An investigation into student self-perceptions of their approaches to study in further education

McLaren, Elizabeth

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Elizabeth McLaren

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ABSTRACT

The thesis opens with a consideration and critical analysis of the theoretical bases influencing my early teaching, i.e. Piaget, Skinner and Rogers, which is, in a real sense, my personal and intellectual starting point. This leads to a review of pertinent literature which identifies some key concepts of teaching, learning and study approaches, i.e. Biggs's Study Process Questionnaire (SPQ)(1987), Honey and Mumford's Learning Styles Questionnaire (LSQ)(1986), and Buzan's ideas on such study techniques as mind-mapping. The Q-sort, an approach devised by Stephenson (1953) and used by Rogers to assess growth and change in a client's self-esteem, is then adapted and used as a basis for the empirical investigation in this thesis. This technique is used to elicit information from further education students about their individual, and unique, ideas on their approaches to learning. Inferences about the data collected from the first cohorts (the 1996-8 'A' level and 1997-9 GCSE students) result in further refinements to the Q-sort for its administration with the second cohorts (the 1997-9 'A' level and 1997-8 GCSE students). Students' Q-sorts, combined with lecturer predictions of examination outcome, will be concurrently validated by comparing them with SPQ and LSQ scores to establish concurrent validity. Q-sort scores and lecturer predictions will also be compared with examination grades actually achieved, to establish predictive validity. The thesis closes by drawing defensible inferences from the data and presenting suggestions for further research and educational practice.

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FOREWORD

This study is methodologically complex. While the introductory chapter describes a straightforward start to the study, my efforts to enhance the validity and reliability of its findings led me to use methods of data elicitation with four different student groups (referred to as cohorts) over a period of three years. (See the table below.)

TABLE SHOWING THE VARIOUS COHORTS FROM WHOM DATA HAS BEEN COLLECTED AND THE TIME SCHEME INVOLVED

DATE	COHORTS			
	1996-8 'A' level.	**1996-7 GCSE.**	**1997-9 'A' level.**	**1997-8 GCSE.**
Sept 1996	LSQ, Q-sort	LSQ, Q-sort		
May 1997	SPQ,second LSQ	SPQ,second LSQ, changes to Q-sort		
June 1997	Group interviews. First 'A' level module.	GCSE examination.		
Sept 1997	Changes to Q-sort Questionnaires 1 and 2.		SPQ, LSQ, Q-sort	SPQ, LSQ, Q-sort
Jan 1998	Second 'A' level module.			
May 1998			Changes to Q-sort	
June 1998	Third and fourth 'A' level modules		First 'A' level module.	GCSE examination.
Sept 1998			LSQ,SPQ,Q-sort.	
Jan 1999			Second 'A' level module	
June 1999			Third and fourth 'A' level modules	

SPQ = Study Process Questionnaire (Biggs (1987)).
LSQ = Learning Styles Questionnaire (Honey and Mumford (1986)).
Q-sort = My adaptation of the Q-sort.

Having presented a table showing student groups and the time scale involved, it may also be helpful to the reader to show how this complex process hangs together. (See the diagram on the next page.)

DEVELOPMENTAL STAGES OF THIS THESIS

MY NAIVE RESPONSES AS A YOUNG TEACHER IN THE 1960S - the unexamined pedagogical practice of the teacher - David McNamara (1991) - Chapters 1 and 2.

PIAGET - SKINNER - ROGERS
(Some theoretical perspectives on learning / learner behaviour which, as a young teacher was useful in describing and predicting learning behaviour in children.) Chapter 1.

MARTON AND SALJO (1976) - ROSSUM AND SCHENK (1984) - BIGGS (1987)
(Present a different type of model of student learning showing deep and surface approaches to learning - task-based model. This allowed me, as a teacher in further education in the 1990s, to go beyond Piaget, Skinner and Rogers, by giving me a method of quantifying student learning behaviour.) Chapter 3.

HONEY AND MUMFORD (1986)
(Present an alternative model of viewing a student's learning as part of that student's underlying predisposition - disposition-based. This allowed me to take a step away from the task-based typologies of Biggs, to the disposition-based categorisation of student learning.) Chapter 3.

MY FOUR HYPOTHESES
(Using my revised Q-sort technique - Chapter 4)

QUANTIFICATION
(Chi-squared, Spearman's Rho -Chapter 5)

QUALITATIVE DATA
(Student group discussions -Chapter 6)

VALIDITY, SEX DIFFERENCES, INTERVENTION
(Chapter 7)

STUDENT SURVEY
(Questionnaires -Chapter 8)

SUPPORT FOR MY FOUR HYPOTHESES AND MODIFICATIONS FOR LATER COHORTS
(Chapter 9)

REPLICATION STUDY AND EXAMINATION RESULTS
(Chapters 10 and 11)

DISCUSSION
(Chapter 12)

Thus, this thesis begins with generalised explanations of learning, continues through an examination of techniques for measuring student approaches to learning (both task-based and disposition-based), then moves away from the typologies subsequently created by these measuring techniques, to devise a more individually-based method of assessing approaches to study (the revised Q-sort technique). This technique will recognise the spiral (or helical) nature of learning and the need to be able to continuously and cumulatively assess a student's approaches to study.

SECTION ONE

Theoretical bases influencing my teaching and observations on the nature of learning leading to my review of research on study skills.

CHAPTER ONE

Theoretical bases influencing my early teaching: Piaget, Skinner and Rogers.

What intrigues me currently, from a professional point of view, is how students perceive their study approaches. However, the seeds of thought which culminated in this thesis had their beginnings in the 1960s; thus in order to begin writing this research, and to provide a personal context for it, my intention, in Chapter One, is to examine the theoretical bases which influenced my early teaching in the 1960s. These theoretical bases are threefold:

(1) The research of Piaget, which was probably most influential to me at that time, with the developmental cognitive milestones and discovery learning which it engendered, (Piaget (with Inhelder) (1958); Flavell (1963); Sigell and Hooper (1968); Furth (1969)).

(2) The contributions of Skinner which, although somewhat less influential to me, still offered methods of instruction for teachers to use with pupils which took the form of programmed learning and its accompanying schedules of positive reinforcement, (Skinner (1953); Skinner (1958); Sanborn and Schustern (1969)).

(3) The ideas of Rogers whose research and practice, originally on interpersonal relationships in client-centred therapy (Rogers (1959)), was beginning to be assimilated by teachers trying to create a trusting and friendly learning environment, (Rogers

(1969)). (N.B. Similar democratic practices had already been used by Neill in his school, Summerhill (Neill (1962)).

It is hoped that my threefold theoretical bases will provide me with a conceptual framework through which I may, firstly, examine my implicit theories about my teaching; secondly, make these theories explicit and empirically supported by evidence; and thirdly, apply my findings to classroom practice where observations of the outcomes may contribute to further implicit theories.

This threefold conceptual basis is similar to that suggested by Susan Gilmore (1980), who proposed a three-tiered model for the structure of her theory for helping relationships thus:

Level 1: Conceptual framework for an intervention system.

Level 2: General theory of human behaviour.

