b. By age: - Students were grouped according to their age. For this analysis, the total population was divided into two groups (on convenience grounds):

Group 1 - up to and including the age of 23 years, and

Group 2 - Age 24 years and over.

The classifying age of 23 years was selected for this analysis since this divided the total student population into two almost equal groups. Of the 258 students who gave their age (5 students declined), 128 (49.6%) fell within the 18 - 23 years age banding, and 130 (50.4%) were aged 24 years or over.

It should be noted that 'actual age' was used for these classifications (as opposed to the 'corrected age' which has been used in other respects to provide equivalence between the cohorts at the different stages of their programme). The reason for this is that the objective is to test the significance of the effect of age on the approach to learning adopted by students; clearly actual age is more meaningful in this context.

- c. By gender:- To investigate whether there is any real difference in the approach to learning adopted by male students and female students. It is acknowledged that it may be necessary to break down each cohort into male and female groups depending on whether any significant difference in approach is determined for each cohort (a above).

- d. By chosen branch speciality:

- To examine whether students working towards the three different branch programmes have a predisposition towards different approaches to learning and studying.

- e. By entry qualification:

- Students were grouped according to the qualifications classification system earlier described and an analysis was undertaken to determine whether or not students adopted different approaches to learning according to their previous

educational qualifications achieved. Again it may be necessary to break this down by cohort and gender as well, depending on the outcome of other analyses.

f. By ethnicity:

Although it is acknowledged that this would have been a useful analysis, it could not be undertaken since the ethnic origin of the respondents was not requested at the time of data collection.

Mean scores for each student were calculated for each of the three main approaches to learning by summing the student's score for all the statements attributed to each approach. The statements within the subscales considered invalid (subscale 3 in the Strategic Approach and subscale 1 from the Surface Approach) for this student population were excluded, but the related subscales were included since the earlier Spearman's rho correlational analysis had demonstrated that, in the context of correlation, these related subscales were valid for the student population under investigation. By dividing the summed score by the number of applicable statements, a mean score (on the same scale of from 1 to 5) could be determined for each student for each approach to studying. Thus by comparing the responses of the groups of students (allocated according to the various criteria identified) this enabled the implications of those criteria to be examined. In order to test the results of these analyses for statistical significance, the data was submitted to one-way Analysis of Variance or, where appropriate, to independent sample t-test. It is acknowledged that these tests are inferential statistical analyses to be utilised with interval data. It is argued that these mean scores, based as they are upon the summed Likert-scale responses to statements (assumed to be matched) have sufficient interval data characteristics to render them eligible for parametric analysis techniques such as ANOVA and t-test.

a. Comparison of the data for Section B - analysed by COHORT

Table 5.14: The mean scores awarded for each approach to studying, with students grouped according to their cohort. **EXCLUDING INVALID SUBSCALES**

Cohort		Deep	Surface	Strategic
9509	Mean	3.7962	3.2009	3.5685
	N	73	73	73
	Std. Deviation	.5560	.7648	.7008
9609	Mean	3.7445	3.1857	3.5625
	N	79	79	79
	Std. Deviation	.5379	.5858	.6468
9709	Mean	3.7877	3.3123	3.6278
	N	111	111	111
	Std. Deviation	.5060	.6969	.6120
Total	Mean	3.7771	3.2433	3.5917
	N	263	263	263
	Std. Deviation	.5283	.6858	.6463

It should be noted that the means recorded here for 'Total' do truly represent all the students. For some of the subsequent analyses, there may be a slightly different figure recorded. This is because the cohort was identifiable for all students, but for some of the other criteria (for example, age or gender) some respondents declined to submit that information. Such cases are excluded from the analysis.

As can be seen there is a remarkable level of consistency in the scores awarded by the three different cohorts of students to each of the three approaches to studying. This observation is confirmed by the Analysis of Variance that is shown in table 5.15 which shows that there is a very high probability that there is no real difference between the scores of the three cohorts ($p \geq 0.377$ for each approach).

Table 5.15 ANOVA of differences between cohorts in approach to learning.

		Sum of Squares	df	Mean Square	F	Sig.
Deep Approach	Between Groups	.123	2	6.170E-02	.220	.803
	Within Groups	72.988	260	.281		
	Total	73.112	262			
Surface Approach	Between Groups	.922	2	.461	.980	.377
	Within Groups	122.295	260	.470		
	Total	123.218	262			
Strategic Approach	Between Groups	.251	2	.126	.299	.742
	Within Groups	109.200	260	.420		
	Total	109.451	262			

Of all the various groupings analysed in this section, it was this grouping by cohort that showed the smallest difference between groups. On this evidence it would appear that, everything else being equivalent, there is no significant change in the approach to learning adopted by students as they progress through their programme. It is thus concluded that it is appropriate to continue with the subsequent analyses which use criteria which do not distinguish between the students' stage of their programme; for example when the students are divided into 'male' and 'female' categories, the cohort of the students can be disregarded for that analysis.

The mean scores suggest that, using the inventory authors' primary classifications, students undertaking the DipHE Nursing programme tend to favour the deep approach to studying in preference to (in order) the strategic approach and, lastly, a surface approach. It is acknowledged that this is not a very strong tendency based upon this analysis.

b. Comparison of the data for Section B - analysed by AGE

Table 5.16: The mean scores awarded for each approach to studying, with students grouped according to their Age (Group 1 is up to and including 23 years, group 2 is 24 years and over) **EXCLUDING INVALID SUBSCALES**.

Age Group		Deep	Surface	Strategic
1	Mean	3.6392	3.4206	3.4180
	N	128	128	128
	Std. Deviation	.4913	.6061	.6388
2	Mean	3.9173	3.0609	3.7562
	N	130	130	130
	Std. Deviation	.5286	.7109	.6174
Total	Mean	3.7793	3.2393	3.5884
	N	258	258	258
	Std. Deviation	.5281	.6838	.6494

These results were submitted to a t-test which showed that, in relation to all three approaches, there is a statistically significant difference in the responses of the two groups ($p=0.00$) (table 5.17).

Table 5.17 t-Test of differences between age groups in approach to learning

	t	df	Sig.
Deep Approach	-4.377	256	.000
Surface Approach	4.370	256	.000
Strategic Approach	-4.325	256	.000

As can be seen from the table 5.16 above, the more mature group tended to demonstrate a preference for the deep approaches and showed least preference for the statements associated with the surface approaches. It is interesting to note that the more mature students scored fairly highly on the strategic approach. As in the case of all the previous analyses, the strategic approach appears to be in between those two extremes. Whilst the younger students still showed a preference for deep approaches, this was much less marked than their older colleagues. For the younger ones, also, there was a greater tendency to favour surface approaches; it is in this approach that there is the greatest variance between the mean scores of the two age groups.

Because of the statistically highly significant difference in response according to the age banding of the respondent, it is clearly necessary to review subsequent analyses (by gender, branch speciality and entry qualifications) to determine whether any differences detected are as a result of the distribution of ages amongst the groups or the primary groupings themselves.

c. Comparison of the data for Section B - analysed by GENDER

Table 5.18: The mean scores awarded for each approach to studying, with students grouped according to their Gender. **EXCLUDING INVALID SUBSCALES**

Gender		Deep	Surface	Strategic
f	Mean	3.7523	3.3081	3.5868
	N	221	221	221
	Std. Deviation	.5179	.6529	.6319
m	Mean	3.9077	2.9028	3.6176
	N	42	42	42
	Std. Deviation	.5685	.7593	.7252
Total	Mean	3.7771	3.2433	3.5917
	N	263	263	263
	Std. Deviation	.5283	.6858	.6463

The mean scores recorded here would suggest that the male students tend slightly more than their female counterparts to favour the deep approach to learning and to be less likely than the female students to adopt surface approaches. The likelihood of adopting strategic approaches appears to be almost identical irrespective of gender. These observations are borne out by the t-test (table 5.19) which confirms that the difference in responses in relation to deep approaches and strategic approaches are not statistically significant. However the difference in relation to the preferences of male and females students for the surface approach is statistically highly significant ($p=0.00$).

Table 5.19: t-test of difference between genders in approach to learning.

	t	df	Sig.
Deep Approach	-1.755	261	.080
Surface Approach	3.590	261	.000
Strategic Approach	-0.282	261	.778

It is necessary to determine whether or not the observed central tendencies result from the gender of the respondents or from the effect of the age breakdown across the genders. It has already been demonstrated that the cohort / stage of the course would appear to have minimal effect on the results.

Table 5.20 Age characteristics of male and female students in total population.

Gender	Mean	N	Std. Deviation	Minimum	Maximum	Aged 23 or under
f	26.23	216	7.93	18	48	54.2%
m	28.40	42	6.79	19	48	26.2%
Total	26.59	258	7.79	18	48	49.6%

The age distribution of the male and female students were subjected to an Independent Samples t-Test which demonstrated that there is no statistically significant ($p=0.098$) difference between the age distributions of the male and female students. It is therefore probably reasonable currently to assume that the difference in preference demonstrated above is due to the gender not to the underlying age of the respondents.

d. Comparison of the data for Section B - analysed by BRANCH SPECIALITY

Table 5.21: The mean scores awarded for each approach to studying, with students grouped according to their Branch Speciality EXCLUDING INVALID SUBSCALES.

Branch		Deep	Surface	Strategic
a	Mean	3.7001	3.3407	3.5514
	N	169	169	169
	Std. Deviation	.5386	.6445	.5916
ld	Mean	3.9115	3.2778	3.6146
	N	24	24	24
	Std. Deviation	.4121	.6569	.7215
m	Mean	3.9365	2.9870	3.6689
	N	64	64	64
	Std. Deviation	.5074	.7167	.7628
Total	Mean	3.7787	3.2468	3.5866
	N	257	257	257
	Std. Deviation	.5301	.6787	.6498

These results are interesting in that they appear to demonstrate that Learning Disabilities Nursing (ld) students and Mental Health Nursing (m) students tend to favour the deep approach more than their Adult Nursing (a) students, though all three groups favour deep approaches slightly more than other approaches. A similar result is shown in relation to the strategic approach, but is reversed for the surface approach with Adult Nursing students tending to favour the surface approach slightly more than the Learning Disabilities Nursing students. The Mental Health Nursing students favour this approach less than the other two specialities. The results of the ANOVA (table 5.22) would suggest that the difference in expressed preference in relation to the Deep approach and the Surface approach is statistically significant ($p=0.004$ and $p=0.002$ respectively). The results in relation to the strategic approach are not statistically significant.

Table 5.22 ANOVA of difference between branch specialities in approach to learning.

		Sum of Squares	df	Mean Square	F	Sig.
Deep Approach	Between Groups	3.062	2	1.531	5.647	.004
	Within Groups	68.867	254	.271		
	Total	71.929	256			
Surface Approach	Between Groups	5.835	2	2.917	6.611	.002
	Within Groups	112.079	254	.441		
	Total	117.914	256			
Strategic Approach	Between Groups	.662	2	.331	.783	.458
	Within Groups	107.443	254	.423		
	Total	108.105	256			

It is necessary to determine whether or not the observed central tendencies result from the selected nursing speciality of the respondents or from the effect of the age breakdown across the branch groups. It has already been demonstrated that the cohort / stage of the course would appear to have minimal effect on the results.

Table 5.23: Age characteristics of Adult, Mental Health and Nursing Disability students in total population.

<u>Branch</u>	<u>Mean</u>	<u>N</u>	<u>Std. Deviation</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Aged 23 or under</u>
a	25.50	168	7.69	18	48	58.9%
ld	27.65	23	6.92	19	43	39.1%
m	29.19	64	7.87	18	48	28.1%
Total	26.62	255	7.81	18	48	49.4%

Noting that a far higher percentage of both the mental health students and learning disabilities students fall into the more mature age group, there appears to be a very strong likelihood that the age of the students in the three branch groupings would have an effect on the preference for various approaches to learning (given the earlier finding that age is a significant variable). In order to test this, the age distribution among the three branch specialities of the students was subjected to an ANOVA which demonstrated that the differences between the specialities with respect to their age was statistically significant ($p=0.004$). On the basis of this evidence alone, therefore, it is not possible to determine whether the different preferences demonstrated by the three branches arose as a result of their branch speciality or as a result of their age. It is also likely that there is a greater proportion of male students particularly in the mental health group compared to the adult nursing group. The fact that there has been demonstrated to be a statistically significant difference between male and female respondents in relation to the preferences for the surface approach also clouds the interpretation of this particular analysis. Both of these effects will be addressed in Chapter 9.

e. Comparison of the data for Section B - analysed by ENTRY QUALIFICATIONS

A reminder of the classification system used may be helpful:

Classification 1 = Possession of a previously obtained degree,

Classification 2 = Possession of two or more pass grades at A' level,

Classification 3 = Possession of a University Diploma or Certificate
(includes HNC and HND),

Classification 4 = Possession of a BTEC National Certificate or Diploma,
 Classification 5 = Possession of 5 GCSEs / GCE's at grades A,B or C (or
 CSEs grade 1) (may include 1 A' level (&/or AS level)),
 Classification 6 = Possession of NVQ level 3 (or above) or Advanced GNVQ,
 Classification 7 = Possession of a pass in the 'DC Test'.
 Classification 8 = Possession of a Pass in an approved and kitemarked
 'Access to Higher Education' course.

Table 5.24: The mean scores awarded for each approach to studying, with students grouped according to their ENTRY QUALIFICATIONS EXCLUDING INVALID SUBSCALES

Entry Qualification		Deep	Surface	Strategic
1	Mean N Std. Deviation	3.9766 8 .3550	2.4792 8 .6184	3.9141 8 .6529
2	Mean N Std. Deviation	3.8333 42 .5622	3.0575 42 .7468	3.5952 42 .6016
3	Mean N Std. Deviation	3.7344 4 .9401	3.1042 4 .7018	3.5469 4 .6622
4	Mean N Std. Deviation	3.6471 34 .5730	3.3284 34 .6689	3.5184 34 .7725
5	Mean N Std. Deviation	3.7495 118 .4836	3.3213 118 .6344	3.5339 118 .6256
6	Mean N Std. Deviation	3.6917 15 .3694	3.4944 15 .3952	3.6417 15 .4614
7	Mean N Std. Deviation	3.9492 16 .6284	2.8073 16 .6816	3.6172 16 .8357
8	Mean N Std. Deviation	4.0417 15 .4474	3.7500 15 .3318	3.9208 15 .5482
Total	Mean N Std. Deviation	3.7832 252 .5208	3.2513 252 .6756	3.5890 252 .6479

These results appear to suggest that students who gained entry to the programme on the strength of an approved Access to Higher Education programme (Qual. 8) show a stronger preference for all three of the main

approaches to learning than any of the other groups of students. Perhaps more interestingly the students in possession of a previous university degree (Qual. 1) favour strongly the deep approach and the strategic approach to learning and show the lowest preference for a surface approach. However, in relation to the preference for deep approaches, these students are nearly matched by students gaining entry by means of the D.C test (Qual. 7). Equally surprising is the revelation that students entering the programme on the basis of a previously acquired NVQ or GNVQ (Qual. 6) or BTEC Qualification (Qual. 4) show the lowest mean scores for the deep approach statements and (with the exception of the Access Course applicants (Qual.8)) the highest mean score for the surface approach statements. Table 5.25 shows through the outcome of an ANOVA on this data that there is no statistically significant difference (at the $p=0.05$ level) in relation to the preferences expressed for the deep and strategic approaches. The difference in the responses of the various groups in relation to the surface approach are, however, statistically significant ($p=0.00$).

Table 5.25 ANOVA of difference between entry qualifications in approach to learning.

		Sum of Squares	df	Mean Square	F	Sig.
Deep Approach	Between Groups	2.747	7	.392	1.466	.180
	Within Groups	65.326	244	.268		
	Total	68.073	251			
Surface Approach	Between Groups	14.985	7	2.141	5.246	.000
	Within Groups	99.570	244	.408		
	Total	114.555	251			
Strategic Approach	Between Groups	3.088	7	.441	1.052	.395
	Within Groups	102.278	244	.419		
	Total	105.365	251			

It is necessary to determine whether or not the observed central tendencies relate to the entry qualifications of the respondents or arise from the effect of the age distribution across the groups. It has already been demonstrated that the cohort / stage of the course would appear to have minimal effect on the results.

Table 5.26: Age characteristics of the groups (by entry qualification) in total population.

Entry Qualification	Mean	N	Std. Deviation	Minimum	Maximum	Age 23 or under
1	30.88	8	7.66	24	45	0.0%
2	25.62	42	6.36	19	45	50.0%
3	33.25	4	13.15	19	48	25.0%
4	26.50	34	6.89	20	45	50.0%
5	25.10	117	7.34	18	47	61.5%
6	23.67	15	5.19	19	36	66.7%
7	31.63	16	8.80	20	48	12.5%
8	34.50	14	8.98	19	47	7.1%
Total	26.55	250	7.77	18	48	49.6%

Some explanations concerning the trends shown in table 5.24 may become apparent on examining table 5.26 (relating to the ages of the respondents in the various entry qualification classifications). There is a clearly disproportionate number of more mature students in several of the groups; this would include groups 7 and 8 (entrants from the DC test and from Access courses) and, on the evidence of the effect of age and approach to studying, it is less surprising that those two groups show the greatest tendency towards deep approaches. The same issue raises itself with groups 1 (possession of a degree) and group 3 (possession of a diploma or certificate) the cause of whose tendencies towards deep approaches being clouded by the larger proportion of more mature students in their groups. In this context, possibly the tendency of group 2 (possession of 2 A' levels) towards the deep approach takes on a little more significance when it is noted that the number of mature students in their group is slightly lower than the mean for the total population.

The data relating to the age distribution among the eight entry qualification groups of the students were subjected to an ANOVA which, not surprisingly, demonstrated that the differences between the groups with respect to their age was statistically significant ($p=0.000$). On the basis of this evidence alone, therefore, it is not possible to determine whether the different preferences demonstrated by the members of the entry qualification groups arose as a result of their entry qualifications or as a result of their age. An attempt will be made to address this in Chapter 9.

Factor Analysis of Student Responses to Section B.

In opening the analysis, the question has to be addressed as to whether or not the correlation matrix of the data for section B of the inventory is factorable. While it has been argued that, for factor extraction to be feasible, the variables need to be measured on a scale that is ratio or interval (Polit, 1996) there is a strong body of literature that supports the proposition that Likert-scale measurements have sufficient interval-type properties to render the outcome factorable.

The size of the inter-item correlations gave some cause for concern. Polit (1996; p349) suggests that if the correlation coefficients are generally below 0.30, "there is probably nothing to factor analyze". Exploration of the correlation matrix for the responses in section B of the inventory revealed that the majority of correlation coefficients were indeed below 0.30. Faced with this concern, the data was submitted to Bartlett's test of sphericity which tests the null hypothesis that the correlation matrix is an identity matrix. The null hypothesis was rejected ($p=0.00$), and it was therefore deduced that it was appropriate to attempt to utilise factor extraction techniques. This also takes into account the sample size which, with 263 students providing responses on a five point scale to 52 variables, is considered to be sufficiently large to minimise the effects of random experimental errors. Where there were missing values within the original data set (where a student failed to record a response to a specific variable) that case was deleted from the factor analysis (the process referred to as 'listwise deletion').