Level 3: Philosophical assumptions: metaphysical, epistemological, ethical.

My research will begin with my conceptual framework for the introduction into my teaching situation of a medium for enabling students to show me self-perceptions of their learning abilities (Gilmore's Level 1). This conceptual framework will enable me, in Level 2, to examine my implicit theories about the learning behaviour of my students, i.e. Gilmore's 'general theory of human behaviour'. Finally, Level 3, (Gilmore's 'Philosophical assumptions: metaphysical, epistemological, ethical level'), will be concerned with my implicit theories and the wider issues raised by my findings.

Hence, the first chapter of this thesis will examine the conceptual framework of Piaget, Skinner and Rogers, relate it to my own practice as a teacher and my implicit theories, based upon the behaviour of children and the comments of teachers.

Since this thesis is about students' self-perceptions of their study approaches (i.e. students' thoughts on behaviours, both in and out of class which help maximise their chances of succeeding in examinations), the second and third chapters will discuss definitions of different researchers' concepts of study skills and research attempts to measure the study process. This will continue to add to my conceptual framework by examining paradigms, already in existence, which attempt to understand and measure students' study habits. It is then my intention, in later chapters, to make a lateral move in thought, outside the set paradigms, to create a different paradigm for examining students' self-perceptions about their own study abilities. Thus, what begins as an analysis of study approaches, will develop into an analysis of students' self-perceptions of their approaches to study.

1.1 Theoretical bases influencing my early teaching: Piaget

As mentioned in the introduction, I was interested in Susan Gilmore's (1980) explanation of the knowledge and practice influenced by theory which can be either implicit or explicit but which, from a professional viewpoint, needs to be made explicit. Her proposal of a three-tiered model for the structure of her theory for helping relationships gives Level One as the level for introducing a conceptual framework, Level Two for a general theory of human behaviour, and Level Three for the philosophical assumptions enabling her to bring implicit theories to the surface and examine the wider issues raised by her findings. Thus my research will begin with my conceptual framework enabling me to examine my implicit theories about the learning behaviour of my students, or pupils, as they were in the 1960s, relate these implicit

theories to explicit theories drawn from the literature, and critically analyse these implicit theories.

Over the past thirty years I have taught all age groups from children in Infants' school to Further Education students. In the early years, my teaching was influenced by Piaget as a cognitive developmentalist (Piaget and Inhelder (1958)), and by Skinner (1953,1958,1968) as a learning theorist. Latterly, however, Rogers' (1969) humanistic/existential approach has become an important influence upon my teaching style in that Rogers believed himself to be a facilitator of learning rather than a teacher, and so do I. These three researchers have provided me with theoretical bases of some diversity and will be discussed in the following pages. This section will examine Piaget's influence on my teaching.

It has been suggested that it is important for teachers to work out how they can influence the development of thinking (Joyce, Weil and Showers (1992, p242)) and how they can match their teaching to the developmental level of their pupils (Hunt (1961)). Joyce, Weil and Showers (1992, p242) state that one strategy used by teachers is to adjust their teaching to match the learners' stage of development. This strategy was often used in the 1960s and owed some of its basic precepts to Piaget's idea that children develop increasingly more complex levels of thinking at different stages. As a young teacher at this time, it followed that the first influence upon my teaching was Jean Piaget (Piaget and Inhelder (1958); Flavell (1963); Sigell and Hooper (1968); Furth (1969)). This influence continued through the 1970s and 1980s, too, (Wadsworth (1978); Thomas (1985); Boden (1979)). Although criticism has been levelled at some aspects of Piaget's theory (see p8ff for a critical evaluation of Piaget), in the 1960s his theory was influential in causing schools to revise their

curricula and classroom organisation 'towards greater reliance on the child's spontaneous learning by way of concrete activities and self-regulation, and less on early reading' (Boden (1994, p1)). That is to say that, contrary to the idea of teaching children and filling them with knowledge (tabula rasa), children were encouraged to learn by interacting with their environments and discovering answers for themselves. Children thus learned from their own actions upon the world in order to construct the knowledge which presented itself to their sensory experience for processing. This type of learning became known an active or discovery learning:

'.....the teacher is expected to achieve a proper balance between actively guiding and directing children's thinking patterns and providing opportunities for children to explore by themselves.' (Thomas (1985) - reproduced by Gross (1993, p.759)).

Kenneth Lovell (1978, p17) says that:

'For Piaget the cognitive structures involved in knowing are given neither in the object nor in the person, but in the interaction between them.'

This meant that for the child to develop her/his knowledge of the world s/he needed to process the sensory experience through an interaction between her/himself and an object or experience. To Piaget, it was the interaction that was important. This was not an attempt to devalue any one sensory experience alone since each sense provides invaluable information to a child ('Nil in intellectu nisi prius in sensibus' - nothing goes into the intellect unless it has first passed through the senses: Thomas Aquinas, using Aristotelian epistemology, thus wrote about the importance of the senses to the intellect.) The combination of these sensory experiences occurs through the interaction. This concept has been of interest for centuries. For instance, a child may look at a toy and perceive its shape and colour, but unless s/he interacts with that toy

by reaching for it, touching it and playing with it, s/he will not establish schematas or concepts of the texture, properties of movement or even its distance away.

This interaction is the result of what Piaget referred to as assimilation, accommodation and equilibration (Piaget (1968)). Piaget (1968) described equilibrium as the result of two polar opposites, each of which was present in some degree in all change: assimilation (the modification of an incoming stimulus by the activity of a pre-existent structure, i.e. fitting it into one's current body of knowledge) and accommodation (the active modification of the structure to adapt to the incoming stimulus, i.e. changing one's current knowledge to enable new information to fit). For example, a child who has a pet dog may then assume that all four-legged animals are dogs. In order to learn that this is not the case requires accommodation. Thus, to assume that a cat barks because it has four legs would be an example of assimilation, but to learn that a cat purrs because it is a cat is an example of accommodation. The interaction between child and environment thus allows assimilation and accommodation to take place. This, in turn, enables the child to equilibrate. The process whereby assimilation and accommodation interact, creates a form of cognitive conflict which fine tunes cognitive adaptation to a higher level of thinking. Lovell (1978, p27) was later to state:

'In the school situation his (Piaget's) notion of cognitive conflict argues that the curriculum or task presented to the pupil should demand cognitive skills slightly more advanced than those available in order to induce conflict.'

Hence, in the sixties, the teacher tried to create the proper balance between guiding children's thinking patterns and providing opportunities for them to explore, as shown in the above quote.

In relation to my thesis, this would suggest that part of a teacher's role would involve matching students with interactive material a little more complex than their understanding. Piaget and Inhelder (1958) call this 'moderate novelty' The ensuing cognitive conflict of assimilation and accommodation arising in the student would fuel the learning process by eliciting equilibration.

Later, Boden (1994, p6) defined equilibration as, 'a relatively stable (but inherently dynamic) state of some structure, such that it can accept and adapt to varied input without any essential change.' The varied input comes in the form of schemas which Gross (1993, p739) described as, 'the basic unit or building block of intelligent behaviour.' When a schema develops, assimilation consolidates it through repeated practice while accommodation allows it to be varied and adapted to fit developing thought processes.

'Assimilation and accommodation are both necessary and complementary and together they continue the fundamental process of adaptation.' (Gross (1993, p740)).

Boden (1994, p23) says that a baby's sensorimotor schemas (developed in the sensorimotor stage during the first two years of life) are constructed out of perceptual and motor systems only, but later there is an integration with symbolic and operational systems during the pre-operational stage (two to seven years) and the concrete operational stage (seven to eleven years). This supports the idea that the senses are an essential mode for developing schemas which are internalised by the child and practised through interaction with the environment. This could take the form of interactions as diverse as playing with objects or discussing rules of a game with peers but it could also be applied to older students who enjoy learning by interacting with stimulus

material as a change from listening to lectures. This theme will be continued in subsection 1:2 which shows how Piaget's work influenced my teaching.

1.2 How Piaget's work influenced my teaching and a critique of his research

Not only was Piaget's work applicable to the discovery methods used with primary children whereby they learned through interacting with stimulus material in the classroom, it can also be applied to the older students in that they, too, enjoy actively learning through interaction with stimulating material. This can help facilitate the assimilation and accommodation of difficult information, given in lectures, and enable the student to formulate new schemas.

However, influenced as I was by Piaget's theory, as I taught my way through age groups which ranged from four years (in an infants' school) to seventy-seven years (the oldest student on one of my Basic Counselling courses), I was also aware of refinements and critiques of his work by other researchers and these, in their turn, caused me, later, to refine my teaching methods. Piaget underestimated the ability of infants in the sensorimotor stage (Bower (1977)) and older children at the concrete operational stage (Donaldson (1978); Bryant (1982)). Thus, my teaching methods needed to be flexible enough to encourage all children to fulfil their potential. In addition, since his theory accounted for learning in Western society for the first fifteen to twenty years of life (Piaget and Inhelder (1958, Chapter 17)), it appeared to make the assumption that cognitive development stopped around that age with the development of formal operational thinking (eleven plus years). Piaget (1972) suggested that most individuals attained this level of thought , if not by fifteen, then by twenty, but they did so in different areas of expertise. This did not imply that learning

ends at this age. Piaget (1972), appeared to be suggesting that specific training is important in giving direction to the development of cognitive abilities, i.e. creating specialist knowledge. This would suggest that any refinements to my teaching methods needed to incorporate the facilities to enable students to fine-tune their cognitive abilities in specialist areas. Children, also, could follow their specialist interests and still develop their cognitive abilities. Piaget and Inhelder (1958) likened a child's operational understanding of concepts to the adult scientist's understanding of matter in general thus suggesting that although concepts are qualitatively different, the process of understanding was fundamentally similar. By the time students are taking GCSE and 'A' level examinations, they are receiving subject-specific teaching. Despite this, however, teaching can still increase the general level of cognitive ability.

It was mentioned earlier (p8) that Piaget's theory was concerned with learning in Western society and cross-cultural investigations into the development of Piagetian stages are not conclusive. Jane Wolfson (1976, p53) later suggested that, "when measured against the parameters set out by Piaget, other cultures do not achieve 'full' cognitive development", due to a lack of contact with 'the sort of knowledge and culture emphasised in Western schools." However, Bovet (1973) and Greenfield (1966) found that different modes of thought could lead to the same results and also that Piagetian concepts necessary to a certain life-style would develop, regardless of Western schooling. If the progress through Piaget's stages was maturational, children would go through the stages in the same way no matter what their cultural background. If it was learned, then progress would vary from culture to culture. However, maturational processes could be speeded up by the appropriate teaching at the right time.

The idea of learning as a result of both maturational development and of teaching, influenced and refined my thoughts about education in that teaching could be seen as a means of interfering with the maturational process and increasing learning. Thus Piaget's stages may be considered as sensitive periods during which the type of learning experienced by the child increases his/her effectiveness and ability at that stage and any underestimation of children's abilities at this stage might fail to accelerate a child's progress. (This idea also has applicability to older students in that work which is too easy can be boring, while work which is too difficult can be prohibitive, i.e. the Piagetian idea of moderate novelty.)

However, Piaget underestimated children's cognitive skills (Bower (1977); Donaldson (1978): Bryant (1982)), and the degree to which their intelligence is domain-specific (i.e. concerned with the development of various domains, like the linguistic domain), instead, believing it to be acquired by a number of domain-general stages, i.e. concerned with the development of general intelligence, (Boden (1994), Introduction, p.xvii). Piaget also neglected such aspects of development as social interaction, motivation and emotion (Boden (1994), Introduction, p.xvi). Sociocultural forms of life, rather than biological, are currently emphasised by some developmental psychologists (Bornstein and Bruner (1989); Bruner (1990); Rogoff (1990)). 'They see cognitive development as due more to social interaction than to individually based construction' (Boden (1994), Introduction, p.xvi).

More recently, psychologists working in the area of study skills, have given attention to the social and motivational aspects of learning (Biggs (1987); Honey and Mumford (1992)). In addition, behaviourists, with their emphasis upon observable responses (Cardwell, Clark and Meldrum (1996)), also rejected Piaget's 'humane insistence on

defining psychology as the study of the mind'(Boden (1994), p.15). In their eagerness to have psychology accepted as a science, they reacted against Piaget's methodology, especially his reliance upon clinical interviews as a means of data-gathering. Piaget's concept of an internal schema also contrasted with that of Skinner, the second influence upon my teaching. Although today, 'mainstream academic psychology is no longer behaviourist in nature' (Boden (1994), p.16), in the 1960s, the influence of behaviourism was observable in education and this will provide the discussion points in subsections 1.3 and 1.4.

1.3 Theoretical bases influencing my early teaching: Skinner

The theoretical basis of behaviourist thought which influenced my early teaching career, manifested itself through Skinner's idea of reinforcing the external behavioural response aspects of learning; that is, although he, like Piaget, saw learning as the result of interacting with the environment, he proposed that this interaction was caused by a specific stimulus which led to a specific response, reinforcement in the form of positive and negative reinforcers, and punishment (Skinner (1971, 1974, 1981)). Both positive and negative reinforcers were said to strengthen behaviour, positive reinforcers through the presentation of something pleasant, and negative reinforcers through the removal of something unpleasant, from a situation (Nelson-Jones (1990), p264). For instance, children may complete assignments because they enjoy positive reinforcement such as praise, but more often the work is produced to avoid, or escape from, the consequences of not doing it (negative reinforcement). Conversely, punishment weakens a behaviour by producing an unpleasant experience, although it does not demonstrate which appropriate behaviour should replace the one

which has been weakened. In addition, unless reinforcement schedules like variable interval or variable ratio reinforcement, are introduced, extinction occurs because children do not always perform well once a positive reinforcer has been removed. Variable interval reinforcements "are scheduled according to a random series of intervals having a given mean and lying between arbitrary values," whereas variable ratio reinforcements "are scheduled according to a random series of ratios having a given mean and lying between arbitrary values."(Nelson-Jones (1990, p118)).