Method of Factor Extraction

The 'Principal Components Method' of factor extraction is probably the most commonly used model for this type of analysis. Its special characteristic is that it mathematically takes account of all the variance in the variables. This includes 'specific variance' (that which can only be measured by that variable), 'common variance' (that which a variable has in common with other variables) and 'error variance' (that which is random and unrelated to other types) (Howitt and Cramer, 1997). Mathematically, this is reflected in the fact that correlations of 1.00 are recorded along the diagonals of a correlation matrix (which correlations must therefore take account of common, specific and error type variance). Howitt and Cramer (1997) observe that in many data sets of psychological origin, there tend

to be low inter-item correlations. This is certainly true of the data arising from the responses of the DipHE Students in section B of the inventory where correlations between items only infrequently exceed 0.300. While such correlations may still be statistically significant, the real value does suggest that the Principal Components Method may not be the most appropriate model for factor extraction in this case since the factors identified could be distorted by the comparatively very high variance arising from the diagonals in the matrix.

The 'Principal-Axis Factoring Method' is primarily different to the Principal Components Method in that it excludes specific variance and error variance from the analysis. Thus only common variance is used; this is mathematically estimated and is referred to as 'Communality' and it is this figure which replaces the correlations of '1.00' that appear in the diagonals of the correlation matrix. Since the communality will approximate much more closely to other correlations in the matrix, it is argued that it will have a less distorting effect on the factors extracted. Thus the Principal-Axis Factoring method was adopted for the factor analysis of this data.

Factor Rotation.

There are two principal methodologies for factor rotation. The first is Orthogonal Rotation in which the factors are, conceptually, at right angles to each other - that is, there is no correlation between the factors and they are therefore independent of each other. The process of factor extraction develops factors that are, by definition, unrelated to each other and when the results are rotated to aid interpretation, the factors are retained at right angles to each other. This is orthogonality.

The second type of factor rotation is called Oblique Rotation. In this form of rotation the angle of the axes of the factors does not have to be kept at right angles. The angle between the axes can therefore deviate from 90 degrees, an act which conceptually acknowledges that factors can be related to each other. Thus factors that have been rotated using oblique techniques can be correlated to each other.

In an earlier section of the presentation of findings it was noted that the responses from each individual student were not clearly polarised into demonstrating just one approach to learning to the exclusion of strategies and opinions commensurate with the other approaches. In other words, it is

not unlikely that there would be a correlation between the various factors identified. For this reason, it was decided to utilise oblique rotation techniques (Oblimin) as the default factor rotation procedure for the factors extracted from the analysis of the data from section B of the inventory. In reality both oblique and orthogonal (Varimax) rotations were carried out and there was a high degree of comparability between the results of the two procedures.

Factor Loadings.

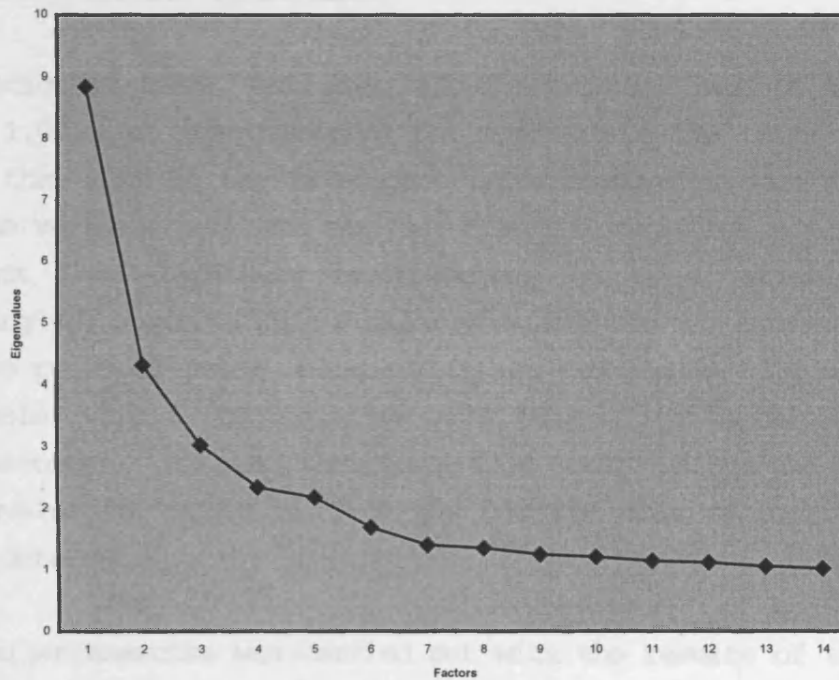
Oblique rotation techniques produce both a 'pattern matrix' and a 'structure matrix'. In the latter, the factor loadings are true correlations between the variable and the factor, but since these loadings can be affected by the correlation between factors as well as the correlation with the factor itself, it was decided to utilise the factor loadings provided by the pattern matrix (recognising that these are partial regression coefficients as opposed to specific correlation coefficients).

In all cases a factor loading of 0.30 was considered to be the minimum value to which realistic meaning could be attached (though lower values may be commented upon if they go some way towards adding clarity). For all factors a 'marker variable', with a high loading (preferably of at least 0.70) associated with just that factor was looked for but it was accepted that, realistically, the factor loading of the marker variable may drop to as low as 0.60.

Selection of Factors

An eigenvalue of a factor is an index of how much of the variance in the total factor analysis is explained by that factor. Initially, the decision was taken to exclude any factors with an eigenvalue of under 1.0 since, as Howitt and Cramer (1997) point out, such a factor cannot be statistically significant (since, in a principal components analysis, it would represent less variance than one of the original variables). This led to 14 factors being considered (see table 6.1); however, as will become clear from the results of the factor analysis, using this criterion, though the extraction of 14 factors did account for 61.6% of the total variance, the percentage of variance explained by the majority of those factors was very small. A scree plot was therefore drawn which suggested that 6 was probably the maximum number of factors with which to work (figure 6.1)

Figure 6.1 Scree plot of factor analysis



A further criterion used to determine the number of factors to work with is the proportion of the variance that the factors account for. A minimum of 5% of the variance has been suggested as being the cut off point for determining the optimum number of factors. That would limit the number of factors in this analysis to 3 (see table 6.1).

Table 6.1: Total variance explained by factor extraction using the Principal Axis Factoring method.

Factor	Eigenvalue	% of Variance	Cumulative %
1	8.849	17.017%	17.017%
2	4.329	8.326%	25.342%
3	3.038	5.843%	31.185%
4	2.347	4.513%	35.698%
5	2.183	4.198%	39.896%
6	1.697	3.263%	43.159%
7	1.411	2.714%	45.873%
8	1.361	2.616%	48.490%
9	1.256	2.415%	50.905%
10	1.213	2.332%	53.237%
11	1.150	2.212%	55.449%
12	1.123	2.159%	57.608%
13	1.063	2.045%	59.653%
14	1.029	1.979%	61.632%

This table highlights some statistical dilemmas. The decision was taken to carry out factor analyses using each of the three criteria stated (namely an eigenvalue of at least 1.00, scree plot assessment of 6 factors, and a minimum of 5% of variance accounted for by the factors). Further

exploration could then be undertaken to decide which was the most helpful number of factors to utilise.

As indicated above, utilising all the fourteen factors with an eigenvalue over 1.00 does indeed account for over 61% of the total variance, but the fact that most of the 14 account individually for such a small percentage of the variance reflects the fact that the variables are spread very thinly amongst them (typically incorporating 2,3 or 4 variables with a factor loading of above 0.30). Similarly 10 of the 14 extracted factors (with values produced using oblique rotation techniques) did not have a 'marker variable' with a loading above 0.70 (indeed it was below 0.60 in 6 of the 14 factors). It was therefore felt that using the criterion of an eigenvalue in excess of 1.00 was not the most appropriate criterion for this data set.

A similar exercise was carried out with the results of the rotated factor extraction for 6 factors. These six factors accounted for over 43% of the total variance (see table 6.1 above) with each accounting for over 3% individually. However only 3 of the 6 identified factors had a marker variable with a factor loading after oblique rotation greater than 0.7. Of the remaining 3 factors only one had a marker variable with a loading greater than 0.6. Since two of the 6 variables also incorporated only a comparatively small number of variables with factor loadings greater than 0.30 it was decided that the use of 6 factors was also not the most appropriate way to interpret the underlying dimensions within the data.

The final factor analysis for this phase was then carried out with the extraction of three factors (this decision being based upon the criterion that a factor should account for at least 5% of the total variance). The negative aspect of the use of this criterion is that the three factors collectively only account for some 31% of the variance - a figure that is rather lower than would ideally be desirable. The three factors, after oblique rotation, each incorporated a wide range of variables with a loading in excess of 0.30, with only two of the 52 variables loading above this level on two of the factors simultaneously. Each of the three factors had a strong marker variable, but this only exceeded 0.70 for one of the factors (the other two having a loading of 0.641 and 0.653 respectively). However, it was considered that the clarity of the association of the great majority of the variables with the three main factors outweighed these weaknesses, and it was concluded that the three factor model (with each

factor accounting for in excess of 5% of the total variance) was the most helpful model for interpreting the underlying dimensions within the data.

Table 6.2: Rotated (oblique) Factor Matrix (Pattern Matrix) for Principal Axis Factoring extraction of factors associated with approaches to studying (Section B of ASSIST Inventory). Factor loadings <0.1 omitted.

Variable	Variable Class	Factor			Communality
		1	2	3	
b31	Strat. Primary 2	.746			.528
b44	Strat. Primary 2	.726			.509
b5	Strat. Primary 2	.703			.461
b14	Strat. Primary 1	.656	-.181	-.135	.412
b37	Strat. Related 4	.613	.236	.195	.545
b27	Strat. Primary 1	.557		.106	.369
b50	Strat. Related 4	.534	-.114	.126	.371
b40	Strat. Primary 1	.527			.257
b18	Strat. Primary 2	.471			.255
b24	Strat. Related 4	.455		.267	.370
b10	Strat. Related 4	.408	.234	.194	.306
b15	Strat. Primary 3	.348	.330	.157	.280
b34	Strat. Related 5	.286	.118	.244	.201
b1	Strat. Primary 1	.226			.066
b35	Surf. Related 4	.136	.641		.431
b48	Surf. Related 4		.623		.391
b22	Surf. Related 4	-.125	.615	-.120	.439
b8	Surf. Related 4		.534		.289
b51	Surf. Primary 3		.520	-.115	.301
b45	Surf. Primary 2		.490		.254
b32	Surf. Primary 2		.434	-.159	.225
b6	Surf. Primary 2		.427		.185
b38	Surf. Primary 3	-.325	.365		.241
b3	Surf. Primary 1	-.209	.355	-.192	.256
b41	Strat. Primary 3		.335	.184	.129
b2	Strat. Primary 3	.208	.300		.138
b25	Surf. Primary 3	-.352	.297		.250
b28	Strat. Primary 3		.293		.085
b19	Surf. Primary 2	-.118	.261	-.219	.165
b12	Surf. Primary 3	-.475	.257		.285
b16	Surf. Primary 1	-.116	.163	-.297	.167
b29	Surf. Primary 1	-.132	.146	-.200	.106
b33	Deep Primary 2	-.130		.653	.391
b26	Deep Related 4			.625	.419
b9	Deep Primary 3			.536	.291
b17	Deep Primary 1			.523	.279
b21	Deep Primary 2	.138		.515	.357
b36	Deep Primary 3	.180		.495	.347
b30	Deep Primary 1			.490	.263
b52	Deep Related 4			.477	.239
b46	Deep Primary 2	-.278	-.108	.468	.218
b49	Deep Primary 3			.467	.199
b39	Deep Related 4			.430	.167
b23	Deep Primary 3			.424	.167
b13	Deep Related 4	.115		.416	.224

(continued)

Variable	Variable Class	Factor			Communality
		1	2	3	
b43	Deep Primary 1			.412	.181
b20	Strat. Related 5	.310	.144	.401	.359
b11	Deep Primary 2	.157		.317	.180
b7	Strat. Related 5	.260		.306	.221
b4	Deep Primary 1	.146		.295	.143
b47	Strat. Related 5	.259	.233	.271	.232
b42	Surf. Primary 1			-.166	.029
Eigenvalue		8.849	4.329	3.038	
% of Variance Explained		17.017%	8.326%	5.843%	

Table 6.3: The actual statements in section B of the ASSIST Inventory.

- b1. I manage to find conditions for studying which allow me to get on with my work easily
- b2. When working on an assignment, I'm keeping in mind how best to impress the marker
- b3. Often I find myself wondering whether the work I am doing is really worthwhile
- b4. I usually set out to understand for myself the meaning of what we have to learn
- b5. I organise my study time carefully to make the best use of it
- b6. I find I have to concentrate on just memorising a good deal of what I have to learn
- b7. I go over the work I've done carefully to check the reasoning and that it makes sense
- b8. Often I feel I'm drowning in the sheer amount of material we're having to cope with
- b9. I look at the evidence carefully and try to reach my own conclusion about what I'm studying
- b10 It's important for me to feel that I'm doing as well as I really can on the course here
- b11 I try to relate ideas I come across to those in other modules whenever possible
- b12 I tend to read very little beyond what is actually required to pass
- b13 Regularly I find myself thinking about ideas from lectures when I'm doing other things
- b14 I think I'm quite systematic and organised when it comes to revising for exams
- b15 I look carefully at tutors' comments on course work to see how to get higher marks next time
- b16 There's not much of the work here that I find interesting or relevant
- b17 When I read an article or book, I try to find out for myself exactly what the author means
- b18 I'm pretty good at getting down to work whenever I need to
- b19 Much of what I'm studying makes little sense; it's like unrelated bits and pieces
- b20 I think about what I want to get out of this course to keep my studying well focused
- b21 When I'm working on a new topic, I try to see in my own mind how all the ideas fit together
- b22 I often worry about whether I'll ever be able to cope with the work properly
- b23 Often I find myself questioning things I hear in lectures or read in books

- b24 I feel that I'm getting on well, and this helps me put more effort into the work
- b25 I concentrate on learning just those bits of information I have to know to pass
- b26 I find that studying academic topics can be quite exciting at times
- b27 I'm good at following up some of the reading suggested by lecturers or tutors
- b28 I keep in mind who is going to mark an assignment and what they're likely to be looking for
- b29 When I look back, I sometimes wonder why I ever decided to come here
- b30 When I'm reading, I stop from time to time to reflect on what I am trying to learn from it
- b31 I work steadily through the semester, rather than leave it all until the last minute
- b32 I'm not really sure what's important in lectures so I try to write down all I can
- b33 Ideas in course books or articles often set me off on long chains of thought of my own
- b34 Before starting work on an assignment or exam question, I think first how best to tackle it
- b35 I often seem to panic if I get behind with my work
- b36 When I read, I examine the details carefully to see how they fit in with what's being said
- b37 I put a lot of effort into studying because I'm determined to do well
- b38 I gear my studying closely to just what seems to be required for assignments and exams
- b39 Some of the ideas I come across on the course I find really gripping
- b40 I usually plan out my week's work in advance, either on paper or in my head
- b41 I keep an eye open for what lecturers seem to think is important and concentrate on that
- b42 I'm not really interested in this course, but I have to take it for other reasons
- b43 Before tackling a problem or assignment, I first try to work out what lies behind it
- b44 I generally make good use of my time during the day
- b45 I often have trouble in making sense of the things I have to remember
- b46 I like to play around with ideas of my own even if they don't get me very far
- b47 When I finish a piece of work, I check it through to see if it really meets the requirements
- b48 Often I lie awake worrying about work I think I won't be able to do
- b49 It's important to me to be able to follow the argument, or to see the reason behind things
- b50 I don't find it at all difficult to motivate myself
- b51 I like to be told precisely what to do in essays or other assignments
- b52 I sometimes get 'hooked' on academic topics and feel I would like to keep on studying them

Reference to table 6.2, the rotated (oblique) factor matrix for the data obtained in section B of the inventory reveals some interesting points. The three factors separated out from the data appear to relate closely to the three principal approaches to studying and learning postulated by Entwistle and his colleagues (Tait et al, 1997), though their finding that a three factor solution explained 60% of the variance was not replicated in this study when it explained only 31%. Since all the statements are designed to

be 'in the same direction' as other statements it is assumed that a negative factor loading relates to a negative relationship between that statement and the factor.

Factor 1 (for which it would be hard to find a better summarising description than 'Strategic Approach to Studying and Learning') clearly encompasses the originators' strategic approach. Fourteen of the twenty statements originally associated with the strategic approach load most heavily on this factor, with twelve of those fourteen having a factor loading exceeding 0.300. A further four strategic variables also load positively (though not as highly as on other factor(s) - b2 (0.208), b20 (0.310), b7 (0.260). The factor has a heavily loaded 'marker variable' (0.746) which is:

b31 "I work steadily through the semester, rather than leave it all until the last minute",

and indeed, it would appear that time management is the strongest feature of this factor - b31, b44 and b5, the three variables with the highest loading, all relate to time management.

Factor 2 might realistically be described as 'Surface Approaches to Studying and Learning' largely encompassing, as it does, the inventory originators' surface apathetic approach. Fifteen of the sixteen statements originally described as defining this approach loaded most heavily on this factor, twelve of them with a factor loading greater than 0.300. The factor has a comparatively heavily loaded (0.641) marker variable in:

b35 "I often seem to panic if I get behind with my work"

and indeed this concept of 'fear of failure' seems to define this factor most closely (the four most heavily loaded variables all related to this aspect of the surface approach). Also of particular interest is the fact that, interspersed with the variables attributed as defining the surface approach to studying and learning, three of the four variables of the Strategic Approach (primary subscale 3) appear. This subscale was entitled 'Alertness to Assessment Demands'. In an earlier section of this analysis, when correlation coefficients were being reviewed, it was concluded that this subscale was probably not valid for this student population. Herein lies the confirmation of this in that the DipHE Nursing Students fairly clearly relate the concept of the alertness to assessment demands to surface approaches rather than to strategic approaches.

The surface approach subscale 1, was similarly earlier concluded probably not to be valid for this student population. To an extent this is also borne out by the factor analysis. Whilst three of the variables of this subscale do load most heavily on factor 2, only one (b3, 0.355) has a loading exceeding 0.300. For the other two the loading is very low - b16 (0.163) and b29 (0.146). The fourth variable of the subscale (b42) is alone amongst all the variables in not really loading on any of the three extracted factors. This variable is:

b42 "I'm not really interested in this course, but I have to take it for other reasons"

and its dismissal probably reflects the vocational orientation of the students undertaking a professional programme of preparation.

Factor 3 would have to be described as the 'Deep Approach to Studying and Learning'. It embraces all of the variables described by the inventory's authors as defining the deep approach, all sixteen loading most highly on this factor. Fifteen out of sixteen of those variables have a factor loading exceeding 0.300 (the sixteenth being 0.295). It has a comparatively heavily loaded marker variable (0.653) in:

b33 "Ideas in course books or articles often set me off on long chains of thought of my own",

but unlike in the other two factors, none of the original subscales predominates in this factor since all the subscales seem to be distributed evenly amongst the ranked variables. It is interesting here that, among all the variables defined as 'deep', are situated three of the four variables designated as defining the 'Monitoring Effectiveness' subscale of the strategic approach. Two of these three variables have a loading on this factor in excess of 0.300; the third achieving 0.271. It would seem that this student population correlated this subscale more closely to their values associated with the deep approach rather than the strategic approach. Applying the same logic as earlier paragraphs, it might be concluded that this infers that the subscale is not valid for this population (despite the earlier assertions concerning the correlations between the results for this subscale and the other variables in the strategic approach). However the earlier recommendation that the subscale was probably valid is supported by the observation that these variables also load comparatively highly with factor 1 (though only exceeding 0.300 in one variable of the four).