Skinner maintained that while continuous reinforcers (where every response gained reinforcement) enabled children to learn quickly, variable reinforcers maintained the learning, enabled progress and were more likely to do so when extinction occurred (i.e. where no responses were reinforced).

Based upon the idea of reinforcement schedules, self-paced individual instruction developed the use teaching machines presenting small amounts of information which indicated that learning could be broken into small units in order to be understood (Skinner (1971, 1974, 1981)). In this way, positive reinforcement, in the form of gaining a correct answer, would be made easier for the child to achieve. Elements (or frames) were presented in a pre-determined sequence such that each frame varied only slightly in difficulty from its predecessor. Since the probability of a child making an error was small, a child's learning was continuously being reinforced by gaining correct answers. Applied to the classroom situation, this enabled children to work at their own pace, whilst prompt feedback ensured that learners could check on their own progress. In addition, continuous reinforcement encouraged higher levels of motivation in the initial stages of learning. For example, in the teaching situation, if reinforcements such as praise, stars, or good marks were given to students frequently

and immediately after they have completed a piece of work, this would encourage them to progress. Once progress had begun, variable reinforcement schedules were devised to help maintain it. On some occasions, students might feel that a higher goal could only be attained if it was broken down into smaller steps, enabling students to develop confidence in themselves as each small step was successfully completed.

'A very slight reinforcement may be tremendously effective in controlling behaviour if it is wisely used.' (B.F.Skinner (1968), reproduced in 'Personality and Learning' (1976, p158-162).) Skinner's proposal, when applied to pupils (and students), would suggest that slight reinforcements (or rewards) given at appropriate times (for instance, after the successful completion of a small element of a larger task (or programme)) would help to optimise learning and increase motivation. This idea, however, was more prescribed than Piaget's in that a student needed to follow the programme through to the end. The only way a diversion from the prescribed route would occur would be on the occasions when a pupil had given an incorrect answer and been diverted to the remedial loop.

Borger and Seaborne (1985, p233) proposed that one reason for Skinner's considerable influence on early developments in the field of learning was that, 'his analysis of the learning process lent itself relatively easily to mechanisation.' This enabled large numbers of children to work at their own pace with less supervision. The next subsection (1.4) is concerned with Skinner's influence upon my teaching and offers a critique of his research.

1.4 How Skinner's work influenced my teaching and a critique of his research

Programmed learning and the teaching machine became a fashionable idea in the 1960s (Borger and Seaborne (1985, p237-8)) and although it enjoyed some success, it could be boring and cumbersome and hamper creativity since, as mentioned above, the only diversion from the programme was to a remedial loop. However, to compare programmed instruction to other teaching methods would, as Gross (1993, p189) states, be no simple matter, 'partly because each can vary so much and each may interact with a number of different variables.' It was a very prescribed method of teaching and exemplified the criticisms already applied to Skinner's theory, namely that it was strongly deterministic in its belief that the manipulation of environmental factors influenced human behaviour so that it was not under the control of the individual (Cardwell (1996)). A logical consequence of this would be that if human beings could not control their behaviour, then they could not be held responsible for it. In addition to this, it opened the possibility for others to control our behaviour. For some, this would appear to be a legitimate goal and even provided a justification for psychology (Skinner (1971)); inasmuch as it was helpful to students to learn from a secure base of knowledge and it was the task of the teacher to find each student's initial level of knowledge, some students preferred to learn information in small steps (in some ways, similar to Piaget's idea of moderate novelty). Large leaps of thought on the part of the teacher might leave students wondering if they will be able to cope with a new subject; for instance, when teaching 'A' level and GCSE psychology, there are concepts, ideas and jargon which need to be learned by students in order to help their understanding of set topics, e.g. terms such as schemas, concepts, assimilation, accommodation and equilibration need to be defined when teaching about Piaget. This applies to most topics in psychology and tends to be addressed by the teacher using a small step

Skinnerian approach. However, although behaviourism satisfied the criteria for a good scientific theory (its explanations are simple and parsimonious - Cardwell (1996)), as a theory applicable to learning, it tended to be mechanical and reductionist. Indeed, Entwistle et al. stated that 'the common assumption that all successful students will follow the same path to success is simply false,' (Entwistle et al. (1971, p65)). Behaviourist theory, however, would suggest that similar stimuli would elicit similar responses. This idea would, therefore, fail to account for the uniqueness of the human condition by offering all students the same path to success. However, since each child is the product of the reinforcements within their own unique environment, then perhaps learning theory, although it would seem to suggest that behaviour is learned through the same mechanisms and according to the same principles, provided a more individual outcome than would, on first consideration, be expected. Therefore, although practical applications such as programmed learning could be used with many children at the same time, it could also be adapted to suit individuals. Thus, although the model of behaviourism chosen as a theoretical foundation for this study was somewhat simplistic, it provided a means of teaching children which could be used in conjunction with approaches such as the discovery methods of Piaget and the student-centred learning of Rogers (to be discussed in subsections 1.5 and 1.6). In addition, the ideas of social learning theorists were adding to the growing body of evidence which suggested that while it was acceptable to note what was observable in behaviour, other factors were important, i.e. factors such as cognitive functioning and socialising factors (which intervene between stimulus and response). Bandura (1965) was proposing that observational learning could take place without any reinforcement and might not even be evident in behaviour until the learner perceived the positive

consequences, then the behaviour, itself, would become manifest. However, since for Skinner the role of reinforcement was more central to the learning process (whereas, for Bandura it was important only because it determined whether or not a learned response would be demonstrated), his ideas found favour with teachers because of its simplicity. Indeed, even now, in the 1990s, with the introduction of testing children at regular intervals and having league tables of achievement , it would seem that the idea of stimulus material and measurable responses still appeals to some politicians even if it has lost its appeal to those teachers who have progressed beyond the more simplistic applications of behaviourism in their classrooms and now think that if children only learned through a selection of stimuli, responses and reinforcements, their learning would be very limited. This would, indeed, provide strength to the ideas of social learning theorists whose concepts of imitation (or modelling) and vicarious learning provide explanations of how children learn the variety of responses which they exhibit (Bandura (1965)). This would suggest that children are as unique as the social environment (and its accompanying variety of stimuli) in which they live and which impinges upon them.

Other psychologists (e.g. Rogers (1951, 1959, 1969, 1974)), also believed that humans were unique but for different reasons. They thought that we each possessed the innate potential and ability to know what was best for us. Rogers called this being 'a fully functioning person' while Maslow referred to this as self-actualisation (Maslow (1954,1968)). However, although like Skinner, a proponent of self-paced learning, unlike Skinner, Rogers believed that learning should be under the control of the learner (Rogers (1969)). Consequently, the third influence upon my teaching was Rogers' humanistic approach and this will be discussed in subsections 1.5 and 1.6.

1.5 Theoretical bases influencing my early teaching: Rogers

With the humanistic approach, the emphasis moved to the learner's experience of the learning process and the teacher's task became one of facilitating this process.

'It meant being with the student in a sensitive understanding of his or her own interests, desires, directions. It involved being a real person in the teacher-student relationship, rather than playing a role....' (Rogers (1969))

Rogers wrote that an atmosphere of trust should be developed in the classroom in an attempt to nourish the student's natural desire to learn, to increase his/her self-esteem and to allow both student and teacher to grow as people.

'We discovered that failure is just a word, that there is a difference between failure and making a mistake, and that mistakes are part of the learning process.' (Rogers (1969)).

The central points of Rogers' theory are all concerned with the self and how it becomes differentiated and determines people's responses to their environment. He calls upon the ideas of Cooley (1912), and Mead (1934), especially with regard to the differentiation of the self from the environment as part of the actualising process. Both Cooley (1912), and Mead (1934), saw the self developing as a result of social activity. Mead (1934), stressed that society gave shape and meaning to individual self-conceptualisation. Burns (1979, p39), says that the notion of the self, as used by Rogers, "is broader than the self-concept. It includes the self-concept and the ideal self." In other words, it includes what is in conscious awareness (self-concept) and in the unconscious (the 'self 'as used by Rogers). Thus Rogers broadened out the notion of self-conceptualisation beyond the confines of Cooley's and Mead's definitions and consequently, Rogerian client-centred therapy aimed to provide congruity between the

various self-conceptualisations and enable the real self to become more congruent with the ideal self.

Burns (1979, p40) states that once the self-concept has developed, "all interpretations and motivations are channelled through it." As a consequence, children's ideas of their success or failure will be judged in terms of their self-concept. In other words, one child might see a mistake as an incidental occurrence, whereas another might see him/herself as a failure. It is my intention, later in this thesis, to examine 'A' level and GCSE students' perceptions of their learning approaches and compare this with their performance in their final examinations. This could be considered, in some ways, to be a measure of congruence between perception and reality and is one way in which Rogers has influenced my teaching. Subsection 1.6 considers this influence and also gives a critique of Rogers.

1.6 How Rogers' work influenced my teaching and a critique of his research

Rogers (1969) tended to separate the concepts of teaching and learning and believed that educators could only provide the environment in which learning could take place. Since teaching and learning do not always (if ever) occur simultaneously, the idea of concentrating upon facilitating the learning process was an attractive idea to some teachers, like myself, who felt that teaching was a process of diminishing returns in that the greater the effort made by the teacher, the less the opportunity given to the students to apply that teaching to their learning process, hence the comment from some teachers that, 'I might as well have been talking to myself.' This would imply that in order to learn, students need their own time and space, i.e. freedom to learn, unhindered by the constant indoctrination from the teacher. However, this concept, if

carried to its ultimate conclusion, would suggest a non-directive learning process which could be monitored only with great difficulty; whereas there needs to be a certain level of goal-directedness to the learning process, as suggested by behaviourists. Unlike Skinner's concept of learning, however, which tended to centre more around the teaching process and the steps for learning imposed by the teacher upon the learner, Rogers' (1969) ideas of learning centred round the learning process and how the learner perceived that process.

However, learner perceptions of the learning process can sometimes be misleading in that the learner's experience can be distorted or denied by the learner and a state of incongruence can exist between self-concept and experience. For instance, pupils (or students) with self-concepts too high or too low can distort or deny a teacher's (or lecturer's) feedback because it does not agree with their concepts of themselves as learners. Nelson-Jones (1990, p26) states: "The self-concept is so important to people because it is the constellation of their perceptions about themselves and, as such, the means by which they interact with life in such a way as to meet their needs." In addition, Gross (1996, p764) states that: "The self-image of the congruent person is flexible and realistically changes as new experiences occur; the opposite is true of the incongruent person." One logical progression of this view would be that a student who is congruent would be a more reliable source of accurate self-perceptions than a student who is incongruent, i.e. one with a self-concept that is too high or too low. Congruent students would have more realistic ideas about their abilities to succeed, or their chances of failing, and would therefore be more able to foresee the amount of work involved in gaining successful outcomes. Incongruent students would be less likely to see themselves as being able to succeed when they are able students, or

conversely, some would fail to see their inabilities and would expect to succeed without making an effort.

A technique needs to be devised for obtaining student self-perceptions about their learning process. It would need to have predictive validity possibly in the form of a lecturer's prediction of examination outcome and the actual examination grade gained by each student. Differences between students' statements and the lecturer's predictions would then be attributed either to discrepancies between students' self-concepts due to feelings of incongruence, or lecturer error. However, richness and variety of information could be gained from using such a technique. This will be discussed later in the thesis when an adaptation of a method used by Rogers to measure a client's incongruence (the Q-sort - Stephenson (1953)) will be used to gain information on students self-perceptions of their learning approaches.

The following subsection (1.7) concludes Chapter One by summarising the theories of Piaget, Skinner and Rogers.

1.7 A summary of the three influential theories: Piaget, Skinner and Rogers.

To summarise, the three influential theories in my early teaching career suggested that children could:

(a) learn concepts through their own discovery by interacting with the environment, establishing schemas and constructing them into operations for testing out their knowledge on the environment and making sense of the world - a mastery model (Piaget);

(b) be taught through ready-made programmed instruction, reward orientation, and failure avoidance in a pre-determined sequence of steps designed to maximise success, and minimise failure (Skinner); or

(c) learn through the facilitation of the teacher who provides an environment of trust to encourage self-growth; based upon self-theory, the free choice of the individual, and a rejection of determinism. (Rogers).

This placed in my consciousness a trichotomy, (see Table 1, p22). I saw differences and points of constraint between the Piagetian and Rogerian learner-centred approaches, which encouraged the development of internal schemas along with the use of internal locus of control as defined by a more democratic teaching style in the classroom (Hall, Hall and Abaci (1997)) and Skinner's teacher-centred one which encouraged external schemas along with the use of an external locus of control as defined by a more rigid programme of teaching (Hall, Hall and Abaci (1997)); or conversely, between Piaget's and Skinner's goal-directed approaches and Rogers' non-directive one which encouraged the establishment of congruence between the internal and external environments and saw the ideal teaching environment as being a safe and trusting place for learning to occur.

These triangulated snapshots of the differences and constraints need to be further explored to establish the benefits of those differences. The benefits, in their turn, would allow me to recognise the blind spots of one theory from the illuminations of the other two, as shown in Table 2, p.22. As can be seen from this table, certain aspects of the research of Piaget, Rogers and Skinner, when paired together, reveal the different aspects of the third.

TABLE 1(1): Some points of comparison between Piaget, Skinner and Rogers

PIAGET (1958,1968,1972,1973)	SKINNER (1953,1958,1968,1971, 1974, 1981)	ROGERS (1951,1959,1969,1974, 1983)
Mastery model.	Reinforcement model.	Self-theory model.
Homeostasis/drive towards making sense of environment.	Positive and negative reinforcement and punishment.	Building and enhancement of self-esteem.
Teacher/learner-centred.	Teacher-centred.	Learner-centred.
Discovery learning (individually paced).	Programmed learning and teaching machines.	Safe and trusting environment.
Internal schemas and concepts.	External reinforcement.	Congruence between internal and external.
External/internal locus of control (discovery learning shared by learner and teacher).	External locus of control (teacher-led).	Internal locus of control (democratic teaching style).
Child active and curious.	Child accurate but passive.	Child learning from choice (for self-enhancement).
Goal-directed play - developmental and maturational.	Goal-directed - programmed learning.	Non-directive - to aid self-enhancement.
Matching stimuli to developmental phase (stage-determined).	Learning in small steps which can be positively reinforced.	Unconditional positive regard.