In the sense that the extracted factors from this factor analysis appear to be somewhat contaminated by the variables related to the subscales that appear (from correlation studies) not to be valid for this student population, it is interesting to review the outcome of a further factor analysis when those variables have been excluded.

Table 6.4: Rotated (oblique) Factor Matrix (Pattern Matrix) for Principal Axis Factoring extraction of factors associated with approaches to studying (Section B of ASSIST Inventory). Factor loadings <0.1 omitted. **VARIABLES RELATED TO INVALID SUBSCALES OMITTED.**

Variable	Variable Class	Factor			Communality
		1	2	3	
b31	Strat. Primary 2	.752			.535
b44	Strat. Primary 2	.739			.530
b5	Strat. Primary 2	.702			.462
b14	Strat. Primary 1	.654	-.184	-.145	.416
b37	Strat. Related 4	.623	.250	.193	.545
b27	Strat. Primary 1	.558		.120	.375
b50	Strat. Related 4	.551	-.129		.383
b40	Strat. Primary 1	.536			.265
b18	Strat. Primary 2	.481			.268
b24	Strat. Related 4	.470		.223	.349
b10	Strat. Related 4	.413	.202	.172	.274
b34	Strat. Related 5	.300		.232	.194
b47	Strat. Related 5	.274	.174	.252	.202
b1	Strat. Primary 1	.238			.065
b35	Surf. Related 4	.141	.678		.471
b48	Surf. Related 4		.677		.451
b22	Surf. Related 4	-.132	.653		.480
b8	Surf. Related 4		.592		.346
b45	Surf. Primary 2		.548		.303
b51	Surf. Primary 3		.475	-.119	.259
b32	Surf. Primary 2		.449	-.148	.239
b6	Surf. Primary 2		.428		.182
b38	Surf. Primary 3	-.300	.298		.187
b25	Surf. Primary 3	-.347	.260		.233
b19	Surf. Primary 2	-.127	.231	-.165	.127
b12	Surf. Primary 3	-.460	.202		.254
b33	Deep Primary 2	-.125		.659	.404
b26	Deep Related 4			.602	.406
b9	Deep Primary 3			.558	.319
b17	Deep Primary 1			.519	.275
b21	Deep Primary 2	.150		.512	.362
b49	Deep Primary 3			.491	.227
b36	Deep Primary 3	.191		.488	.346
b46	Deep Primary 2	-.256		.472	.217
b30	Deep Primary 1			.468	.255
b52	Deep Related 4			.468	.233
b23	Deep Primary 3			.446	.190
b39	Deep Related 4			.404	.148
b13	Deep Related 4	.137		.404	.221
b20	Strat. Related 5	.300	.153	.393	.332

(continued)

Variable	Variable Class	Factor			Communality
		1	2	3	
b43	Deep Primary 1			.381	.168
b11	Deep Primary 2	.169		.317	.187
b7	Strat. Related 5	.268		.302	.226
b4	Deep Primary 1	.161		.293	.147
Eigenvalue		8.279	3.802	2.947	
% of Variance Explained		18.816%	8.642%	6.697%	

The same criterion was used for this second factor analysis, namely that the extraction was limited to factors with a minimum percentage of variance of 5%. As can be seen from tables 6.2 and 6.4 above, the latter factor extraction demonstrates that a slightly higher proportion of the variance is explained by the three factors (34.155%) once the variables considered invalid are excluded.

With the variables associated with the invalid subscales omitted, the factor analysis would appear to be even more clear cut. With the exception of two variables (b20 and b7), all the variables load most highly on the equivalent factors which best describe the approach with which they were originally determined to be associated. The two that appear 'out of place' (more highly loaded on factor 3) still also load comparatively highly with factor 1. Thus, in summary:

- 14 of the 16 original strategic related variables load most highly on factor 1, with 13 of the 16 having a factor loading of 0.300 or greater,
- All 12 of the original surface related variables load most highly on factor 2, with 8 of the 12 having a factor loading of 0.300 or greater,
- All 16 of the original deep related variables load most highly on factor 3, with 15 of those 16 having a factor loading of 0.300 or greater.

As stated earlier the eigenvalue of a factor is an index of how much of the variance in the total factor analysis is explained by that factor alone. Factor 1, which has been shown to be allied to the adoption of strategic approaches to studying accounts for considerably more of the variance in the factor solution - approximately twice the variance for each of factors 2 (surface approaches) and 3 (deep approaches). Factor 2 accounts for slightly more of the variance than does factor 3.

Estimation of Internal Reliability of Factor Solution

Cronbach's Alpha is a test of internal reliability and consistency based

upon the average inter-item reliability within a group of variables. Applied to the outcome of a factor analysis, it is a measure of the extent to which the items or variables comprising the factor might be considered to be assessing the same attribute. Thus all the variables that loaded most heavily on each factor (but with a loading in excess of 0.2) were grouped and submitted to analysis by Cronbach's Alpha. This exercise was repeated for the variables in the factor solution when the variables considered invalid for this group were omitted.

Table 6.5: Alpha analysis of the factor solutions

		<u>Cronbach's Alpha</u>
Factor 1	All variables included	.8639
	'Invalid' variables excluded	.8621
Factor 2	All variables included	.7948
	'Invalid' variables excluded	.7867
Factor 3	All variables included	.8406
	'Invalid' variables excluded	.8388

Since a value of .5 for Alpha is the generally accepted minimum for conclusions about internal reliability, it may be observed that there is a high degree of internal reliability in these factor solutions. It is noted that the value is very slightly lower for each factor when the variables considered invalid are excluded. This is to be expected since some of those variables did load comparatively heavily on the three factors. What is important is that the value for Alpha still shows a high degree of internal reliability for the factors when those variables are not included.

Confirmatory Factor Analysis

It would appear from the preceding section that there is some justification in claiming construct validity for the ASSIST Inventory in relation to its use with the population of students undertaking the Diploma of Higher Education in Nursing programme at De Montfort University. However, the total sample size of over 260 respondents means that it would be statistically justifiable to attempt to undertake the same factor analysis with two randomly selected halves of the total sample (though it is acknowledged that two half groups of approximately 130 students would take the ratio of cases to variables in each half below the generally considered desirable level of 5:1). Thus, by looking for comparability in the results, it may be possible to validate the conclusions of the factor analysis of the total population. Such a check for comparability may be undertaken at

various levels, from informal observation through to more complex statistical techniques. If the former reveals comparability, it is probably not necessary to undertake the latter.

Thus each of the three cohorts of students were randomly divided into two groups so that each overall half of the student population would contain the same number of students from each group. It was felt that this was more appropriate than simply randomly allocating all the students into two groups since it was important to ensure that any variation in approach to studying between cohorts would not effect the outcomes of the factor analysis for each population half. As before, and for the same reasons, the Principal Axis Factoring method of factor extraction and oblique rotational techniques were used in each case. It would be normal practice to ensure that, in comparisons such as this, the factor analysis for each half would be based upon the extraction of the same number of factors. However on this occasion it was discovered that a better 'match' was found when one of the halves had four factors extracted rather than the three of the other half. It was considered that this was justifiable for the following reasons:

- a. This was not an attempt to undertake a statistically accurate comparison.
- b. As can be seen from table 6.6 below, the third and fourth factors both clearly relate to the strategic approach, and could therefore be conceptually combined to equate with the factor 1 of the other half group.
- c. There is a positive correlation between factors 3 and 4 (albeit small at 0.103). Other than a very small positive correlation between factors 2 and 3 (0.03), the other inter-factor correlations are negative.
- d. The effect of extracting a fourth factor was to 'decontaminate' the other two factors in a way that allowed a more realistic comparison between the two half groups.
- e. The four factor model for half 1 gave stronger 'marker' variables across all three of the first 3 factors than were found on a straight 3 factor model.
- f. The extraction of 3 and 4 factors was consistent with the 5% of variance explained rule for determining the number of factors.
- g. Using 4 factors in the first half and 3 factors in the second accounted for approximately the same proportion of the total variance explained by the factors (36.12% and 34.05% respectively).

Table 6.6: GROUP HALF 1. Rotated (oblique) Factor Matrix (Pattern Matrix) for Principal Axis Factoring extraction of factors associated with approaches to studying (Section B of ASSIST Inventory). Factor loadings <0.1 omitted. ALL VARIABLES INCLUDED (including those not considered to be valid for the total population).

Variable	Variable Class	Factor				Communality
		1	2	3	4	
b36	Deep Primary 3	.610				.308
b9	Deep Primary 3	.602	.121			.329
b17	Deep Primary 1	.565				.312
b33	Deep Primary 2	.557	-.119			.380
b21	Deep Primary 2	.549		-.138		.368
b30	Deep Primary 1	.532		.149	-.187	.332
b23	Deep Primary 3	.492			.191	.254
b49	Deep Primary 3	.470			.168	.218
b34	Strat. Related 5	.437	.115		-.259	.292
b43	Deep Primary 1	.434		.160	-.276	.311
b13	Deep Related 4	.421		-.252		.313
b46	Deep Primary 2	.412	-.105	.145	.190	.214
b26	Deep Related 4	.411		-.192	-.232	.355
b4	Deep Primary 1	.371		-.185		.198
b20	Strat. Related 5	.364			-.338	.292
b11	Deep Primary 2	.356		-.118		.179
b39	Deep Related 4	.312			-.263	.195
b52	Deep Related 4	.263	-.155			.194
b7	Strat. Related 5	.263		-.153		.128
b48	Surf. Related 4		.719			.516
b8	Surf. Related 4	.114	.663			.437
b45	Surf. Primary 2		.659			.459
b35	Surf. Related 4		.625		-.242	.470
b22	Surf. Related 4	-.254	.577	.168	-.117	.536
b3	Surf. Primary 1		.554		.138	.308
b29	Surf. Primary 1	.123	.530		.452	.414
b6	Surf. Primary 2		.435		-.128	.207
b19	Surf. Primary 2	-.126	.311		.228	.180
b16	Surf. Primary 1	-.135	.277		.335	.222
b38	Surf. Primary 3		.257	.264		.152
b42	Surf. Primary 1		.160		.301	.133
b31	Strat. Primary 2	-.107	.120	-.681	-.264	.558
b44	Strat. Primary 2	.123		-.613		.436
b27	Strat. Primary 1	.210	.129	-.598	.117	.444
b5	Strat. Primary 2	-.131	.190	-.578	-.124	.385
b50	Strat. Related 4	.121	-.251	-.538	-.283	.535
b40	Strat. Primary 1	-.106		-.511		.249
b14	Strat. Primary 1		-.164	-.476		.255
b18	Strat. Primary 2	.122	.100	-.449		.252
b10	Strat. Related 4			-.200	-.579	.420
b24	Strat. Related 4	.151	-.271	-.284	-.491	.499
b37	Strat. Related 4			-.457	-.473	.512
b15	Strat. Primary 3		.164	-.243	-.467	.339
b51	Surf. Primary 3	-.129	.289		-.412	.295
b41	Strat. Primary 3			.206	-.381	.179
b32	Surf. Primary 2	-.300	.278		-.364	.318
b47	Strat. Related 5	.189			-.350	.196

(continued)

Variable	Variable Class	Factor				Communality
		1	2	3	4	
b2	Strat. Primary 3			-.112	-.344	.159
b28	Strat. Primary 3	-.112	.162		-.325	.153
b25	Surf. Primary 3	-.210	.106	.417	-.233	.305
b12	Surf. Primary 3		.168	.540	-.224	.349
b1	Strat. Primary 1				-.209	.064
Eigenvalue		7.865	4.879	3.309	2.729	
% of Variance Explained		15.125%	9.383%	6.363%	5.249%	

Table 6.7: GROUP HALF 2. Rotated (oblique) Factor Matrix (Pattern Matrix) for Principal Axis Factoring extraction of factors associated with approaches to studying (Section B of ASSIST Inventory). Factor loadings <0.1 omitted. ALL VARIABLES INCLUDED (including those not considered to be valid for the total population).

Variable	Variable Class	Factor			Communality
		1	2	3	
b44	Strat. Primary 2	.749			.538
b31	Strat. Primary 2	.741			.546
b5	Strat. Primary 2	.740			.541
b14	Strat. Primary 1	.718	-.126	-.159	.483
b37	Strat. Related 4	.675	.214	.145	.567
b27	Strat. Primary 1	.641			.465
b24	Strat. Related 4	.583	.132	.107	.400
b18	Strat. Primary 2	.552			.338
b50	Strat. Related 4	.550			.302
b34	Strat. Related 5	.503			.237
b10	Strat. Related 4	.499	.238		.319
b40	Strat. Primary 1	.498			.284
b20	Strat. Related 5	.481	.131	.300	.427
b36	Deep Primary 3	.422		.341	.400
b7	Strat. Related 5	.387		.283	.308
b47	Strat. Related 5	.380	.235	.217	.284
b15	Strat. Primary 3	.376	.331	.158	.291
b1	Strat. Primary 1	.345			.116
b48	Surf. Related 4		.686	.173	.484
b35	Surf. Related 4	.196	.624		.412
b22	Surf. Related 4	-.112	.589		.369
b51	Surf. Primary 3		.573	-.217	.415
b8	Surf. Related 4	-.102	.425		.197
b41	Strat. Primary 3		.411	.170	.201
b6	Surf. Primary 2		.391		.157
b38	Surf. Primary 3	-.383	.388		.325
b2	Strat. Primary 3	.261	.381		.195
b32	Surf. Primary 2		.372	-.107	.166
b45	Surf. Primary 2	-.241	.367	.147	.193
b19	Surf. Primary 2	-.228	.364	-.144	.252
b3	Surf. Primary 1	-.391	.318	-.157	.351
b25	Surf. Primary 3	-.343	.297	-.119	.273
b28	Strat. Primary 3		.284		.081
b16	Surf. Primary 1	-.237	.275	-.209	.232
b12	Surf. Primary 3	-.485	.183		.330
b29	Surf. Primary 1	-.212	.121	-.119	.099

(continued)

Variable	Variable Class	Factor			Communality
		1	2	3	
b33	Deep Primary 2	-.130		.700	.443
b26	Deep Related 4			.697	.511
b46	Deep Primary 2	-.342		.636	.367
b21	Deep Primary 2	.174	-.105	.540	.415
b52	Deep Related 4			.527	.302
b9	Deep Primary 3	.134		.520	.337
b49	Deep Primary 3			.485	.233
b23	Deep Primary 3			.476	.213
b17	Deep Primary 1	.146		.473	.298
b39	Deep Related 4		-.150	.407	.179
b30	Deep Primary 1	.245		.367	.258
b13	Deep Related 4	.106		.362	.169
b11	Deep Primary 2	.222		.292	.195
b43	Deep Primary 1	.206		.227	.129
b4	Deep Primary 1	.190		.218	.129
b42	Surf. Primary 1				.044
Eigenvalue		10.231	4.154	3.319	
% of Variance Explained		19.674%	7.989%	6.382%	

Factor 1 in Group half 1 clearly relates most closely to the deep approach to learning as does factor 3 in Group half 2. Fifteen of the sixteen variables originally attributed to describing the deep approach load most heavily on these two factors, and twelve of the sixteen have factor loadings greater than 0.300.

Factor 2 in Group half 1 similarly relates to the Surface approach to studying and is mirrored closely by factor 2 in Group half 2; it is noteworthy that the strategic approach subscale 3, which has previously been categorised as invalid with this population, is similarly misplaced in this 3 factor solution. Eleven of the sixteen variables associated with the surface approach load most heavily on these two respective factors with nine of those eleven having factor loadings in excess of 0.300.

Factors 3 and 4 in Group half 1 appear to represent the previously determined strategic approach to studying, and these two factors combined appear very closely to reflect factor 1 in Group half 2. Fourteen of the originally twenty variables associated with the strategic approach load most heavily on these respective factors, and fourteen variables also have a factor loading for these factors in excess of 0.300.

The only major aberration outside of what would be expected is that in Group half 1 and factor 1 (deep approaches), three of the four variables from strategic related subscale 5 'Monitoring Effectiveness' load more

heavily than would be expected if this subscale is considered to be valid. This finding is consistent with the solution of the other factor analyses that have been undertaken and it is also noted that two of the three variables do also load comparatively highly on factor 4 (0.259 and 0.338 respectively). It is interesting to note that this effect is not seen in the factor solution for Group half 2.

Overall in terms of an informal and visual but non-statistical analysis of the factor analyses of the two group halves, it would be argued that the factor solutions have revealed broadly comparable, consistent and compatible results, both in terms of the two half groups and of the whole student group. This would appear to suggest that the factor analysis is comparatively robust and worthy of further exploration and discussion.

Factor analysis of variables associated with original approaches.

As previously stated section B of the ASSIST Inventory contains 52 statements with which the respondent is required to state their level of agreement. Entwistle (1997) has categorised these statements according to whether they epitomise a deep approach, a strategic approach or a surface approach to learning or studying. Similarly for each approach there are four or five subscales into which the statements have been allocated.

For example:

DEEP APPROACH

Subscale 1: 'Seeking Meaning'

- b4. I usually set out to understand for myself the meaning of what we have to learn
- b17. When I read an article or book, I try to find out for myself exactly what the author means
- b30. When I'm reading, I stop from time to time to reflect on what I am trying to learn from it
- b43. Before tackling a problem or assignment, I first try to work out what lies behind it

It thus was considered that it would be interesting to submit the student responses to all the statements for each main approach to a factor analysis to see whether or not factors could be extracted that represented the subscales associated with the overall approaches. The criteria used to complete the factor analysis were the same as used previously with the exception that the number of factors was specified according to the original subscales produced by Entwistle (1997); thus for the deep approach statements and the surface approach statements, 4 factors were requested and for the strategic approach statements, 5 factors were requested.

The results are not reproduced here because they were not conclusive. Typically the factors did not bear a particularly close resemblance to the original subscales, though it was not uncommon for two or three of the statements from each subscale to appear in one factor. However, no new clarity was added to the interpretation of the data from this student population by this particular exercise.

CHAPTER 7

Factor Scores.

It is possible, using mathematical calculations based upon the original data submitted by the students, to determine a hypothetical score for each of the students on each of the factors extracted during the factor analysis. These hypothetical scores are called 'Factor Scores'. It is acknowledged that factor scores are, at best, estimations of how an individual student would respond to a factor, but it is argued that their utilisation is still informative. Since there has been demonstrated a close relationship between the factors extracted and the constructs developed by the inventory authors, it was considered that this analysis may provide some useful insights. To this end a factor score coefficient matrix was produced which provided the coefficient for each of the three factors by which each student's response to each statement had to be multiplied and summed; the end result was a factor score for each student for each factor.

If further confirmation were required of the visually close relationship between the scores of the students analysed by the original authors' constructs of deep, surface and strategic approaches and the three factor solution, then this would be revealed by a correlation study between the factor scores and the mean scores achieved (using the original constructs but excluding the subscales deemed to be invalid for this population)

Table 7.1: Spearman's rho correlations between factor scores and mean scores using the inventory constructs.