TABLE 1(2):Comparisons and contrasts of blindspots and illuminations using various pairings of ideas from the theories of Piaget (1958,1968,1972,1973), Skinner (1953,1958,1968,1971,1974,1981) and Rogers (1951,1959,1969,1974,1983)

PIAGET AND ROGERS Learner-centred approaches. Internal schemas. Internal locus of control.	**SKINNER** Teacher-centred approaches. External schemas. External locus of control.
PIAGET AND SKINNER Goal-directed approaches. External interaction with the environment. Mastery/reward orientation. (Skinner through external reinforcements; Piaget through mastery of the environment.)	**ROGERS** Non-directive approach. Congruence between internal and external environments. Ideal, safe teaching environment. (Self-esteem internally enhanced through Unconditional Positive Regard.)
ROGERS AND SKINNER Individual development - unique. (Skinner through a reinforcement schedule; Rogers through non-directive therapy.)	**PIAGET** Individually paced but stage-determined. (All go through the same stages in the same order though not necessarily at the same time.)

On the other hand, all three theories appear to contain common elements.

Firstly, all three theories require the voluntary participation of the learner, albeit to a differing degree. Skinner's instrumental conditioning, when applied to programmed instruction, requires the co-operation of the child; Rogers' client-centredness is based upon the uniqueness of the individual and the freedom of choice of the leaner; Piaget's stages of cognitive development, although a maturational theory, relies upon the desire of the child to interact with his/her environment during sensitive periods in his/her development in order to progress through the stages.

Secondly, all three theories suggest that learning may be enhanced or diminished depending upon the quality of interactions between the child and his/her environment: Skinner's theory suggests that positive and negative reinforcements can alter learning; Rogers' ideas suggest that learning occurs best in a safe environment where self-esteem can be enhanced through unconditional positive regard; and to Piaget, learning occurs through mastery over the environment and transition from one stage of intellectual development to the next.

However, in the final analysis, the emphasis on similarities and differences among theorists like Piaget, Skinner and Rogers may not prove helpful in that teachers' ideas of teaching and learning tend not to show such clear cut adherences to specific theories, but rather to be an eclectic mix of several theoretical bases and their classroom practice a composite of different techniques designed to facilitate learning.

In conclusion, Chapter One has progressed from a discussion of the three theorists who influenced my early teaching, to a comparison of those theorists and, finally, a suggestion that most teachers are informed by an eclectic mix of theoretical bases which influence the ways they help students to learn. In Chapter Two, some

observations will be made on the nature of learning leading to self-questioning about my teaching and to the reading of research on study approaches and attempts to measure them.

CHAPTER TWO

Observations on the nature of learning, leading to self-questioning about my teaching and motivating me to read research on study approaches and attempts to measure them.

Chapter Two begins with some observations on the nature of learning (both intentional and incidental), presents research on study skills and re-visits the conclusions reached in Chapter One concerning the theoretical bases influencing my early teaching career in order to identify the central foci for this thesis. Chapter Two then progresses through definitions of study skills, to a description of attempts to measure the study process.

2.1 Observations on the nature of learning (both intentional and incidental)

With respect to classroom practice, I, as a teacher, was aware that teaching and learning, whilst not necessarily occurring together in time and place, as mentioned on p18, appeared to be linked in some ways in that the nature of learning had consequences for the nature of teaching and vice versa. Some of these consequences seemed to be concerned with the abstract nature of learning. As early as the 1930s, Tolman and Honzik (1930) had shown that learning cannot be measured precisely and that the idea that performance, as an accurate indication of learning, was erroneous. In other words, they demonstrated with rats that learning can take place in the absence of reinforcement and that reinforcement was more likely to enhance a rat's performance, rather than its learning, of a certain behaviour. Bandura (1965) demonstrated this distinction in children when he showed that whilst children learned specific acts by observation, reinforcement and punishment might increase or inhibit performance of

those acts. This distinction between learning and performance is an important one in that if learning cannot be measured easily, then its link with teaching becomes even more tenuous.

It has been current government policy in the 1990s to test children's performances at different stages of their educational development on the assumption that this is indicative of children's learning. The results reflect upon the teachers in that teaching is thought to promote learning which is then measured by testing. In classrooms, teachers use various methods for quantifying measurable learning; for instance, they give students tests and tasks and ask them questions about their performances in an attempt to externalise the thinking process and so to measure some of the learning taking place. While a correlation may exist between learning and performance, work such as that by Tolman and Honzik (1930), cited above, suggests that we ought to be reluctant to see the link as unambiguous. It is certainly the case that the perception of learning has implications for the way in which teaching is construed and practised in that it results in value being placed upon children's performances.

The learner's perspective also has implications for the teacher. Each learner may be focused and motivated in a different way (either internally or externally). In this way, the perception of learning will have consequences for, and be affected by, the perception of teaching, i.e. students (and pupils) using Skinner's programmed instruction techniques (where small pieces of information are given to pupils then a question asked to test understanding) would be learning in a passive manner; Rogers' student-centred approach to learning would lead to students becoming partners with the teacher in deciding what is to be learned and how; and Piaget's idea of learning, as

the result of a child's interaction with his/her environment, would also lead to active (or discovery) learning. (See Table 2(1), below.)

TABLE 2(1)
DIFFERENT VIEWS ON THE NATURE OF LEARNING

PIAGET (1958,1968,1972) AND ROGERS (1951,1959,1969,1974,1983)	SKINNER (1968,1971,1974,1981)
Active learning	Passive learning
Intrinsic motivation	Extrinsic motivation
Internalised thinking encouraged	Externalised responses encouraged
Discovery learning(Piaget) Democratic teaching style(Rogers)	Teacher-led instruction

Since learning cannot be measured precisely except through performance, it could be suggested that some learning is conscious and other learning is unconscious (better described as unintentional or incidental learning) and conscious (or intentional) learning cannot always be measured mechanistically since performance does not always indicate a true relationship with learning.

My reference to conscious learning as 'intentional', originates from a decision that this learning is more accessible to both learner and teacher and its product (or goal) can, in part, be measured, albeit only through performance. On the other hand, the unconscious has a much wider set of definitions depending upon whether you are a Freudian psychoanalyst or a neuropsychologist. Neither can the contents of the unconscious mind be so easily measured. In an attempt to narrow the defining parameters of the concept of unconscious learning, the idea of unintentional, or incidental learning has been introduced. It was thought that 'unintentional', on its own, however, does not best describe unconscious learning for me, whereas

'incidental' (meaning 'happening in connection with, or resulting from, something more important', as defined by 'Collins College Dictionary' (1995 edition)) does, because it suggests that, while students are learning intentionally in order to achieve their goals, they may also learn additional concepts, incidentally, as information which they do not need but have found interesting.