		Deep	Surface	Strategic
Factor1	Correlation Coefficient	.366	-.285	.970
	Sig. (2 tailed)	.000	.000	.000
	N	257	257	257
Factor2	Correlation Coefficient	-.202	.940	-.070
	Sig. (2 tailed)	.001	.000	.256
	N	257	257	257
Factor3	Correlation Coefficient	.972	-.285	.444
	Sig. (2 tailed)	.000	.000	.000
	N	257	257	257

As can be seen the correlations between:

Factor 1 and the strategic approach

Factor 2 and the surface approach, and

Factor 3 and the deep approach

have coefficient values that exceeds 0.940 in each case, thus demonstrating the previously suggested very strong correlation between the factors and the original approaches. Interesting also that there is a statistically significant positive correlation ($p=0.000$) between factor 1 (strategic) and the deep approach, and between factor 3 (deep) and the strategic approach. This supports the suggested link (Entwistle and Ramsden, 1983; Marton and Säljö, 1984) between deep and strategic approaches to learning. The correlations between the surface approach and factors 1 and 3 and between factor 2 and the deep and strategic approaches are all, as might be expected negative (though not all are statistically significant at the level of $p=0.05$).

Factor Scores: Comparisons by cohort.

Once again, for this analysis the statements related to the subscales considered to be invalid for this student population were excluded. By identifying the highest of the three factor scores for each student, a tentative judgement could be made as to which overall approach (factor) was most favoured by each student. This data was analysed descriptively for the total population and the three cohorts that comprised the total population.

Table 7.2: Analysis of most favoured approach to studying as reflected by the factor scores achieved for each factor by each student.

	N	Factor 1		Factor 2		Factor 3	
		Strategic Approach		Surface Approach		Deep Approach	
9509	73	0	0.00%	21	28.77%	52	71.23%
9609	79	0	0.00%	18	22.78%	61	77.22%
9709	111	0	0.00%	36	32.43%	75	67.57%
Total	263	0	0.00%	75	28.50%	188	71.50%

As can be seen from table 7.2, on the evidence of factor scores, no students showed an overall preference (that is, achieved the highest factor score) for Factor 1 which represents the strategic approaches to studying and learning. The majority (71.5% overall) showed a preference for deep approaches (Factor 3) with the remaining 28.5% favouring most the surface approach (Factor 2). More students in the intermediate cohort showed the overall preference for the deep approach. The lowest percentage in this category went to the most junior group with the most senior group in the middle (and approximating very closely to the proportion of the overall student population).

Table 7.3: Descriptive statistics relating to the factor scores for the three factors extracted by factor analysis.

Group		(Strategic)	(Surface)	(Deep)
		Factor1	Factor2	Factor3
9509	Mean	3.9477	5.0892	6.1840
	N	73	73	73
	Std. Deviation	1.1978	1.2260	1.0084
	Minimum	1.17	2.21	3.73
	Maximum	6.09	7.11	7.97
9609	Mean	3.9078	5.0804	6.0925
	N	79	79	79
	Std. Deviation	1.1604	1.0186	.9266
	Minimum	1.21	2.61	3.71
	Maximum	6.33	7.10	8.12
9709	Mean	3.9626	5.3050	6.2414
	N	111	111	111
	Std. Deviation	1.0858	1.2118	.8412
	Minimum	1.23	2.35	4.13
	Maximum	6.15	7.49	7.98
Total	Mean	3.9420	5.1776	6.1807
	N	263	263	263
	Std. Deviation	1.1361	1.1621	.9143
	Minimum	1.17	2.21	3.71
	Maximum	6.33	7.49	8.12

As can be seen there appears to be a very high level of consistency between the three cohorts, an impression that it was necessary to check for statistical significance. Since the factor scores represent continuous data, the factor scores for each cohort were submitted to an analysis of variance. Table 7.4 shows that there is a very strong likelihood (ranging from $p=0.316$ for factor 2 through to $p=0.947$ for factor 1) that there is no real difference between the factor scores of the three cohorts. To put it another way, this would suggest that students do not show a statistically significant difference in their preference for approach to learning and studying at the different stages of the programme.

Table 7.4: Analysis of variance of factor scores between cohorts in the total student population.

		Sum of Squares	df	Mean Square	F	Sig.
FACTOR1 Strategic	Between Groups	.142	2	.0708	.054	.947
	Within Groups	338.016	260	1.300		
	Total	338.158	262			
FACTOR2 Surface	Between Groups	3.118	2	1.559	1.156	.316
	Within Groups	350.690	260	1.349		
	Total	353.808	262			
FACTOR3 Deep	Between Groups	1.023	2	.512	.610	.544
	Within Groups	218.014	260	.839		
	Total	219.037	262			

Table 7.3 also demonstrates, through the estimation of standard deviation that there would appear to be a higher level of inter-student concurrence in relation to the preference demonstrated by the students for the constructs associated with factor 3 (the deep approach to learning). This is demonstrated by the lower standard deviation for this factor.

Factor Scores: Comparison by Age.

For this analysis the total student population was again divided into two groups according to their actual age (as opposed to corrected age used in some other analyses). Group 1 consisted of those students up to and including age 23; group 2 were students with an age of 24 years or over.

Table 7.5: Factor Scores analysed by age grouping of respondents

		(Strategic) Factor1	(Surface) Factor2	(Deep) Factor3
Age Group				
1	Mean	3.6172	5.4528	5.9588
	N	128	128	128
	Std. Deviation	1.1070	1.0094	.8478
	Minimum	1.17	2.35	3.71
	Maximum	5.92	7.49	7.98
2	Mean	4.2497	4.8846	6.4039
	N	130	130	130
	Std. Deviation	1.0879	1.2318	.9287
	Minimum	1.26	2.21	3.73
	Maximum	6.33	7.10	8.12
Total	Mean	3.9359	5.1665	6.1836
	N	258	258	258
	Std. Deviation	1.1402	1.1602	.9155
	Minimum	1.17	2.21	3.71
	Maximum	6.33	7.49	8.12

Visual inspection of this descriptive data would appear to suggest that the more mature students (group2) demonstrate a marked preference for factor 1 (Strategic) approaches compared to their younger colleagues and a marked preference for deep approaches (factor 3). Conversely the more mature group show a significant disinclination towards the surface approaches (factor 2). Table 7.6 shows that all these preferences are highly statistically significant ($p=0.00$).

Table 7.6: t-test of factor scores according to age of respondents

	t	df	Sig.
Factor 1 Strategic	-4.629	256	.000
Factor 2 Surface	4.049	256	.000
Factor 3 Deep	-4.028	256	.000

Factor Scores: Comparisons by Gender.

Table 7.7 shows the descriptive analysis of the factor scores recorded by males and females.

Table 7.7: Factor Scores analysed by gender of respondents

Gender		(Strategic)	(Surface)	(Deep)
		Factor1	Factor2	Factor3
f	Mean	3.9422	5.3010	6.1264
	N	221	221	221
	Std. Deviation	1.1116	1.0763	.8901
	Minimum	1.17	2.35	3.71
	Maximum	6.09	7.38	7.98
m	Mean	3.9410	4.5281	6.4667
	N	42	42	42
	Std. Deviation	1.2716	1.3782	.9957
	Minimum	1.21	2.21	3.89
	Maximum	6.33	7.49	8.12
Total	Mean	3.9420	5.1776	6.1807
	N	263	263	263
	Std. Deviation	1.1361	1.1621	.9143
	Minimum	1.17	2.21	3.71
	Maximum	6.33	7.49	8.12

This table would appear to suggest that whilst there is little difference in the factor scores achieved by males and females in relation to factor 1, this may not be the case in relation to factors 2 and 3. An Independent

Samples t-Test was undertaken to determine whether the observed difference is statistically significant.

Table 7.8: t-Test on factor scores according to gender of respondents

	t	df	Sig.
Factor 1 Strategic	0.007	262	.995
Factor 2 Surface	4.067	261	.000
Factor 3 Deep	-2.228	261	.027

This table clearly shows that it is highly unlikely ($p=0.995$) that there is any real difference in the factor scores of male students and female students in relation to factor 1 (strategic approaches). However there is a highly significant difference ($p=0.00$) between the factor scores of males and females in relation to factor 2 (surface approaches) with male students showing a markedly lower preference for surface approaches than their female counterparts. The reverse is true for their preference for deep approaches (factor 3) with males showing a statistically significant (at the $p=0.05$ level) increased preference ($p=0.027$) for this type of approach. It should be noted that an Independent Samples t-Test has previously been reported as showing that the difference in age between male and female students is not statistically significant ($p=0.098$) so, again, it is assumed that these effects are attributable in some way to the gender of the respondents rather than their age.

Factor Scores: Comparisons by chosen branch speciality.

As previously stated all the students are undertaking one of the three branches programmes. These are Adult Nursing (a) Mental Health Nursing (m) and Learning Disabilities Nursing (ld). Table 7.9 shows the descriptive analysis of the factor scores for the students in each of the three branches.

Table 7.9: Factor Scores analysed according to branch speciality

Branch		(Strategic)	(Surface)	(Deep)
		Factor1	Factor2	Factor3
a	Mean	3.8628	5.3387	6.0424
	N	169	169	169
	Std. Deviation	1.0417	1.0617	.9235
	Minimum	1.17	2.64	3.71
	Maximum	6.03	7.49	7.98
ld	Mean	4.0033	5.2267	6.3900
	N	24	24	24
	Std. Deviation	1.3589	.9997	.7625
	Minimum	1.53	2.90	4.15
	Maximum	6.09	6.90	7.62
m	Mean	4.0923	4.7378	6.4786
	N	64	64	64
	Std. Deviation	1.2978	1.3230	.8828
	Minimum	1.21	2.21	4.29
	Maximum	6.33	6.90	8.12
Total	Mean	3.9420	5.1776	6.1807
	N	263	263	263
	Std. Deviation	1.1361	1.1621	.9143
	Minimum	1.17	2.21	3.71
	Maximum	6.33	7.49	8.12

This would appear to suggest that, in relation to factor 1 (strategic approaches) students undertaking the mental health branch have a slightly higher preference, followed by learning disabilities nursing students and then adult students. The exact opposite of this picture is found in relation to factor 2 (surface approaches) with adult nursing students showing the slightly higher preference followed by learning disabilities nursing students and then mental health students. Thirdly, in relation to factor 3 (deep approaches) the order reverts to mirror the situation for strategic approaches (factor 1). Again this data was submitted to ANOVA to determine whether or not these differences are statistically significant.

Table 7.10 would suggest that the differences between branch students in relation to their preference for factor 1 are not statistically significant. However in relation to both factors 2 and 3 the difference in observed preferences between the students of the various branches is statistically significant ($p=0.002$). The impact of the gender and age of the students in the various branch programmes will be considered in Chapter 9.

Table 7.10: Analysis of variance among factor scores according to branch speciality

		Sum of Squares	df	Mean Square	F	Sig.
FACTOR1 Strategic	Between Groups	2.577	2	1.288	.989	.373
	Within Groups	330.885	254	1.303		
	Total	333.462	256			
FACTOR2 Surface	Between Groups	16.822	2	8.411	6.622	.002
	Within Groups	322.643	254	1.270		
	Total	339.465	256			
FACTOR3 Deep	Between Groups	9.963	2	4.981	6.149	.002
	Within Groups	205.762	254	.810		
	Total	215.725	256			

Factor Scores: Comparisons by entry qualifications.

The previous academic qualifications with which the students entered the DipHE Nursing programme are classified in an earlier section. It remains to be determined whether those entry qualifications have any influence on the preference for different approaches to learning as manifest by the three factors extracted.

Table 7.11: Factor scores analysed according to entry qualifications.

		(Strategic)	(Surface)	(Deep)
QUAL.		Factor1	Factor2	Factor3
1	Mean	4.4838	3.8338	6.5788
	N	8	8	8
	Std. Deviation	1.0321	1.0985	.6020
	Minimum	3.05	2.49	5.74
	Maximum	5.96	5.30	7.40
2	Mean	3.9269	4.8086	6.2788
	N	42	42	42
	Std. Deviation	1.1286	1.2266	.9768
	Minimum	1.48	2.21	3.73
	Maximum	6.15	6.75	7.89
3	Mean	3.8350	4.7200	6.1650
	N	4	4	4
	Std. Deviation	.9305	1.1749	1.5314
	Minimum	2.61	3.96	4.40
	Maximum	4.81	6.47	8.12
4	Mean	3.7944	5.2776	5.9521
	N	34	34	34
	Std. Deviation	1.3188	1.1914	1.0479
	Minimum	1.17	2.28	3.73
	Maximum	5.69	7.38	7.98

QUAL.		(Strategic)	(Surface)	(Deep)
		Factor1	Factor2	Factor3
5	Mean	3.8513	5.3291	6.1365
	N	118	118	118
	Std. Deviation	1.0942	1.0390	.8200
	Minimum	1.21	2.66	3.71
	Maximum	6.33	7.49	7.97
6	Mean	3.9827	5.6733	6.0833
	N	15	15	15
	Std. Deviation	.8242	.7650	.6176
	Minimum	2.59	4.16	5.11
	Maximum	5.90	6.68	7.29
7	Mean	4.0294	4.4900	6.4831
	N	16	16	16
	Std. Deviation	1.5369	1.1459	1.1024
	Minimum	1.26	2.50	4.29
	Maximum	6.09	6.20	7.85
8	Mean	4.5047	6.1220	6.5500
	N	15	15	15
	Std. Deviation	.9944	.5929	.8041
	Minimum	2.37	5.02	4.94
	Maximum	5.71	7.10	7.65
Total	Mean	3.9340	5.1927	6.1933
	N	252	252	252
	Std. Deviation	1.1423	1.1446	.9005
	Minimum	1.17	2.21	3.71
	Maximum	6.33	7.49	8.12

It may be helpful to have a reminder of the meaning of the entry qualification categories:

Classification 1 = Possession of a previously obtained degree,

Classification 2 = Possession of two or more pass grades at A' level,

Classification 3 = Possession of a University Diploma or Certificate (includes HNC and HND),

Classification 4 = Possession of a BTEC National Certificate or Diploma,

Classification 5 = Possession of 5 GCSEs / GCE's at grades A,B or C (or CSEs grade 1) (may include 1 A' level (&/or AS level)),

Classification 6 = Possession of NVQ level 3 (or above) or Advanced GNVQ,

Classification 7 = Possession of a pass in the 'DC Test'.

Classification 8 = Possession of a Pass in an approved and kitemarked 'Access to Higher Education' course.

Comparison with the earlier section which looked at the mean scores achieved by the respondents in relation to the original inventory author's main approaches reveals, as would be expected, a very similar picture to that inferred by this current analysis.

- Students entering by an Access Course (category 8) showed very high mean scores in relation to all three factors, exceeded in factor 3 (the deep approach) only by previous university graduates. This latter group also demonstrated a preference (compared to other categories) for the adoption of strategic approaches.
- Students entering with a DC test pass (category 7) also scored highly on the factors associated with strategic and deep approaches to studying.
- Students in the categories covering NVQ, BTEC National and 5 GCSE's (4,5 and 6) demonstrated the lowest preference for deep approaches (factor 3) but comparatively high preference for surface approaches (factor 2).

All of these points need to be seen within the context of the influence that other variables might have on the results. Most notable, perhaps, the effect of the age of the respondents. Students undertaking DC Test and Access Courses (and probably previous degree studies) are likely to be more mature than those entering the programme on the strength of other types of qualification. As has been seen age of respondent does appear to influence the approach to learning and studying adopted by students. The effects of all of these variables will be considered again in Chapter 9.

Table 7.12 shows that the differences in implied preference between the students with different entry qualifications are only statistically significant ($p=0.00$) in relation to factor 2 (surface approaches). In relation to factors 1 and 3, the ANOVA would infer that there is no real difference in implied preference for strategic or deep approaches to learning as demonstrated by the students in the various categories of entry qualification.

Table 7.12: Analysis of variance amongst factor scores according to entry qualifications.

		Sum of Squares	df	Mean Square	F	Sig.
FACTOR1 Strategic	Between Groups	8.995	7	1.285	.984	.443
	Within Groups	318.542	244	1.305		
	Total	327.537	251			
FACTOR2 Surface	Between Groups	48.624	7	6.946	6.048	.000
	Within Groups	280.224	244	1.148		
	Total	328.849	251			
FACTOR3 Deep	Between Groups	7.292	7	1.042	1.295	.253
	Within Groups	196.231	244	.804		
	Total	203.523	251			

Factor Scores: Comparisons between 'leavers' and 'remainers'.

There is one further analysis that needs to be considered. In Chapter 3 the point was raised (during the discussion on the appropriateness of the research design) that, approximately nine months after completing the inventory, those students who had subsequently discontinued from the three cohorts (whether on grounds of academic failure or through voluntary withdrawal) should be identified. Their responses in the inventory were reviewed to ascertain whether there was a significant difference between them and the other students who had not subsequently discontinued. It was felt that analysis through factor scores would provide the most helpful insight.

In total 12 students had discontinued during this period. 8 had been discontinued on academic grounds and four through voluntary withdrawal. However, due to the fact that students were allowed to retain anonymity if they wished, only 6 of these students' response sets could be identified. This in itself is interesting - the fact that 50% opted not to disclose their identity (this within the context of the observation that of the original total of 278 students, only 30 (10.8%) opted for anonymity).

Table 7.13: Factor scores analysed by students remaining on the programme against those who had left the programme since completing the inventory.

		(Strategic)	(Surface)	(Deep)
Students		Factor1	Factor2	Factor3
'Remainers'	Mean	3.9471	5.1791	6.1751
	N	257	257	257
	Std. Deviation	1.1418	1.1589	.9199
	Minimum	1.17	2.21	3.71
	Maximum	6.33	7.49	8.12
'Leavers'	Mean	3.7250	5.1117	6.4233
	N	6	6	6
	Std. Deviation	.9051	1.4124	.6430
	Minimum	2.57	3.19	5.54
	Maximum	4.83	6.68	7.24
Total	Mean	3.9420	5.1776	6.1807
	N	263	263	263
	Std. Deviation	1.1361	1.1621	.9143
	Minimum	1.17	2.21	3.71
	Maximum	6.33	7.49	8.12

This data would appear to suggest that there is not a great deal of difference in relation to the degree of preference for different approaches to learning between students who left or were discontinued on academic grounds and those who remain on the course. The number of 'leavers' is very

small and it would perhaps be inappropriate to attempt to draw inference from the lower score that they have been attributed on the strategic factor (factor 1) and the higher score that they have been attributed on the deep factor (factor 3). Indeed an ANOVA demonstrates that it is highly unlikely that there is any real difference between the two categories of students in this analysis.

Table 7.14: Analysis of variance amongst factor scores between students still on the programme and those who had discontinued after completing the inventory.

		Sum of Squares	df	Mean Square	F	Sig.
FACTOR1 Strategic	Between Groups	.289	1	.289	.223	.637
	Within Groups	337.868	261	1.295		
	Total	338.158	262			
FACTOR2 Surface	Between Groups	2.670E-02	1	2.670E-02	.020	.889
	Within Groups	353.781	261	1.355		
	Total	353.808	262			
FACTOR3 Deep	Between Groups	.361	1	.361	.431	.512
	Within Groups	218.676	261	.838		
	Total	219.037	262			

This chapter, which has reviewed the factor scores of students, has additionally demonstrated that a range of variables does appear to have influenced the hypothetical scores that the students achieved on the three factors extracted. What has not been reviewed is the inter-variable effect - for example the age of the male students as opposed to the age of the female students, or the entry qualifications of students entering the various branches of nursing. These issues will be considered in detail in Chapter 9.

Qualitative Feedback from Respondents.