The choice of the word 'incidental', therefore, would be a better descriptor of unconscious learning than the word 'unintentional' because, when referring to learning, 'unintentional' cannot really be used synonymously with 'incidental'. For instance, while I have often heard students state their intention to learn a certain concept, I have yet to hear a student exclaim, "Oops! I never meant to learn that," (or words to that effect). Students have, however, pointed out to me that they have picked up extraneous information incidentally, and the fact that they are pleased at their extra learning shows that they either would have wished (or intended) to learn that if they had been given the choice initially, or are pleased at having picked up the knowledge from their own efforts. Thus it could be said to have been learned incidentally rather than unintentionally.

In addition, students can learn both intentionally and incidentally in that, while researching information to reach their learning goal, they may sometimes digress in order to seek information which they did not know they needed at the outset, but which is necessary to learn at that point.

Conversely, some incidental learning can further complicate the measurement process in that it may be viewed as irrelevant and ignored by either learner, teacher, or both. In addition, it was mentioned earlier that conscious learning cannot always be measured mechanistically (at least not with a high level of reliability) due to interference from

extraneous variables, for example, the fluctuating performances of the students. Thus both intentional and unintentional incidental learning can only be measured in the performance of the individual. This suggests that the measurement procedure which depends upon performance is possibly too rigid and static to encapsulate the richness and variety of learning and results in compartmentalising and quantifying rather than describing and evaluating.

It is easy to slip into facile oversimplifications concerning teaching and learning processes and one purpose of this thesis will be to change generalisations into precepts that are pedagogically and psychologically defensible. However these precepts are formulated, I would like to return to the idea of theoretical eclecticism among teachers (see Chapter One, p23). This leads to their use of a variety of styles to promote teaching. Thomas (1985) says that teachers need to strike a fine balance between guiding children and students and providing opportunities for them to actively explore. Although Piaget's theory suggested that children learned in this interactive, exploratory manner from birth onwards, in many ways, the conscious (or intentional) theoretical underpinning of that learning in children has been left to teachers to establish. Thus, teachers have developed methods to facilitate exploration, discovery and other learning strategies which they say underpins children's learning. In addition, it has appeared to be a prevailing view among parents that children learn most at school. I have, on a number of occasions, attempted to dispel this idea by telling parents that their children learn a great deal before they ever attend school and that the first five years are very important. Perhaps it could be said that whereas much learning (both intentional and incidental) takes place in the home, most of the quantifiable learning (i.e. performance) is measured in school through the testing process. This brings me to a comparison,

using examples, between conscious (or intentional) and incidental learning, both at home and at school, i.e. between that learning which a child seeks to learn and that which is picked up in a minor way as a by-product of living. Some examples of these two types of learning can be seen in Table 2(2), below.

TABLE 2(2)
SOME EXAMPLES OF THE CONSCIOUS (OR INTENTIONAL) AND INCIDENTAL ASPECTS OF TEACHING AND PARENTING

TEACHING AND PARENTING	CONSCIOUS (0R INTENTIONAL) LEARNING	INCIDENTAL LEARNING
TEACHING	Working to a syllabus. Examinations.	Information on related (or unrelated) topics assimilated by the students from textbooks while seeking information on set topics.
PARENTING	Children gaining information from questions asked of parents. Learning skills.	Children learning by modelling their behaviours on those of their parents.

It would seem that children learn both intentionally and incidentally both at home and at school and this learning can be both observable and mechanistically measurable. However, this learning may only become measurable when a child is motivated to perform what it has learned. In addition, learning will occur even when not being either reinforced or observed, because children are curious and constantly seeking stimulation. It is up to parents and teachers to take advantage of this and continue to stimulate children.

Carl Rogers (1983) began the later edition of his book 'Freedom to Learn for the 80s' with the following quotation from Albert Einstein:

'It is in fact nothing short of a miracle that the modern methods of instruction have not yet entirely strangled the holy curiosity of enquiry; for this delicate little plant, aside from stimulation, stands mainly in need of freedom; without this it goes to wrack and

ruin without fail.' This statement was one of many which led me to later question my own teaching style and read research on study approaches and their measurement. This will be the topic of discussion in Section 2.2.

2.2 How self-questioning about my teaching led me to read research on study approaches and their measurement.

Over the years I often questioned my teaching results when, at the end of a term, or year, I had marked tests, or examinations, knowing the results did not reflect the abilities of some of my pupils. Some children had performed as though they had retained minimal amounts of information. I felt sure they had learned more than they demonstrated. However, I felt that there were two issues here: firstly, what effect my teaching had upon the children's learning; and secondly, what factors had prevented that learning being demonstrated in their performance.

In 1973, while teaching in a junior school, I noted teachers making comments such as:

'They act like we've never been through this work before.'

'I might as well have been talking to myself.'

'I feel I'm banging my head against a brick wall.'

'They look at me as though I'm speaking a foreign language.'

Since these comments reflected my own feelings, it came as a relief to find I was not alone. Yet there were some pupils whose good results refuted these informed findings because they had either been absent or seemingly inattentive on many occasions yet gained good test results . Although these conclusions were gleaned from anecdotal evidence, they represent the paradox that drives my study, namely that there seems to be no apparent relationship between effort and results in that some students appear to

work hard and fail while other students made no apparent effort, yet succeed. Conversely, whether teachers make great efforts with pupils or not, sometimes results are good, sometimes poor. These findings were supported by researchers working in the area of study skills and approaches (to be discussed later).

As mentioned on p14, Entwistle et al. (1971, p65) found that, 'the common assumption that all successful students will follow the same path to success is simply false'. This supported my tentative findings that some students will succeed without apparently working hard, while others will fail even though they have worked. It also suggests that students will find different routes to success and will have different methods of achieving this. Not all students will use the same study approaches or even the same skills; nor will teachers be able to fulfil the needs of each pupil.

Lafitte (1963), suggested that some students did not waste their time on good study habits but succeeded anyway. Conversely, Maddox (1963, p202) found that poor students often had the most impeccable study habits, i.e. consciously pursued good study habits and yet failed their examinations. This begs the question of what constitutes a good study habit. Since my thesis will be concerned with students' perceptions of their study process, this question is a central feature of the following investigation, and components of the study process will be defined as follows:study skills as self-teaching techniques, e.g. memorising, speed reading, note-taking (Rowntree (1988)); study habits as tendencies to act in certain study-centred ways, e.g. how often and at which times studying is done, and the amount of study undertaken (Collins College Dictionary (1995 edition); Buzan (1989)); and study approaches as skills, habits, values, motives, strategies (Biggs (1987)).

These perceptions will affect the teaching/learning situation, although it has been my experience that teaching and learning do not always occur simultaneously, or even consecutively, and there have been occasions when teaching has taken place with no evidence of consequent learning while there have been other occasions when learning has occurred in pupils when not in the presence of a teacher. The relationship between teaching and learning can therefore be tenuous at best and when variables like teaching and learning styles are added to the equation, it becomes necessary to tease out the individual factors which form the basis of this study. My original question was, 'How do students learn?' It will be by attempting to answer this question that the secondary question, 'What is teaching?' will, in turn, partially derive its answer. In addition to this, students' styles of studying will also derive from this implicit theory of learning and, in turn, these implicit dimensions will need to be made explicit. It may be the case that study skills are self-teaching techniques and provide a mechanism for use by the intentional, or conscious learning process, or may indeed be the mechanism for bringing some aspects of learning into the conscious mind. These skills may form the bridge between internal and implicit learning and observable, explicit and measurable learning. They may also be the mechanism whereby self-consciousness is added to the learning process. This consciousness of the self as a learner may enhance or detract from the learning process in that when children are made aware of themselves as learners by being told what to learn, then their enthusiasm for learning may wane and learning may become a chore.