As noted in the discussion on the research design, it was not a specific objective of this study to utilise qualitative techniques to undertake a detailed evaluation of the component parts of the curriculum with a view to assessing their impact upon the students' approaches to learning. However, it was considered important to provide the students with opportunities to make comments upon the issues that seemed most important to them at that time, often in direct response to the subjects and topics that were raised within the ASSIST Inventory.

All the qualitative data statements were transcribed and an attempt made to analyse the data. Overarching comments, analysis and conclusions will be reserved for the end of the chapter.

Motivation.

The first issue that emerges from the qualitative data is concerned with motivation. There often seems to be a conflict between the motivation to want to be a nurse and the sometimes lack of motivation to study on an academic programme:

"At the end of the day all I want to do is qualify and that is what motivates me." (9709),

is a common emotion expressed by the students, but for some, there are times during the programme when motivation to study is problematic:

"My will to do well is very high, but my motivation to enable this is low." (9509)

"I feel quite depressed, filling in the questionnaire has made me realise how de-motivated I really am." (9609)

"You are totally de-motivated at the end of the 1st year and then again at the end of the second year." (9609)

and, perhaps most concerning:

"For the twentieth time in the last two years, I've been about to 'jack it all in'." (9609)

There is an impression that for a few students, it is quite hard for them to be clear why they need to undertake an academic programme in order to practice as a nurse. This may also be associated with a difficulty in seeing the relevance of some of the subjects that students are expected to study:

"I find it hard to allocate time effectively and also if I'm working on a subject I don't find as interesting as others, I find it very hard to motivate myself." (9709)

"My attitude, motivations and concerns vary from topic to topic." (9509)

For some, the motivation decreases when the programme is perceived to be putting them under pressure:

"I've been a bit negative, but that's because I've got an assignment to hand in in three days' time." (9609)

"Although my aim throughout the course is to do well in all my assessments, I still find it hard to motivate myself to revise for an exam or write an assessment / assignment without leaving it until the last few weeks." (9509)

while for others, it has an opposite effect:

"I tend to leave work to the last minute - often wishing I had more time to read. But I feel more motivated under some stress." (9509)

External Pressures and Conflicts.

This was an often repeated concern. Students were expressing their concerns about their ability to perform on a programme, and to adopt approaches to studying and learning that they implicitly felt were appropriate, when other commitments and external pressures were forcing them into alternative strategies. For some the nature of the external pressures might have been 'recreational', but for a significant proportion of students, the pressures they found themselves under often related to other extremely important aspects of their lives:

"Difficulties in managing time and finding an adequate environment for study are caused by the needs of my family rather than a lack of motivation or time management skills." (9509)

"I don't have the time to read around subjects as well as reading for an exam or assignment, and work on placement, and run a family etc." (9509)

"I find having kids needing childcare an enormous hindrance to being the student I would like to be. Charles Frears and Nursing is limited in flexibility in this and associated issues." (9509)

"Life for the mature student involves a lot more than just college, although it is an important factor in your life, priorities can move due to circumstances and family commitments." (9709)

Of course, the perennial problem of lack of money can have an effect as well - and this leads to the need to undertake part-time employment with the resulting reduction in opportunities for study:

"Study time is limited by part-time work commitments" (9509)

"... other commitments that may take priority over academic work e.g. family, other work, which might show why some people appear disorganised." (9509)

It may also manifest itself in having a negative effect on motivation:

"I feel that although I enjoy the work and it interests me, I cannot motivate myself very well due to outside pressures getting me down (e.g. money)." (9709)

or, as more than one student summarised it:

"STRESS !!" (9709)

Quality of Teaching and Teachers.

These students were the same as students the world over in their willingness to comment upon the academic staff and the quality of teaching that took place. There were a number of compliments; for example:

"I feel that the way most lecturers teach us is structured and assists our learning." (9709)

"I 'definitely like' lecturers who are motivated and use a variety of teaching techniques." (9509)

"....lecturers who show enthusiasm in the subjects they teach inspire us to do our best." (9609)

".... those [teachers] who show a genuine interest in our success prove useful." (9509)

But students have a wish list as well, and this may provide some useful indications regarding favoured approaches to learning:

"More direction would be useful, with regard to study techniques, earlier on in the course."

seems a very reasonable request, and one that may help students to develop the skills to adopt primarily deep approaches. However some views expressed may point towards other tendencies, more akin to surface approaches:

"Lecturers with a balance between telling us exactly what to put down in our notes and encouraging us to think for ourselves are best!" (9509)

"I prefer that what is expected of us is made very clear, and then I can develop from there." (9509)

"I would like the lecturers to give us more input into exactly what goes into the assignments." (9609)

However, in the interests of balance, students did identify what they perceived to be an element of inconsistency in what various members of the academic staff expected of students. It is noted that these statements all came from the same cohort, so it may be that that group had had a particularly bad recent experience of inconsistency:

"Tutors often give different information about what is required in an assignment." (9609)

"There seems to be confusion in teaching and assessing objectives on behalf of teaching staff." (9609)

"We also receive conflicting information about assignments. We have to stick to guidelines from all tutors about the content of our assignments, we cannot write what we think even if it answers the question." (9609)

"With regard to Q51 [*'I like to be told precisely what to do in essays or other assignments'*], I like to be told, as lecturers teaching the same modules sometimes give different accounts of what they want within an assignment; so it can get quite confusing." (9609)

Availability of Resources.

Students suggested that the availability of high quality educational support resources was an important factor influencing their experience:

"Better material should be provided at the library - shortage of books at the library really inconveniences students - recall of books (weekly loans) inconveniences students when they are on placements. Students on placements should be allowed more time to make it convenient for them to return books." (9709)

"Up to date books - and plenty of them would be beneficial." (9509)

Again, the pressure that the professional practice-based elements of the course put students under was emphasised. Students spend at least 50% of their programme off campus, and then resources can be hard to obtain:

"..... campus library opening hours!" (9509)

They inferred that this could affect their approach to studying:

"It's hard getting access to the library while on placement so this makes me leave it till the last minute." (9609)

Another resource issue that students commonly raised was the resource of detailed feedback from previous assessed work. Not that this was not provided; rather that, because of the nature of university regulations regarding assessment boards, such feedback was often not available to the students before the next piece of assessed work was due to be handed in:

"It is difficult at this stage of the course to truly gauge how you are working, as 'comments' have not yet been given by tutors for marked work - especially for students who had low [provisional] grades given back." (9709)

"When assignments are handed in it takes so long to get back and you can't see where you have gone wrong or where you could have improved your marks; this would make a difference especially on subsequent assignments." (9709)

To counteract this, generally speaking students did find that there were usually members of academic staff available to help and support.

Academic Study versus Professional Practice.

As stated earlier, a not uncommon theme arising in discussions and qualitative feedback was the fact that the inventory was perceived to be exclusively associated with academic issues. For many students, it is difficult to tie the two aspects (academic and professional) meaningfully together:

".... Is academic 'doing well' equated with being a good nurse? Is it not more related to a combination of concepts, ideals, models, morals etc.?" (9509)

"Some modules are more exciting to me than others. I prefer modules that relate specifically to practice." (9609)

"It would be nice if we could specialise in the subjects we are interested in and be able to apply them to practice within the university." (9709)

For some, the two aspects seemed to be at different ends of a continuum; for example:

"I am not very academic, more practical." (9609)

Impact of Curriculum Issues.

Reference has been made earlier to the potential impact that the curriculum, in its widest sense, can have on the approaches to studying adopted by students (for example, Entwistle and Ramsden, 1983; Entwistle

and Tait, 1990; Biggs, 1993; Gibbs, 1992). Students raised several issues which appeared to confirm that various aspects of the curriculum did indeed influence their behaviour. For example:

"I have enjoyed academic work which I have undertaken previously, but find that although nursing appears to be taught with a wide scope for learning, I find it quite restricting in many ways. In many ways, the further into the course I travel the more restricting it becomes."
(9609)

This is an interesting perspective. Without the specific opportunity to test the true meaning of 'restricting' it is assumed that this respondent is inferring that the curriculum is encouraging her / him to adopt a less deep approach (and perhaps more surface or strategic approaches) as the programme progresses. Other students implied the same in that they felt that the pressure of work was a problem:

"We have too much to do - with practice and college....." (9609)

"With so many bits of work, there's never enough time to really do your best." (9509)

On a more pragmatic note:

"I have an aversion to exams because I panic and feel that I do not perform very well under exam conditions." (9609)

"Assignments and exams are very different, my approach to these is rarely the same." (9709)

"The difficulty is how to pass the exams and assignments while still having the time and inclination to delve further into other related or unrelated matters." (9609)

"... a lot of this course is very different at times and as such it can relate to the way that study is done..." (9609)

Many students made comments that appeared to be allied quite clearly to the three main approaches to learning. For some there may be apparently conflicting impressions laid:

"Although I like exams / tests based on definite texts, I do believe in reading around the subject as well." (9509)

One is left to wonder whether the tendency towards surface approaches is greater than the implied tendency towards deep approaches.

For a small number of students, there was an awareness that they had changed or developed over the period of the programme. It was interesting

that this insight was almost exclusively expressed by the most senior group (9509):

"There has been a change in my attitude / thinking over the term of the course and therefore some questions (e.g. 32 and 35 [*these are both surface related statements which the respondent scored '1 - Disagree'*]) would have been answered differently 2 years or so ago." (9509)

"As the course has moved on I know I have become more academically minded. I find myself questioning 'why?' a lot more often. This I feel is what, overall, you are trying to teach us." (9609)

"My studying has changed and so have my motivations since beginning this course in September 1995." (9509)

"At the beginning of the course I often worried about whether I would be able to cope with the work properly." (9509)

In the quantitative data, it emerged that there was probably a difference in the approach to learning most favoured by students on different branches. At the two extremes, it was found that mental health nursing students favoured most the deep approaches, and the adult nursing students favoured most the surface approaches. Further discussion will take place in a later chapter, but some clues may have been revealed by adult nursing students:

"The adult branch students seem to have a bigger work load than the other branches..... not just assessments but things like presentations and seminars."

There are no comments that would identify whether students on the other two branches would agree. However several students did use expressions like:

"Mental Health is more laid back....."

"The adult programme is more factual with much more to remember..."

Students from all specialities were equally vocal in their 'complaint' that DipHE Nursing students are:

"..... not like other students."

They clarified that they were referring to two features of their programme:

- a. 50% of their course time was spent in practice settings, and
- b. their academic year was of 45 weeks duration, as opposed to the much shorter working year of other students.

On a more general note, a rather disturbing number of students seemed to adopt a 'what does it matter?' approach, suggesting that the university

does not listen to their concerns. Whilst accepting that there were often resource and logistical reasons why certain situations pertained, they commented, for example:

"Why do we fill in [module] evaluation forms when nobody takes any notice of what we say." (9609)

"We've been saying the same things [about resources] since we started...." (9609)

"We know things can't be changed overnight, but why doesn't anybody give us a progress report on important things?"

Deep Approaches.

For many students there seemed to be little doubt that the right approach for them (at times in the face of significant difficulties) was to adopt tactics for studying and learning that were clearly commensurate with the deep approach:

"I tend to read a lot of material around lecture or assignment topics. I sometimes fear that I'll get 'bogged down' in all the extra information. However this often works for my better understanding." (9609)

"My approach to study is very systematic. I enjoy reading round a certain topic of study and sometimes wander completely off topic. However I do not see this as a problem as it generally increases my knowledge foundation for other topics on the course. Having gone through a rigorous study through my MBA, I found doing the nursing course has allowed me to pace and schedule my time to read round the subjects." (9709)

"I am a person who enjoys reading. I personally do not agree with spoon feeding. Students should be allowed to develop their own ideas and challenge some of the comments made by lecturers." (9709)

"It is very important that I understand the lectures and feel at ease to ask any questions without embarrassment." (9709)

Strategic Approaches.

Some students (albeit a smaller number) had clearly found that the most appropriate way for them to progress was to 'use the system' to their advantage - to find out the rules and play by them; this is, in part, characteristic of the strategic approach along with other features such as being well organised, using time and resources effectively and being alert

to the progress that is being made. Students expressed some of these concepts in the following ways:

"Teachers within the same module often want different things in an essay. Therefore you write what the marker of your paper wants." (9609)

"At the beginning of each module, I always set out to organise my time, and work." (9609)

However this student confesses that such strategies do not always work and other pressures mean that work usually "... gets left to the last moment." (9609)

Some students make strategic choices:

"... dependant on the lecturer, the module being studied, and the type of assessment e.g. reading around subject is great for assignments, not good for fact-based multiple choice." (9609)

"Assignments and exams are very different, my approach to these is rarely the same." (9709)

With reference to the earlier statement that detailed feedback is often delayed, one student bemoaned:

"There is very little feedback on how you are doing and how I [sic] could improve." (9709)

Surface Approach.

It would appear that pleas from students relating to surface approaches to learning were more prevalent than those relating to deep or strategic approaches. It may be that this is the nature of surface orientated students - they want to be given the information that they need and are prepared to ask for it if that is the most appropriate strategy. The following examples were representative of the comments made and go some way towards defining many of the characteristics of the surface approach. Again it is noteworthy that the most senior group (9509) seem to feature much less in the statements that demonstrate a clear surface orientated approach. For the other cohorts, assessed work was a central theme:

"I would like the lecturers to give us more input into exactly what goes into the assignments." (9609)

"A lot of information given in modules I find totally irrelevant for exams and assignments." (9609)

"Tutors should give students more guidance when preparing for exams." (9709)

"It would be helpful if assignments were clearly set out in writing rather than attempting to adapt a vague question to what a particular tutor requires." (9609)

"I feel it is more beneficial when studying a module that is tested by exam to identify points throughout the teaching sessions that are more likely to appear in the exam" (9709)

"....Also there is so much work to be learnt, it's better to be told what to concentrate on for exams before we all become stressed and give up." (9709)

Aspects other than examinations and assignments also featured in the list of concerns for these students:

"There are so many books and journals to look at it's good to be told which are best." (9709)

"We never know how far in depth we need to study in modules when told to 'read round the subject'. This becomes confusing." (9709)

"some (most) seminars are extremely tedious and could have been better spent on biology questions for instance" (9709)

"I find it daunting when we're given many references for further reading, and this information is different to that in our notes." (9709)

Insight into the research process and research subject.

The great majority of the students who participated in the research showed very positive attitudes towards it and agreed, without any pressure, to participate. It is acknowledged that their relative position within the organisation may have made them feel obliged to participate, but the qualitative impression is one of real willingness to be involved. Some students clearly saw the research as an opportunity to enhance their own education both through their involvement and ultimately through the outcomes of the study. All opinions were expressed freely and recorded without prejudice. The following provide some interesting postscript impressions and demonstrate some significant insights:

"It made me think, you don't normally ask those kind of questions of yourself." (9609)

"I'd be interested to know whether the results are affected according to age and gender." (9609)

"It would be interesting to know how our approaches to studying have changed over the length of our course." (9609)

"Will it be possible to obtain the results / conclusions of this piece of research, for developing future study techniques?" (9509)

Discussion.

Though it may seem to be a rather negative approach, it may be helpful to attempt to analyse the qualitative data using a framework of the course characteristics associated with a surface approach. Gibbs (1992) suggests the following as a research-based summary of such course characteristics:

- A heavy workload

- Relatively high class contact hours

- An excessive amount of course material

- A lack of opportunity to pursue subjects in depth

- A lack of choice over subjects and a lack of choice over the methods of study

- A threatening and anxiety provoking assessment system

Some of the most prevalent observations made related to the workload that students experienced; they often commented upon the fact that they had to cope with practice placements as well as theoretical work. Sometimes the workload was viewed in absolute terms, but many students made their observations within the context of other pressures upon them (family and social commitments, part-time employment, even recreational activities). No student commented that there was 'enough time'. Closely related to the overall workload are the high class contact hours and the large amount of course material. Though it is true that the DipHE Nursing programme does have a comparatively high class contact hours figure, this issue was not specifically commented upon; the excessive amount of course material certainly was frequently cited. Interesting also the perception that, for example, the adult branch programme had a greater pressure of academic work than did the other branches. This could possibly provide part of the explanation for the finding that mental health nursing and learning disability nursing students tended to demonstrate a greater preference for deep approaches and a lower preference for surface approaches.

The comments made by the students would seem to suggest that a range of issues (from pressure of work, number of assessments and even the non-availability of appropriate resources) conspire to reduce the opportunities for student to pursue subjects in depth. Similarly students reported that there was no choice over subjects in that they had difficulty in motivating

themselves to study subjects that were of minimum interest to them and of which, implicitly, they could not see the relevance. Some students were still not convinced of the importance of the relationship between the academic and professional aspects of nursing education, yet they realised that this was the only route into their chosen profession. It is true that, for very sound reasons, there are no optional modules in the programme, and therefore very limited student choice. However there is a clear signal here of the need to demonstrate the relevance and appropriateness of all the modules in the programme and to review whether there could be enhanced options for choice, not least in the area of methods of study.

The final characteristic relates to a threatening and anxiety provoking assessment system. Such threat is referred to as 'extrinsic motivation' and is very real in relation to the DipHE Nursing students for two reasons. Firstly, the students perceive that there are a large number of assessments. Secondly, students are aware that two failures in any assessment usually result in discontinuation from the programme. Clearly this is extremely threatening because it would mean the end of their ambition to become a professional nurse. Many students suggested that the university adds to the threat by the delays that tend to occur in providing feedback on summative assessments and the conflicting advice that they sometimes receive from academic staff.

This examination of the qualitative data using the criteria suggested by Gibbs (1992) would appear to make it inevitable that the students' approach to learning would be affected. For example Entwistle and Tait (1990) found that in departments where there existed a consensus among the students that there was little student choice and a heavy workload, there was a higher proportion of students adopting surface approaches. This seems even more likely when to the equation is added the very widespread perception that the students' opinions and evaluations are not valued because the university does not listen to their concerns. Yet the quantitative data shows that these students still tend to favour the deep approach. Importantly, some students were even able to identify how their approach to learning had changed as they had progressed through the course, and many students made statements that clearly showed that they saw deep approaches as being the most effective way to learn. Clearly there are a range of very positive aspects of the curriculum that would act to counterbalance the surface-inducing characteristics identified, but these were not widely

elucidated by the students. However the concept of intrinsic motivation deserves mention.

Motivation seems to be the issue that commentators perceive as being one of the most important determinants in the approaches to learning adopted by students (for example, Fransson, 1977; Marton and Säljö, 1984; Watkins and Hattie, 1981; Richardson, 1994; Gibbs, 1992). Intrinsic motivation to learn has been shown to result in a predilection for deep approaches, and at the end of the day most students undertaking a pre-registration nursing programme are there because they want to be; it is their vocational choice and, so long as they can see the relevance of the modules, they are likely to have a high level of interest in the programme. Students also commented on how the enthusiasm and interest of academic staff aid in the maintenance of motivation. It may well be that intrinsic motivation is the characteristic that most clearly prescribes the approach to learning adopted and that, because of it, students may be able to continue to utilise deep approaches, at times, almost despite some of the other aspects of the curriculum.

Conclusions and Analytical Comparisons.

Biographical details.

This research was based primarily upon the application of the ASSIST Inventory to three separate cohorts of DipHE Nursing students - a first year group, a second year group and a final year group. In support of the arguments for the research design approach adopted as opposed to a 'follow up' or 'cohort' study design, the point was made that there was no reason to assume that there was any difference between the students of the three cohorts in relation to a range of potentially very important biographical details. These included:

- i the distribution of students amongst the branches of nursing for which they were preparing,
- ii the age distribution of the students in the three cohorts,
- iii the gender distribution of the students in the three cohorts,
- iv the academic entry qualifications profile of the students in the three cohorts,

Upon collection and analysis of the data, it was found that there was indeed no statistically significant difference between the groups in relation to i. and iii. above, but that there was a statistically significant difference between the groups in relation to ii. and iv. Clearly this latter finding has a bearing on any conclusions that may be drawn from the research. However it was noted that, in relation to both of these criteria, there was one cohort that was significantly different from the other two:

- Age distribution - 9609 was statistically different from 9509 and 9709
- Entry qualifications - 9509 was statistically different from 9609 and 9709

This provided a possible way of dealing with dilemmas in interpretation caused by the difference between groups, namely that consideration could be given to excluding the cohort which differed significantly from analyses for which the criteria appeared to be relevant.

Main findings.

Throughout the preceding chapters, the findings from this research have

been presented; in parallel with that presentation, an attempt has been made to provide some degree of analysis of those findings. The purpose of this chapter is to begin to assimilate the various strands of those analyses of the previous chapters into a series of conclusions that endeavour to summarise what has been revealed by the administration of the ASSIST Inventory to this population of Diploma of Higher Education in Nursing Students from De Montfort University. There were two distinct elements in the previously reported analyses; these were:

- the analyses of the responses of the students based upon the assumptions of the authors of the inventory and the constructs that were implicit within it, i.e. the three approaches to studying (Entwistle, 1997).
- the outcome of the exploratory factor analysis (whose robustness was confirmed by the confirmatory factor analyses), and the implications of that factor solution in the attempt to assess the preferences for approaches to learning of this population.

It is argued that one useful way of pursuing the objectives of this research is to look for consistency between the findings of the analyses based upon these two elements because, implicit within such a comparison, would be an assessment of whether the original authors' constructs were valid for this population and also, therefore, the approaches to learning adopted by these students. It should be noted that the three factors extracted during the factor analysis are referred to in terms of the original constructs of deep, surface and strategic approaches. It is argued that this is legitimate since it was shown in Chapter 6 that the statements claimed to be related to the three approaches loaded consistently heavily on the respective factors. Thus:

Factor 1 relates closely to the original strategic approach

Factor 2 relates closely to the original surface approach, and

Factor 3 relates closely to the original deep approach,

as can be seen from the very high correlations between the factor scores and the scores based upon the original constructs (table 7.1).

Two general points may be made that appear to apply to all the comparisons that are here made concerning the consistency between the results found by analysis using the original constructs and that using the outcome of the factor analysis. Firstly, the level of implied preference for the approaches to learning based upon the original constructs was not as marked as was shown by the factor scores based upon the factor solution. This

would be expected since, by definition, the factor solution clarifies and takes account of variables that do not correlate particularly well with the original approaches. Secondly, while there was universal agreement (in each categorisation) for the deep approach being most preferred, the second preference changed according to the analysis. Using the original constructs, the strategic approach was usually the second preference (with surface approach third). Using the factor scores, this order was changed with the surface approach (factor 2) being markedly preferred to the strategic approach.

The following observations can be made about the findings of the **two main elements of the analysis (i.e. comparing outcomes based upon the original constructs with factor scores)**:

- a. Overall preferences in relation to approach to studying. Notwithstanding the general observations made above, there was a very high level of consistency in the results of the analysis of the two elements.
- b. Differences between cohorts in relation to preferred approach. There was a remarkable level of consistency between the implied preferences of the three cohorts. There was equal consistency whether the comparison was based upon the original constructs or those derived from the factor analysis.
- c. Preferences for approaches to learning shown by different age groups. Both elements of the research showed highly significant differences ($p=0.000$) between the preferences of the younger students and those of the more mature students. The exception to the normal pattern of preferences was that, using the original constructs, the younger students demonstrated a slight preference for surface approaches rather than strategic approaches.
- d. Preferences shown by male and female students. A consistent pattern emerges in the analysis of both elements. Male students showed a slight (but not statistically significant at the $p=0.05$ level) preference for deep approaches compared to their female counterparts, but in both elements there was found a statistically significant difference ($p=0.00$) in the implied level of preference for surface approaches.
- e. Preferences shown by students on the different branch programmes. Given the general observations above, the picture that emerged from the two elements was entirely consistent. In both analyses, the difference between specialities in implied preferences relating to deep and surface approaches was statistically significant at the $p=0.01$ level.

f. Preferences shown by students with different entry qualifications. Again the results from the analysis based upon the original constructs were very consistent with those based upon the factor analysis. The same general observations apply with the exception that the students who entered the programme with an existing degree showed a greater preference for strategic approaches than surface approaches (table 7.11) as in the analyses based upon factor scores.

Conclusions.

1. Validity of the ASSIST Inventory Approaches (section B).

Analysis of the data from the application of the ASSIST Inventory would seem to suggest that the three main approaches to learning identified by Entwistle and his colleagues (Tait et al., 1997) are probably valid for this population of nursing students.

The evidence to support this conclusion arises from four sources:

- a. the correlation studies (Spearman's rho) performed on the responses to the statements of section B of the inventory,
- b. The closeness with which the variables from each of the original constructs relate to the three factors extracted. There is an amazing level of congruity, particularly when the subscales that are considered to be invalid have been excluded (table 6.4); this is further supported by the correlation study shown in table 7.1.
- c. the close parallel between the outcome of the analysis of the mean scores attained by students (when the responses in section B were grouped according to the original approaches to learning) are compared to the outcome of the factor scores analysis derived from this factor solution.
- d. the analysis of internal reliability (Cronbach's Alpha) (tables 5.13 and 6.5) performed both on the responses grouped according to the original constructs and the responses based upon the factor analysis.

The reservation about this conclusion stems from the previous observation that the sequence of preference demonstrated by students for surface and strategic approaches in the analysis based upon the original constructs is reversed in the analysis based upon factor scores. This is explained by the observation that the factor solution translated two of the original strategic orientated statements (from Strategic approach related subscale 5) to the factor associated with the deep approach. These were variables

with a high mean score (4.1 for each) seen within the context of the overall strategic approach mean score (excluding related subscale 5) of 3.50. This will have had two effects:

- a. increasing the factor scores for the deep approach (in relation to the other factor scores), and
- b. decreasing the factor score for the strategic approach which may explain why in the analyses based upon factor scores, the surface approach tends to have an implied higher level of preference than the strategic approach.

2. Validity of the scales and subscales of the original inventory.

Entwistle (1997) identified that his research had demonstrated that the first three primary subscales in each overall approach could normally be combined with confidence. He went on to suggest that the related subscales should be assessed as to their validity with different student populations.

This research has demonstrated that the related subscales should be considered valid for the students on the DipHE Nursing programme. There are three sources of evidence to support this:

- a. the correlation studies (Spearman's rho) performed on the responses to the statements of section B of the inventory, and
- b. the comparatively high coefficients with which the statements of the related subscales load onto the three factors extracted during the factor analysis (table 6.4)
- c. the analysis of internal reliability (Cronbach's Alpha) performed on the responses grouped by scale and subscale (table 5.13).

Two of the statements allocated to strategic approach related subscale 5 'Monitoring effectiveness' loaded more heavily on the 'deep' factor (3) than on the strategic factor (1). However it is argued that they can still be included since they also load comparatively heavily on the factor 1 (0.300 and 0.268 respectively) and also because they generally correlated to a statistically significant level with the other variables in the strategic approach.

This research has demonstrated that there are two primary subscales whose relationship with the other subscales in their approach would appear to suggest that they are not valid for this student population. These subscales are:

Strategic approach primary subscale 3 'Alertness to assessment demands' and Surface approach primary subscale 1 'Lack of purpose'. This conclusion is supported by:

- a. the correlation studies (Spearman's rho) performed on the responses to the statements of section B of the inventory,
- b. the way in which their exclusion from the exploratory factor analysis enhances the clarity and interpretation of the factors extracted (table 6.4)
- c. in part, by the analysis of internal reliability (Cronbach's Alpha) performed both on the responses grouped according to the original constructs and the responses based upon the factor analysis (Tables 5.13 and 6.5).

Given Conclusions 1. and 2. above, it is reasonable to suggest that the discussion of other conclusions should be based upon analyses in which the subscales considered invalid are excluded. It is also appropriate, given the high level of consistency described earlier in this chapter, that the findings from the analysis using the original constructs and from the factor analysis can be included in the discussion.

3. The deep approach was the most preferred.

The majority of nursing students, 71.5%, demonstrated that the deep approach was their preferred approach to learning and studying. This is also supported by the mean scores for each approach (table 5.14 and table 7.3) though it should be noted that the preference is not particularly marked (especially when mean scores on the original constructs are considered), nor is it strongly polarised in that students do not demonstrate such a preference to the exclusion of implied preference for other approaches (table 5.14 and 7.3). Upon reflection, such a polarisation would probably not be expected. Most students (Gibbs, 1992) seem to be able to adapt their approach according to their perception of the demands of the task; there is no evidence that the nursing curriculum 'demands' a deep approach of its students and it is likely that different parts of the curriculum appear to require different approaches. Meyer and Muller (1990) also suggest that a deep orientated student would be equally capable of seeing and responding to the surface as well as the deep aspects of a learning task.

4. There is no change in approach to learning as students progress through the programme.

The factor scores achieved for each factor and the mean scores awarded to each cohort for each approach are remarkably consistent with each other. These students did not show a statistically significant difference in their preference for approach to learning and studying at the different stages of their course. This finding is consistent with that found by Stiernborg et al. (1997) in an analysis of the use of the ASI (a forerunner of ASSIST) with Australian nursing students. In the current study it is acknowledged that there is a statistically significant difference between cohorts in relation to two important biographical details:

Age distribution - 9609 was statistically different from 9509 and 9709

Entry qualifications - 9509 was statistically different from 9609 and 9709

Thus, if the implied preferences for 9509 were compared to those of 9709, and the implied preferences for 9609 were compared to those of 9709, then the implication of the statistical difference between groups in relation to these criteria could be eliminated. This was undertaken by independent sample t-test analyses.

Table 9.1: t-test analysis of factor scores for 9509 and 9709

	t	df	Sig.
Factor 1 <u>Strategic Approach</u>	-0.088	182	.930
Factor 2 <u>Surface Approach</u>	-1.176	182	.241
Factor 3 <u>Deep Approach</u>	-0.418	182	.676

Table 9.2: t-test analysis of factor scores for 9609 and 9709

	t	df	Sig.
Factor 1 <u>Strategic Approach</u>	-0.333	188	.740
Factor 2 <u>Surface Approach</u>	-1.343	188	.181
Factor 3 <u>Deep Approach</u>	-1.152	188	.251

These analyses show that any difference in the factor scores between these groups do not have statistical significance. It would be argued therefore that this supports the contention that there is no change in the preference for approach to learning expressed by the students as they progress through their programme.

5. Age does effect the preferences for different approaches to study.

With the younger group being classified as being up to and including the age of 23 years, and the more mature group being aged 24 years and over, there were found to be highly statistically significant differences ($p=0.00$) in approaches to learning adopted by the groups. This was found to be equally true whether the analysis was by the original constructs or by the factor scores. Both groups favoured deep approaches but this was much more marked for the mature group. There were slightly bigger differences between the groups in relation to strategic and surface approaches than there were for the deep approach (tables 5.16 and 7.5). These findings were consistent with those of researchers in similar studies (for example, Sadler-Smith, 1996; Richardson, 1995).

6. Gender does appear to make a difference.

In relation to the strategic approach there is no statistically significant difference between the preferences of male and female students. This applies also to the deep approach when the analysis is based upon the ASSIST constructs. Using the factor scores, however, there is a statistically significant (at the level of $p=0.05$) difference in the preference implied for the deep approach ($p=0.027$) with males scoring higher on this approach. Using both elements there is a highly significant ($p=0.00$) difference in relation to the surface approach with male students showing a markedly lower score for this approach than their female counterparts (tables 5.18 and 7.7). Observation of table 5.20 might suggest that the explanation of this is that the male students tend to be older than the females, but the fact that this difference in age does not achieve statistical significance ($p=0.098$) means that the null hypothesis in relation to the age and gender of the students cannot be rejected. There remains speculation, however, as to whether the observed difference in approach to learning results from the gender or from the branch speciality or from educational entry qualifications of the students. The risk of the latter being the determinant factor can be investigated in part by comparing the results of 9609 with those of 9709 (for which groups there is no real difference in academic entry qualifications of the members); this was achieved, once again, by means of an independent samples t-test analysis.

Table 9.3: t-test analysis of factor scores for male and female students with 9509 excluded

	t	df	Sig.
Factor 1 Strategic Approach	-1.368	188	.173
Factor 2 Surface Approach	3.337	188	.001
Factor 3 Deep Approach	-2.021	188	.045

Once again, table 9.3 would suggest that with the 9509 cohort excluded, (meaning that there is now no significant difference between the remaining cohorts in relation to previous academic qualifications) there remains a statistically significant difference between male and female students in relation to their preferences for surface and deep approaches to learning. However, the remaining variable of the branch to which the student belongs has still to be eliminated before a tentative conclusion can be reached as to whether the difference expressed is attributable to gender or to the impact of the branch programme. In order to explore this further, the preferences of male and female students in, in turn, just the adult branch, the learning disabilities branch and the mental health branch were separately examined by independent samples t-tests:

- amongst all the adult nursing students only, there was no statistically significant difference between the preferences of male and female students for the three factors ($p=0.443$, $p=0.109$ and $p=0.599$ respectively).
- amongst all the learning disabilities nursing students only, there was no statistically significant difference between the preferences of male and female students for the three factors ($p=0.869$, $p=0.922$ and $p=0.329$ respectively).
- amongst all the mental health nursing students only, there was no statistically significant difference between the preferences of male and female students for factors associated with the deep and strategic approaches ($p=0.456$ and $p=0.888$ respectively). However in relation to the surface approach there was a statistically significant (at the $p=0.05$ level) difference ($p=0.022$) between the males and the females with the males demonstrating a markedly lower preference than their female counterparts in the mental health branch for this approach.

Then the preferences, by branch for just the male students and then just the female students, were examined by ANOVA analyses. There were no statistically significant differences (at the $p=0.05$ level) between the

male students in the three branches, but there was a significant difference ($p=0.034$) in the factor scores attributed to the deep approach to learning by the female student of the various branches. Female mental health nursing students favoured this approach most, followed, in order, by female learning disabilities nursing students and then female adult nursing students.

It must be concluded therefore, that the overall preference of male students for deep approaches does not lie with their individual chosen branch programme, but must be in some way attributable to their gender. Also the overall difference between male and female students as far as the surface approach is concerned seems to originate from the different preferences of the male and female students undertaking the mental health branch. Since the students here are undertaking the same branch, it seems reasonable to assume, again, that the variation is based upon the gender of the respondents. This concurs with the findings of Sadler-Smith (1996), but not with those of Richardson (1993) who concluded in his research that there was no evidence of a significant difference between the approaches adopted by males and females. He nevertheless suggests that the distribution of 'power' between men and women within the university may be a strong influencing factor in the perceived role of women and men and the potentially correlated approaches to learning adopted.

7. The branch of nursing may affect the approach to learning.

Both the analysis by original constructs and the factor scores analysis showed that, while there was no statistically significant difference between students of the three branches in the level of preference shown for strategic approaches to learning, there was a significant difference in relation to deep and surface approaches. Adult nursing students showed the highest level of preference for surface approaches of the three specialities and the lowest level of preference for deep approaches. Mental health nursing students showed the opposite tendencies, with the highest level of preference for deep approaches and the lowest for surface. Learning disabilities students were in the middle for both constructs.

The question must be asked whether this difference originated from the branch programme (whether that be the impact of the branch programme curriculum or the characteristics of students who select the different branch options) or from some other variable such as the gender distribution across the three branches or the age distribution within the branches.

Table 5.23 clearly demonstrates that age may be a factor with a higher proportion of mental health students falling into the mature student category. Similarly there was shown to be a statistically significant ($p=0.004$) difference in the age distribution of students across the three branches.

There was also (table 4.9) a statistically significant difference ($p=0.000$) in the distribution of male and female students across the three branches. On the basis of these analyses alone, therefore, it is not possible to draw conclusions regarding the origin of the variations in preference for the different approaches to learning observed between the students on the various branch specialities. However, a clue may be provided by comparing the factor scores for just the students in the mature group (aged 24 years and over) in each of the branches:

Table 9.4: Factor scores of mature group students only according to branch speciality

Branch		Factor1	Factor2	Factor3
a	Mean	4.1339	5.1307	6.1925
	N	69	69	69
	Std. Deviation	.9703	1.0924	.9569
ld	Mean	4.2443	5.0443	6.5214
	N	14	14	14
	Std. Deviation	1.1950	1.0222	.9004
m	Mean	4.4011	4.4533	6.6713
	N	46	46	46
	Std. Deviation	1.2191	1.3947	.8338
Total	Mean	4.2412	4.8798	6.3989
	N	129	129	129
	Std. Deviation	1.0877	1.2354	.9298

Interestingly, this shows exactly the same trends as the analysis with all the students included. An ANOVA (table 9.5) shows that the differences in scores for factors 2 (surface approach) and factor 3 (deep approach) are still statistically significant (at the $p=0.05$ level).

Table 9.5: Analysis of Variance among factor scores OF MATURE STUDENTS ONLY according to branch programme.

		Sum of Squares	df	Mean Square	F	Sig.
FACTOR1	Between Groups	1.970	2	.985	.830	.438
	Within Groups	149.471	126	1.186		
	Total	151.441	128			
FACTOR2	Between Groups	13.092	2	6.546	4.526	.013
	Within Groups	182.253	126	1.446		
	Total	195.345	128			
FACTOR3	Between Groups	6.564	2	3.282	3.973	.021
	Within Groups	104.096	126	.826		
	Total	110.660	128			

This is comparatively persuasive that at least part of the difference in approach demonstrated by the three branch programmes is attributable to the branch programme upon which the student is enrolled. The question must be asked, then, as to whether any such difference is attributable to the characteristics of people who would select the various branches, or to the different curricula that students on the branch programmes are subjected to once they actually commence the branch programme. An indicator for this might be found by analysing the preferences of just the mature group students in the 9709 cohort; the reason for this is that, though they have been allocated to their eventual branch for this analysis, at the time of completion of the inventory they were still in the common foundation programme and had, therefore, all been subjected to exactly the same curriculum.

Considerable caution would have to be expressed since excluding so many categories of student (younger ones and students from 9509 and 9609) clearly reduces the number of valid cases (down to 42 students). However it can be reported that (see table 9.6) there was no statistically significant difference in the implied preferences for the various approaches between students in each of the branch specialities.

Table 9.6: Analysis of Variance among factor scores OF 9709 MATURE STUDENTS ONLY according to branch programme.

		Sum of Squares	df	Mean Square	F	Sig.
FACTOR1	Between Groups	.235	2	.117	.119	.888
	Within Groups	38.360	39	.984		
	Total	38.595	41			
FACTOR2	Between Groups	2.843	2	1.422	.853	.434
	Within Groups	64.975	39	1.666		
	Total	67.819	41			
FACTOR3	Between Groups	1.563	2	.781	1.126	.335
	Within Groups	27.070	39	.694		
	Total	28.633	41			

This might imply that the observed difference in adopted approach is not attributable to the characteristics of the students themselves, but rather to the curriculum to which they are exposed once they commence the branch programme itself. This conclusion still needs to be evaluated within the context of the widely different distribution of male and female students across the three branches; the context here is that table 4.8 shows that male students are in a much higher proportion in the mental health branch, and that table 7.7 shows that when the preferences of male and female students are compared, they demonstrate a very similar pattern of preference as do mental health students nursing compared to adult nursing students. It was previously reported (no 6. above) that, in an ANOVA analysis with just male students, there was no statistically significant difference in the preferences among students in the three branches; this would seem to suggest that any difference in overall preference for the students in the three branches is not the result of the effect of the male students in the branch. Therefore the numbers of male students is irrelevant in this context.

Thus it is tentatively concluded that the observed differences in preference for the deep and surface approaches to learning are attributable to the branch programme that the student is undertaking.

8. Dispersion of data for the different approaches to learning.

The dispersion of the mean scores for each approach to learning may be seen to be a measure of the degree of congruity that existed among the total student population for the approaches. It is worthy of note that the dispersion (as manifest through the standard deviation) was found to be lowest for the deep approach to learning (table 9.7):

Table 9.7: Mean Scores and Standard Deviations for all students in the population

	Deep Approach	Surface Approach	Strategic Approach
Mean	3.7771	3.2433	3.5917
N	263	263	263
Standard Deviation	.5283	.6858	.6463

These mean scores and standard deviations relate to the actual scores based upon the original constructs (and can therefore be seen within the context of a Likert scale of 1 to 5). As can be seen the lowest level of congruity in the student population was found to be in relation to the surface approach to learning.

9. Entry Qualifications seem to make a difference - at least in relation to the surface approach .

Tables 7.11/7.12 (and tables 5.24/25 - original constructs) showed that there was a statistically significant difference in the level of preference expressed for the surface approach to learning dependant upon the previous academic qualifications attained by the students. This was not found in relation to the other two approaches. What was not clear was whether this difference was attributable to the entry qualifications themselves as opposed to other variables that have been shown to be relevant. In the attempt to explore this ANOVAs were undertaken on the factor scores of just the mature students (over the age of 23 years) grouped according to their entry qualifications (table 9.8) and then just the younger students (aged 23 years and below) (table 9.9):

Table 9.8: Analysis of variance amongst factor scores according to entry qualifications *MATURE STUDENTS ONLY*

		Sum of Squares	df	Mean Square	F	Sig.
FACTOR1	Between Groups	2.103	7	.300	.238	.975
	Within Groups	148.837	118	1.261		
	Total	150.940	125			
FACTOR2	Between Groups	45.739	7	6.534	5.342	.000
	Within Groups	144.322	118	1.223		
	Total	190.060	125			
FACTOR3	Between Groups	6.176	7	.882	1.107	.363
	Within Groups	94.027	118	.797		
	Total	100.204	125			

Table 9.9: Analysis of variance amongst factor scores according to entry qualifications STUDENTS AGED 23 YEARS AND UNDER ONLY

		Sum of Squares	df	Mean Square	F	Sig.
FACTOR1	Between Groups	3.912	6	.652	.529	.785
	Within Groups	144.219	117	1.233		
	Total	148.131	123			
FACTOR2	Between Groups	4.658	6	.776	.827	.552
	Within Groups	109.867	117	.939		
	Total	114.525	123			
FACTOR3	Between Groups	4.079	6	.680	.939	.470
	Within Groups	84.715	117	.724		
	Total	88.794	123			

Table 9.9 clearly shows that there is no statistically significant difference in the implied preferences for the three approaches to learning when the younger students are grouped according to their previous academic attainments. However table 9.8 shows that the original finding, that there is a difference in preference in relation to the surface approach, is maintained ($p=0.000$) when just the more mature students are examined. The likelihood of there being any real difference in implied preference for the deep and strategic approaches between different entry qualification groupings is less than when the total population of students is analysed. This would suggest that, despite the age of the respondents being a known factor, the entry qualification is also a factor at least in relation to the surface approach to learning.

The effect of the gender of the students in the two age bands was examined by undertaking an ANOVA of the means of just the male and then just the female students in the entry qualification classifications in each age band:

Young age group MALES - there was no statistically significant difference in the level of preference for the surface approach expressed by the students in the various entry qualification groupings ($p=0.167$).

Young age group FEMALES - there was no statistically significant difference in the level of preference for the surface approach expressed by the students in the various entry qualification groupings ($p=0.685$).

Mature age group MALES - there was no statistically significant difference in the level of preference for the surface approach expressed by the students in the various entry qualification groupings ($p=0.354$).

Mature age group FEMALES - As would be expected from the above, there was a statistically significant difference ($p=0.00$) between the means of the previous educational attainment groups in relation to the surface approach to learning.

The parallel between these results and those shown in tables 9.8 and 9.9 would suggest that the gender distribution amongst the qualification groups was not a significant factor in the difference between the levels of preferences found.

It has previously been demonstrated that the branch programme of the student seems to be a determining factor in relation to preferences for the different approaches to learning. In order to attempt to ascertain whether the branch programme of the students within the various entry qualification groups was significant, the distribution of the three branches amongst the qualification groups was submitted to chi-square analysis:

Table 9.10: Chi-square analysis of distribution of students on different branches amongst the entry qualification groupings.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.396 ^(a)	14	.421
Likelihood Ratio	14.927	14	.383
N of Valid Cases	252		

(a) 13 cells (54.2%) have expected count less than 5. The minimum expected count is .38.

This would suggest that it is highly unlikely ($p=0.421$) that there is any real difference between the distribution of the three branch programmes amongst the various entry qualification classifications.

Thus it is concluded that, in relation to the surface approach to learning, there is a real difference in the implied level of preference expressed by students classified according to their previous academic attainments, and that this difference is linked to those previous qualifications. The mean

scores attained by the different entry qualification groups for the factor that represents the surface approach should therefore be reviewed:

Table 9.11: Mean score on Surface factor of different entry qualification groups

Group		Factor2
1	Mean	3.8338
	N	8
	Std. Deviation	1.0985
2	Mean	4.8086
	N	42
	Std. Deviation	1.2266
3	Mean	4.7220
	N	4
	Std. Deviation	1.1749
4	Mean	5.2776
	N	34
	Std. Deviation	1.1914
5	Mean	5.3291
	N	118
	Std. Deviation	1.0390
6	Mean	5.6733
	N	15
	Std. Deviation	.7650
7	Mean	4.4900
	N	16
	Std. Deviation	1.1459
8	Mean	6.1220
	N	15
	Std. Deviation	.5929
Total	Mean	5.1927
	N	252
	Std. Deviation	1.1446

Thus, on the basis of the evidence from this student population, there is marked increase in the level of preference for the surface approach for students in group:

8 = Access to Higher Education Course, and

6 = NVQ or Advanced GNVQ

and the lowest level of preference for this approach being demonstrated by students with previous experience of higher education i.e. in group:

1 = Previous degree, and

3 = University Diploma or Certificate

Perhaps surprisingly, students entering with D.C. Test (group 7) also showed comparatively low levels of preference for the surface approach.

10. There is a relationship between the students' personal conceptions of learning and their preferred approach to learning.

In section A of the inventory, students were asked to rate various conceptions of 'what is learning'. Entwistle (1997) suggests that three of the statements relate to the surface approach and three relate to the deep approach. A mean score for these groups was determined and the outcome compared to the factor scores for factors 2 (surface approach) and factor 3 (deep approach) by means of a Spearman's rho (since the data is primarily ordinal) correlation study.

Table 9.12: Spearman's rho correlation study of student perceptions of 'what is learning' and factor scores.

		Factor2	Factor3	Surface Concepts	Deep Concepts
Factor2	Correlation Coefficient	1.000	-.204	.269	.025
	Sig. (2 tailed)	.	.001	.000	.695
	N	257	257	257	257
Factor3	Correlation Coefficient	-.204	1.000	.035	.224
	Sig. (2 tailed)	.001	.	.572	.000
	N	257	257	257	257
Surface Concepts	Correlation Coefficient	.269	.035	1.000	.292
	Sig. (2 tailed)	.000	.572	.	.000
	N	257	257	257	257
Deep Concepts	Correlation Coefficient	.025	.224	.292	1.000
	Sig. (2 tailed)	.695	.000	.000	.
	N	257	257	257	257

As inferred in Chapter 5 (tables 5.1-5.4)) there was no clear distinction between the student perceptions of definitions of learning that relate to surface and deep approaches (there is a statistically significant ($p=0.00$) correlation, albeit with a comparatively low value of r_s , between their recorded perceptions of each conception). There is, however, a statistically significant ($p=0.001$) negative correlation between attitudes toward factors 2 and 3 (table 9.12). These two observations explain the very low correlations that exist between attitudes towards surface concepts and factor 3 and deep concepts and factor 2. Though still not particularly high, there are statistically significant correlations ($p=0.00$ in each case) for the correlation between factor 2 and surface concepts ($r_s = .269$) and factor 3 and deep concepts ($r_s = .224$). Thus it may be concluded that

there is a relationship between the students' personal conceptions of what learning is and their preferred approach to studying.

12. There is a relationship between students' preferences for different types of course and teaching and their preferences for different approaches to learning.

Despite the earlier assertions in Chapter 5 that two of the statements in section c of the inventory (f and h) skewed the analysis, it was decided that the students' reactions to these statements should be included in this analysis of the relationship between their specified preferences for different types of course and teaching and their implied preferences for the deep and surface approaches to learning.

Table 9.13: Spearman's rho correlation study of student preferences for different types of course and teaching and factor scores.

		Factor2	Factor3	Deep Types	Surface Types
Factor2	Correlation Coefficient	1.000	-.196	-.212	.360
	Sig. (2 tailed)	.	.001	.001	.000
	N	263	263	263	263
Factor3	Correlation Coefficient	-.196	1.000	.493	-.127
	Sig. (2 tailed)	.001	.	.000	.039
	N	263	263	263	263
Deep Types	Correlation Coefficient	-.212	.493	1.000	-.092
	Sig. (2 tailed)	.001	.000	.	.139
	N	263	263	263	263
Surface Types	Correlation Coefficient	.360	-.127	-.092	1.000
	Sig. (2 tailed)	.000	.039	.139	.
	N	263	263	263	263

It should be noted that the reason for the value of r_s being slightly different for the factor 2 / factor 3 correlation when compared to table 9.12 is that in each analysis some (though not the same) cases had to be excluded because of incomplete data recorded by respondents.

In this analysis, there are comparatively strong positive correlations between preferences for deep types of teaching and course and factor 3 and between preferences for surface types of teaching and factor 2 ($p=0.00$ in each case). Though not always statistically significant, there are negative correlations between all other combinations. Thus it may be concluded that, in this population, the students distinguish between different types of teaching and course, and polarise their preferences according to the approaches to learning implied by those types. There is also a relationship

between those preferences and the level of favour attributed by the students to the different approaches to learning.

13. There appears to be a relationship between the outcome of student self assessment of performance and preferences for different approaches to learning.

Students were asked to self-evaluate their performance in assessed work on the course to date; this on a scale of 1 (rather badly) through to 9 (very well). A correlation study (Spearman's rho) was undertaken between these scores and the factor scores achieved by the students in the three factors identified.

Table 9.14: Spearman's rho correlation study of student self assessment of performance factor scores.

		Self Assessment of Performance
Self Assessment of Performance	Correlation Coefficient	1.000
	Sig. (2 tailed)	.
	N	255
Factor 1	Correlation Coefficient	.372
	Sig. (2 tailed)	.000
	N	255
Factor 2	Correlation Coefficient	-.237
	Sig. (2 tailed)	.000
	N	255
Factor 3	Correlation Coefficient	.271
	Sig. (2 tailed)	.000
	N	255

This analysis would suggest that the strongest correlation ($r_s = .372$, $p=0.00$) exists between the level of achievement in assessments and the preference for factor 1 (strategic approaches to learning). It is interesting, within the context of the relationship between deep and strategic approaches to learning, that the correlation is still statistically significant ($p=0.00$) for the relationship between performance and preference for deep approaches (factor 3). However a negative correlation is seen when the relationship between performance and preference for surface approach (factor 2) is examined; in other words students who have implied an increased preference for surface approaches perceive that they are not performing particularly well in summative assessments. In the absence of actual data concerning the grades achieved by students, it would probably not be appropriate to draw firm conclusions from this final section of the inventory.

The aim of this chapter has been to attempt to draw some conclusions by reviewing and combining the various analyses reported in earlier chapters. This has enabled some tentative deductions to be made about the characteristics and preferences of DipHE Nursing students at De Montfort University. The implications of these will be discussed in the final chapter.

Discussion and Implications for Nursing Education.**Introduction.**

Although there is no known reason to suggest that students undertaking the Diploma of Higher Education in Nursing programme at De Montfort University are any different from students undertaking similar courses across the United Kingdom, it should be stated that this discussion and the implications for nursing education relate primarily to De Montfort University. As has been earlier identified, many issues related to approaches to studying and learning would appear to be tied up intrinsically with the curriculum. Because the curricula in even apparently similar departments of nursing education will all be unique, extreme care must be taken to ensure that comparisons are valid. Notwithstanding, it is hoped that this study may have some relevance to other DipHE Nursing programmes and may provide useful indicators for further investigation and discussion.

There are two basic premises that underpin this research. Firstly, there is an assumption, borne out in the literature, that the constructs (i.e. the classification of approaches to studying and learning as 'deep', 'surface' and 'strategic') which form the basis of the ASSIST Inventory are helpful, meaningful and potentially transferable to nursing education. Secondly, there is a basic assumption that deep approaches are what university departments should aspire to. It is argued that this is the case as Stiernborg et al. (1997) affirm:

"Nursing education should provide an impetus to increase nurses' deep level learning and reduce their surface level learning as they progress through the 3-year training. It is also important to stimulate and nurture this development process in order to foster self-directed learning in their continuing education" (p126)

Given these two premises, it has been shown that, with recommendations for specified minor amendments, the ASSIST Inventory is a comparatively robust instrument for use in nursing education and that the original constructs were reliably reaffirmed using factor analysis techniques. This finding is consistent with the conclusions of Stiernborg et al. (1997) using an earlier version of the inventory and allows the recommendation to be made that further use of the ASSIST Inventory with other nursing students would be helpful and informative.

Strengths and Weaknesses:

A brief analysis of some of the strengths and weaknesses of the study may be helpful to future researchers. The conclusion that there was a statistically significant difference between the three cohorts in relation to some biographical criteria potentially jeopardised the validity of the research design. The fact that, for each criterion, it was demonstrable that there was one cohort that differed significantly from the other two meant that the difficulties in analyses could be largely overcome. Nevertheless any attempt to replicate this study should take this issue into consideration. An alternative model may have been to use random sampling or stratified sampling from each cohort (based upon appropriate representation of various age groupings, gender or nursing speciality and previous academic qualifications). Such a solution would have circumvented the problems of inequalities between cohorts. Indeed, since all the students in the three cohorts provided data, it would have been possible to extract randomly stratified groups retrospectively in order to obtain statistically similar groups. However this option was not feasible since it would inevitably have resulted in a total population size that would be smaller than the recommended minimum for valid factor analysis.

A further issue relating to the research design should be briefly considered. Using three different cohorts, at different stages of their programme means that the more senior groups will have lost more students (through academic failure and natural attrition) than the more junior groups. Since such students are 'lost' it is not possible to assess their preferences for different approaches to learning. Consideration would have to be given to the risk that the observed factor scores for the more senior groups are skewed by the absence of scores from students who have left. Since there is no evidence at all regarding the likelihood of leavers favouring one approach more than others (and indeed the limited evidence reported at the end of Chapter 7 suggests that there is no difference between the preferences of 'leavers' and of those continuing on the course) it would be inappropriate to speculate on the effect of this issue. The only meaningful potential implication is to ask whether this observation has an effect on the comparisons between groups. A strategy to eliminate the variable should also be built into future research proposals.

A detailed discussion of the ethical considerations of this study was provided in Chapter 3, but two areas bear repetition. Firstly, not least because of the fact that the research revealed differences in approach to

learning between men and women, there is the issue of the fact that the researcher is male and, as a result of his role within the organisation, may be seen by the respondents as being in a position of 'power'. As stated in Chapter 3, every effort was made to minimise the implications of this; indeed the risks are arguably less in a research design based upon collection of data largely through a questionnaire completed and returned during classroom time. However the collection of at least part of the qualitative data involved interaction between the researcher and small groups of students. Whilst the qualitative data collected would appear to suggest that the students did not feel too inhibited to express their feelings, the effect of the gender and position of the 'interviewer' should be taken into consideration.

This study did not set out to undertake a detailed evaluation of the curriculum with a view specifically to assessing its impact on the approaches to learning. Had that been the case, the approach to the collection of qualitative data would have been very different, with focused questions and specific areas addressed. The outcome of the more open approach is that there is a propensity for students just to address concerns rather than to provide a balanced appraisal of the situation. There was thus a tendency for the qualitative data to highlight weaknesses and not necessarily the strengths as well.

Recruitment and Selection Issues

It would be unacceptable for the demonstration of deep approaches to learning by potential students to be a specific criterion for selection because one of the aims of university education is to enhance the ability of students to utilise deep strategies. Clearly therefore students could not be excluded because they do not meet, at the beginning, one of the end objectives. Notwithstanding, a question that is likely to be asked is whether this research provides any information or insights that could inform the process of recruitment and selection of students for nursing programmes. Even before considering the ethical and moral issues, the answer to this question would have to be 'no'. There are three biographical areas that have been tentatively demonstrated to have an effect on the approaches to learning favoured by students, and these characteristics are:

- age
- gender
- previous academic attainments

Frankly, it would have to be said that, equal opportunities issues apart,

there are simply not enough potential applications for there to be any strategy to, for example, increase (at the expense of other groups) the recruitment of more mature students, or more males, or more postgraduate students. Similarly, this research has made no attempt to determine whether it is some intrinsic characteristic of mature students or men that encourage them to favour deep approaches to learning, or whether they have an enhanced ability to interact with the curriculum (or even 'overrule' the curriculum) in a way that younger students or, to a lesser extent, females do not. This would be an important area for further investigation.

Gibbs (1992) summarises the findings of much important research (*inter alia*, Marton and Säljö, 1984; Entwistle and Ramsden, 1983) as well as his own, when he is quite clear that most students can modify their approach to learning in both positive and negative ways. So the starting point is not important; what is important is to concentrate on developing strategies that, firstly, attempt in a valid manner to determine the approaches to learning favoured by students and, secondly, that are geared towards encouraging an environment and curriculum that values and expects deep approaches to studying and meaningful learning. From this perspective, then, it is argued that the ASSIST Inventory is a helpful analytical tool.

Curriculum and its effect on approaches to learning

A detailed discussion has been provided in the literature review (Chapter 2) of the features of curricula that have been shown through earlier research to be likely to engender different approaches to learning within the student population. One of the aims of this study was to develop a greater understanding of the impact of the DipHE Nursing curriculum on the approaches to learning adopted by its students. This did not imply an intention to undertake a formal and detailed evaluation of the various parts of the curriculum. However, it is argued that the aim of 'a greater understanding' has been achieved since a range of issues has emerged in the study. This section will, therefore, focus primarily on those issues.

It was found that adult nursing students exhibited the highest level of preference for surface approaches of the three specialities and the lowest level of preference for deep approaches. Mental health nursing students showed the opposite tendencies, with the highest level of preference for deep approaches and the lowest for surface. In Chapter 9, the effects of a range of potentially valid variables were stripped away until it could be

tentatively concluded that it was the branch programme curriculum itself that lead to this difference.

The students themselves, without knowing the quantitatively demonstrated effect, suggested some possible explanations when they discussed:

- the greater workload of adult nursing students in things like seminar preparation and presentations,
- the more factual nature of the adult nursing curriculum compared to the broader and more conceptually orientated curriculum of mental health nursing,

The Subject Leader for mental health nursing (a senior lecturer with responsibility for the branch programme) was asked to conjecture why students on that branch programme might demonstrate the preferences shown. His response was interesting:

"Towards the end of the second year of the programme, mental health nursing students participate in a module entitled 'Therapeutic Interventions'. In this module they undertake an assignment which involves analysing two transcripts of real dialogue taken from both an individual and group therapy session. Students are asked to apply a variety of theoretical perspectives to each transcript in an attempt to deconstruct the substance of the client/therapist interaction. Psychodynamic theories are often abstract in nature, and this exercise encourages the student to conceptualise the constructs, before being able to interpret and relate them to the real world of mental health nursing.

My own observations reveal a noticeable change in the dynamics of groups who have completed this module, and perhaps more importantly, the growth in confidence of individuals within each group. The module seems to turn them into mental health nurses who are able to peel back the veneer of issues which are presented, and offer a depth of considered analytical ability that either I failed to recognise at the outset of the module, or which had developed during the module" [the latter seems the more likely interpretation!]

Clearly this is one of the more interesting findings from this student population, and it would seem to be important to investigate in some depth the differences between the curricula of the various branch programmes with the objective of enhancing the potential of all students to utilise deep

learning strategies. However Biggs (1993) urges caution when the desire to 'tinker' with the curriculum arises. The DipHE Nursing students were quite clear in their qualitative statements about the features that they value in their teachers, and teachers often seem to perceive students as lacking something (whether that be ability or motivation). Biggs (1993) suggests that what is called for is an overview of the whole situation:

"... teaching, assessment, and student perceptions striking a balance that supports a way of coping Rhetoric, technology, and the social structure of the institution need to be mutually supportive."
(p15)

For example, the results in this study have shown that there is a relationship between the students' personal conceptions of learning and their preferred approach to learning. It may be deduced that if time is spent exploring the different conceptions of learning, this has the potential to encourage deep approaches to learning. Gibbs (1992; p5) concludes that there are some students who adopt a surface approach:

"because they have a conception of learning which does not make it possible for them to go about learning in any other way."

It was also concluded in the previous chapter that there is a relationship between students' preferences for different types of course and teaching and their preferences for different approaches to learning. Exploration and evaluation of different types of teaching, and certainly the utilisation of teaching techniques that support deep approaches to learning are, therefore, likely to pay dividends.

A review of the observations made by students in their qualitative data is salutary in the context of the course characteristics said to be associated with surface approaches (Gibbs, 1992):

- A heavy workload

- Relatively high class contact hours

- An excessive amount of course material

- A lack of opportunity to pursue subjects in depth

- A lack of choice over subjects and a lack of choice over the methods of study

- A threatening and anxiety provoking assessment system

It might be concluded that all students on the DipHE Nursing programme would be extremely likely to adopt surface approaches (or, at best, strategic approaches). This observation warrants reiteration that this

student population, when questioned about their current programme reported that they liked least:

'courses where we're encouraged to read round the subject a lot for ourselves',

and showed the greatest preference for:

'books which give you definite facts and information which can easily be learned'.

It is almost surprising, therefore, that the deep approach was the most favoured amongst the student population. This is possibly attributable to the fact that some of the above listed features are mitigated against in nursing education because of the fact that the students assert that they are there for vocational reasons and tend to be extremely well internally motivated.

The qualitative data also suggests that students do indeed demonstrate the willingness to adapt their approach to learning according to how they perceive what the situation demands or offers. This would suggest that the faculty should review a range of issues with the objective of ensuring that the curriculum shows that deep approaches are valued. For example:

- the nature and kind of assessments,
- the relationship and integration of theory and practice,
- removal of threat
- the philosophy and culture of the department; this includes freedom of choice and the students' perception of their value.

Two of these issues have not been addressed elsewhere, namely assessment and the philosophy and culture of the department. Firstly, assessment. Students are influenced by the demands of the set task; if they perceive that all is required is the regurgitation of facts, they are likely to adopt surface approaches to studying the material. As Cust (1996) points out, this is particularly pertinent in nursing education where there is pressure continuously to increase the numbers of students in a strategy aimed at redressing human resource shortfalls. There is a temptation to attempt to manage the situation of increasing student numbers by extending the reliance upon less teacher-intensive assessment strategies such as objective testing. The implications of such a policy are clear. On a related issue, much emphasis has been placed in the literature (for example, Marton and Säljö, 1984) on the subject of 'threat' (extrinsic motivation) and anxiety influencing the approach to learning adopted. The presence of extrinsic motivation and anxiety has been found to lead to

surface approaches; their absence leads to deep approaches. In this professional programme, assessments were seen as threatening and anxiety provoking, not particularly because of the degree of difficulty, but because students know that failure on two attempts leads to discontinuation. Whilst acknowledging the professional and academic rationale and implications, the department needs to explore ways of managing this in a less threatening and anxiety provoking manner.

Secondly the issue of the philosophy and culture of the department warrants some brief further consideration. It is not easy to make freedom of choice available to students on a course where there is such a high degree of external regulation - professionally, statutorily, by university and Health Service policies and procedures, and on which there are so many students and time is so tightly controlled. On the whole, students were mature and intelligent enough to understand that, but did feel that, perhaps, there might be slightly more latitude demonstrated. Perhaps more significantly, was the widespread concern expressed in the qualitative data that the students felt that they were not valued because they felt they received insufficient feedback both on assessments and in relation to issues that they raised in programme and module evaluations. Addressing these issues may potentially facilitate the development of a greater preference for deep approaches to learning and studying and the attendant benefits for patient care.

Recommendations for further research:

a. The effect of ethnicity on approaches to learning. A range of biographical information relating to each respondent was collected for analysis; this included:

- age
- branch speciality
- gender
- previous academic qualifications

What was not collected was the ethnic origin of the respondent. This data would have provided unique and very interesting information, not least within the context of the ambition of the School of Nursing and Midwifery to continue to enhance recruitment from the minority ethnic groups within the geographical catchment area.

b. Relationship between Academic Performance and Approaches to Learning.

Various researchers have sought to investigate (Sadler-Smith, 1996, Stiernborg et al., 1997; Richardson, 1995) the relationship between implied preferences for different approaches to learning and the academic performance of the students (albeit the three studies cited utilised a former version of the inventory). Such a correlation was not part of the research design for this particular study, but having demonstrated the validity of the inventory with nursing students, it would be interesting to attempt to ascertain whether there was a relationship between the performance of the students in programme assessments and their preferences for the different approaches to learning.

c. Academic entry qualifications. There remain some questions associated with the stated preferences for different approaches and the previous academic experiences of the student. The relevance of this issue to recruitment and selection activities has been discussed elsewhere, but other issues have not been considered. For example, does the fact that the September 1995 cohort is different from other cohorts in terms of previous qualifications mean that attrition (natural and academic) has changed the group profile? It would be important to obtain information relating to any correlation between previous qualifications and attrition in a further study.

d. Relationship between gender and approach to learning. It was found that male students seemed to demonstrate a greater preference for deep approaches than their female colleagues and a lower preference for surface approaches. This concurs with the findings of Sadler-Smith (1996) who also found, as in this study, that there was no statistically significant difference in relation to male and female students' preference for strategic approaches. Clarke (1986) in his analysis of male and female medical students did find a difference in relation to this construct. This issue of the effect of gender is clearly one that warrants further research, both with other cohorts of nursing students and with students in other specialities. It might be argued, for example, that the public perception of the role of the nurse being more generally associated with women, and the subsequent fact that only approximately 16% of nursing students are men, means that only men with certain specific attributes or characteristics are likely to enter the profession. Put another way, are the male students on the DipHE Nursing

programme typical of male students on other university courses? Or does the difference between male and female students arise from some characteristics of the curriculum itself?

e. Relationship between age and approach to learning. Although researchers have speculated on the potential reasons why more mature students tend to favour deep approaches to learning (for example Richardson, 1994; Richardson, 1995) there would appear to be very limited literature or research as to the actual reasons for this. Glackin and Glackin (1998) in their related study suggest that there has been no published research at all in relation to nursing education students. There are a range of questions ripe for further research, for example:

- i Does the difference in preference relate to enhanced motivation?
- ii Does it stem from the wider range of life experiences?
- iii Does the curriculum in some way allow more mature students to interact more 'successfully' with it?
- iv Is the difference between older and younger students associated with the younger students' more recent involvement in secondary education?

These issues were beyond the scope of this study, but consideration should be given to pursuing them in a subsequent study.

Concluding remarks

Nursing education has changed dramatically in the space of a comparatively few years. Ten years ago, the concept of the higher education of the majority of student nurses was still an ambition. In Leicester, the process of change continues, with the early Diploma and Degree programmes now having been evaluated, modified and re-developed. There will soon be sufficient data to commence the evaluation of the second wave of courses and students. What is clear is that an immense amount has been achieved, both by the teaching staff, many of whom have had to prepare themselves to teach and assess at the level of higher education for the first time, and by the students. The latter have risen incredibly well to the challenges of being in a new department with new curricula which demand the development of both practice and academic skills. Often the students do not possess the same level of prior educational achievement as other university students. For example, over 50% of the sample population were admitted to the programme by fulfilling the statutory entry requirements but with qualifications below the normal minimum of entry to University programmes.

It is extremely rewarding to be able to demonstrate that the greatest preference amongst students undertaking the Diploma of Higher Education in Nursing programme of De Montfort University is for deep approaches to learning and studying. There is no room for complacency for it has been shown that this preference is neither particularly strong nor to the exclusion of the alternative approaches (tables 5.14 and 7.3). There is thus still room for improvement. It is, however, worthy of note that even this degree of preference is not a universal finding of studies of this type; Gibbs (1992) in his large scale research into the learning approaches of students from a wide range of academic and professional disciplines (but excluding nursing) found that the surface approach was generally the most common.

While implying absolutely no criticism of academic faculty, it appears that the preferences for deep approaches are, at times, despite the curriculum rather than because of it. It remains to be seen whether university departments of nursing education can rise to the challenge of making such approaches still more prevalent. The point was made at the beginning of this chapter that cultivating the development of deep learning orientated students will help to foster self-directed learning in their continuing education. Perhaps this statement falls short of the ultimate objective. A nursing profession whose members continue to learn will be better equipped to give the highest quality of care to its patients.

Appendix I

The ASSIST Inventory

De Montfort University
Faculty of Health and Community Studies
Department of Nursing and Midwifery

A S S I S T
Approaches and Study Skills Inventory for Students
(Short version)

This questionnaire has been designed to allow you to describe, in a systematic way, how you go about learning and studying. The technique involves asking you a substantial number of questions which overlap to some extent to provide good overall coverage of different ways of studying. Most of the items are based on comments made by other students. Please respond truthfully, so that your answers will **accurately** describe your **actual** ways of studying, and work your way through the questionnaire quite **quickly**. Thank you.

Background Information

Name or Identifier: **Age:** years **Sex:** M / F

University: De Montfort University **Department:** Nursing and Midwifery

Course: DipHE Nursing **Group Code:**

A. What is Learning?

When you think about the term 'LEARNING', what does it mean to you?

*Consider each of these statements carefully, and rate them in terms of how close they are to **your own** way of thinking about it.*

	Very close	Quite close	Not so close	Rather different	Very different
a. Making sure you remember things well.	5	4	3	2	1
b. Developing as a person.	5	4	3	2	1
c. Building up knowledge by acquiring facts and information.	5	4	3	2	1
d. Being able to use the information you've acquired.	5	4	3	2	1
e. Understanding new material for yourself.	5	4	3	2	1
f. Seeing things in a different and more meaningful way.	5	4	3	2	1

Please turn over

B. Approaches to Studying

The next part of this questionnaire asks you to indicate your relative agreement or disagreement with comments about studying again made by other students. Please work through the comments, giving your **immediate** response. In deciding your answers, think in terms of your current course - the Diploma of Higher Education in Nursing. It is also very important that you answer **all** the questions; please check that you have done so.

5 = agree (✓) 4 = agree somewhat (✓?) 2 = disagree somewhat (X ?) 1 = disagree (X)

Try not to use: 3 = unsure (??), unless you really have to, or if the comment cannot apply to you or your course.

	✓	✓?	??	X ?	X
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 find myself wondering whether the work I am doing 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're having 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's important for me to feel that I'm doing as well as I really can on the course here	5	4	3	2	1
11. I try to relate ideas I come across to those in other modules 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
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 tutors' comments on course work to see how to get higher marks next time	5	4	3	2	1
16. There's 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 pretty 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 bits 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 focused	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 about whether I'll 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'm 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'm good at following up some of the reading suggested by lecturers or tutors	5	4	3	2	1

Please turn over

	✓	✓?	??	x?	x
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
29. When I look back, I sometimes wonder why I ever decided to come here	5	4	3	2	1
30. When I'm 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 semester, rather than leave it all until the last minute	5	4	3	2	1
32. I'm not really sure what's important in lectures so I try to write 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'm 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 the things I have to remember	5	4	3	2	1
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 to 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 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

Please feel free to add any comments you may wish to make about this section:

Please turn over

C. Preferences for different types of course and teaching

5 means definitely like (✓) 4 = like to some extent (✓?) 2 = dislike to some extent (X?)
1 means definitely dislike (X)

Try not to use: 3 = unsure (??), unless you really have to, or if the comment cannot apply to you or your course.

a.	lecturers who tell us exactly what to put down in our notes	5	✓?	??	x?	x
b.	lecturers who encourage us to think for ourselves and show us how they themselves think	5	4	3	2	1
c.	exams which allow me to show that I've thought about the course material for myself	5	4	3	2	1
d.	exams or tests which need only the material provided in our lecture notes	5	4	3	2	1
e.	modules in which it's made very clear just which books we have to read	5	4	3	2	1
f.	modules where we're encouraged to read around the subject a lot for ourselves	5	4	3	2	1
g.	books which challenge you and provide explanations which go beyond the lectures	5	4	3	2	1
h.	books which give you definite facts and information which can easily be learned	5	4	3	2	1

Please feel free to add any comments you may wish to make about this section:

Finally, how well do you think you have been doing in your assessed work overall, so far?

Please rate yourself **objectively**, based upon the grades you have been obtaining:

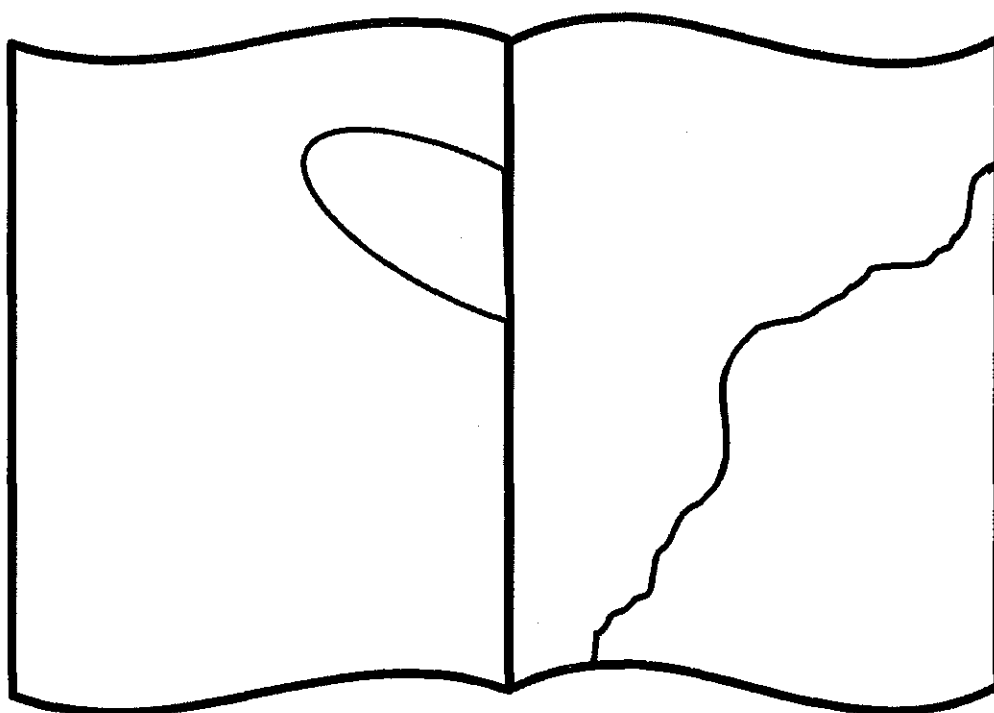
<i>Very well</i>		<i>Quite Well</i>		<i>About Average</i>		<i>Not so well</i>		<i>Rather badly</i>
9	8	7	6	5	4	3	2	1

Thank you very much for spending time completing this questionnaire; it is much appreciated.

Appendix II

Letter of permission to use ASSIST Inventory

SPECIAL NOTICE



DAMAGED TEXT - INCOMPLETE IMAGE



6th January 1998

Mr P. Pleasance
5 Stockwell Road
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Leicester
LE2 3PN

CENTRE *for* RESEARCH ON LEARNING
and INSTRUCTION

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Dear Mr Pleasance

Thank you for your letter of 3rd January. You do not need written permission to use the inventory, I am happy that you use it in your research. I also enclose a paper that should help explain the evolution of ASSIST.

Yours sincerely

N.J. Entwistle
BP Professor N.J. Entwistle

Appendix III

Letter to students inviting them to participate in research

11/5/1998

Dear Student

I am hoping that you will agree to participate in a piece of research that I am currently undertaking as part of my doctoral studies with the University of Leicester. My research interest lies in the learning styles adopted by students of nursing. Learning styles can be measured in various ways, but the way that I have chosen is to use the "Approaches and Study Skills Inventory for Students (ASSIST)" developed by the University of Edinburgh. As far as I can tell, this has never been used before with nursing students in the U.K. so I am particularly interested to test the validity of this tool with people such as you. If all goes well, I anticipate that I will be able to analyse the patterns of the approaches to studying shown by our DipHE Nursing students. I believe that this is a valuable piece of research that should be beneficial both to you and to future students.

Please note that your participation in my research is totally voluntary. The Department of Nursing and Midwifery has given me permission to ask you to complete the questionnaire, and I am pleased to invite you to do so. Obviously I hope that you feel that it would be worthwhile to assist me, but once again I would stress that your involvement is not in any way compulsory.

Normally responses obtained in research like this are totally confidential. If you wish your response to be confidential, then that is fine - leave the 'Name or Identifier' space blank. However it is possible that once detailed analysis has taken place, I may be able to advise respondents of ways in which their studying and learning can be enhanced or made even more effective. Obviously I can only do that if I can identify which questionnaire was filled in by whom. If you wish to keep that option open, I would suggest that rather than write your name on the questionnaire, you simply insert the unique and confidential number that I will supply. I will guarantee that no-one other than myself will ever have access to those numbers, and that they will never be published. That way your anonymity is ensured unless you want to discuss your approaches to studying and learning with me.

I hope that all of this is clear. Once again, please accept my thanks for your contribution. If I can provide any further explanation or clarification, please do not hesitate to ask me.

Yours sincerely

Paul Pleasance

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