Whatever the case, some degree of compatibility may be necessary between teaching and learning styles and study skills in order for some conscious learning to occur. In addition, there seems to be a logical and psychological argument that if children can be

taught at all then they can be taught how to learn; in other words, they can be taught study techniques compatible with their individual needs. The investigation of this phenomenon will be central to this thesis, since the focus will be upon enabling students to identify the strengths and weaknesses in their approaches to study in order that they may use their strengths and, should they wish to do so, seek help to correct their weaknesses. This focus has evolved from the theoretical bases influencing my teaching and section 2.3 will identify the hypotheses for this thesis.

2.3 A return to the discussion of the theoretical bases influencing my teaching and leading to the central foci for this thesis

To return to the earlier discussion about the differences and points of constraint between the theories of Piaget, Skinner and Rogers and their respective influences upon my teaching style (Chapter One, p20-24), it was pointed out that no one theory of learning was sufficient to cover all and triangulated snapshots of similarities and contrasts were given to highlight the blind spots of one from the illuminations of the other two. It was suggested that teachers tended to be eclectic in their teaching styles (p23) and indeed it will be shown that students vary in their learning styles (Section 2.5).

I now need to identify the central foci of my thesis by changing generalisations into precepts that are pedagogically and psychologically defensible. Some of the issues that drive this study have been mentioned, i.e.

(1) The paradox that there seems to be no apparent correlation between effort and results in that:

(a) some students worked hard and failed while other students made no apparent effort, yet succeeded;

(b) students' performances did not always reflect their learning;

(c) whether teachers made great efforts with pupils or not, sometimes results were good, sometimes poor; and

(d) teaching and learning did not always occur simultaneously, or even consecutively, and teachers will not always be able to fulfil the needs of each student.

(2) The attempt to find a response to the question, 'How do students learn?' Students' styles of studying will come from their implicit theories of learning and it will be the task of this study to make explicit those theories, beginning with definitions of the concept of study skills in section 2.4.

2.4 Some definitions of the concept of study skills

As previously mentioned (pp33 and 35), the question, 'How do students learn?' is pivotal to my study and a central question from which others are derived. One such question is 'How do students study?' It has been suggested that studying is related to learning as a process and helps to improve learning as a product (Rowntree (1988), p14). He states that: 'Some students use 'learning' to indicate the same kinds of activity they think of as 'studying''. He goes on to say: 'When they talk about learning as a product, students reveal very different ideas about what they expect to result from the process of learning. Some find it difficult to conceive of results or a product at all - other than passing an examination or getting praised by a tutor.' This, however, as mentioned on pp25 and 26, is the learning which has become synonymous with performance. However, there are other types of learning than that which can be

measured as a product of performance. Rowntree (1988, p16-17) sees learning as: memorising, understanding, for application and for personal development.

Over the years, as I have helped students with their coursework and prepared them for their 'A' level examinations, I have noticed that, whatever their views on learning, they have not been passive partners in this preparation but have struggled to find ways to understand concepts, remember research, develop essay-writing skills, reduce anxiety and, if all else fails, second-guess the examiner. Some students become walking reference books in their attempt to prepare for any eventuality; others become fortune-telling mystics and learn a few selected essays hoping to spot questions which remotely fit.

The moment when students turn over their examination papers marks, for me, the culmination of their studies and a time when a measurement is about to be made of their examination performance, i.e. answering a set number of questions in a certain time. Examiners have had to accept this performance as a measure of student learning, even though it is not always reliable in that students may not be performing to the best of their ability.

Since most 'A' level students need to gain a good grade to go to university, their performance in an examination is often viewed as a means to an end rather than an end in itself. This means that a student's ability to study and prepare is crucial and whether preparation is done over a two-year period, or over a shorter period, this type of preparation has become known as studying. Rowntree (1988, in p.vii of his preface), says that there is no one best way of studying. Not only do methods of study vary from person to person, but from time to time for any one student. He adds that learning to study, 'is essentially a do-it-yourself operation' (p.viii of his preface). In

other words, studying is an individually-based operation in self-teaching and study skills are a collection of behaviours.

The skills which comprise these study behaviours are many and varied, for example students need to learn how to take notes, read quickly and for meaning, understand jargon and concepts, memorise facts, make links and associations between topics, think critically and evaluate research and ideas, and plan and execute coursework. In addition, they need to develop the self-discipline to manage their time, and maintain their determination to continue through to the end of their course. These latter qualities are attitudinal and motivational (rather than behavioural), and though not addressed in Rowntree's (1988) book, need to be considered since they give a student the impetus to engage in the process of learning in the first place.

Buzan (1989, p.35), suggests that study should be a personal and stimulating experience rather than a rigid, impersonal and onerous task. He adds that study techniques are designed to allow a student to have easy access to knowledge in a manner that will encourage the brain to learn more easily and to 'express and organise itself in matters which are more comprehensively attuned to the way' a student functions as an individual (Buzan (1989, p.143)). He believes that an integral component of this lies in the brain's ability to extract the key concepts from material and interlink or integrate these ideas. The brain does this in a non-linear fashion by starting with a main idea and branching out 'as dictated by the individual ideas and general form of the central theme'. (Buzan (1989), p.93). He calls this Mind-Mapping and shows its versitility of application.

Buzan began research into study skills in the 1970s because, as he wrote: 'I had happened upon virgin territory' (Buzan (1993), p11). He felt that, as a student, the

volume of his academic work was increasing and his brain was beginning to collapse under the strain until: 'The more I took notes and studied, the worse, paradoxically, I seemed to do.' (Buzan (1993), p.11). The paradox went thus: if he cut down his studying, he would not possess the appropriate information and would not progress well yet if he studied harder and made more notes, he would also begin to fail. Thus Buzan began to study the nature of thinking and how to learn. Rowntree also produced his first edition of his guide for students ('Learn How to Study') in 1970 (the version quoted in this thesis is the 1988 edition) and he and Buzan were two of the researchers who helped begin the research into study skills which dominated the 1970s. The 1970s also saw research attempts to measure studying as a process and this research will be discussed in section 2.5.

2.5 Research attempts to measure the study process

In addition to Buzan's idea of learning through mind-mapping, researchers such as Biggs (1978) suggested that students appear to be influenced by such factors as their cognitive styles, personality, I.Q., home background, subject area and teaching methods. These personal, social and intellectual qualities have been presented as flow diagrams (see Diagrams 2(1) and 2(2) on p39).

DIAGRAM 2(1)
GENERAL MODEL OF STUDY PROCESSES
(Biggs (1978), p.267)

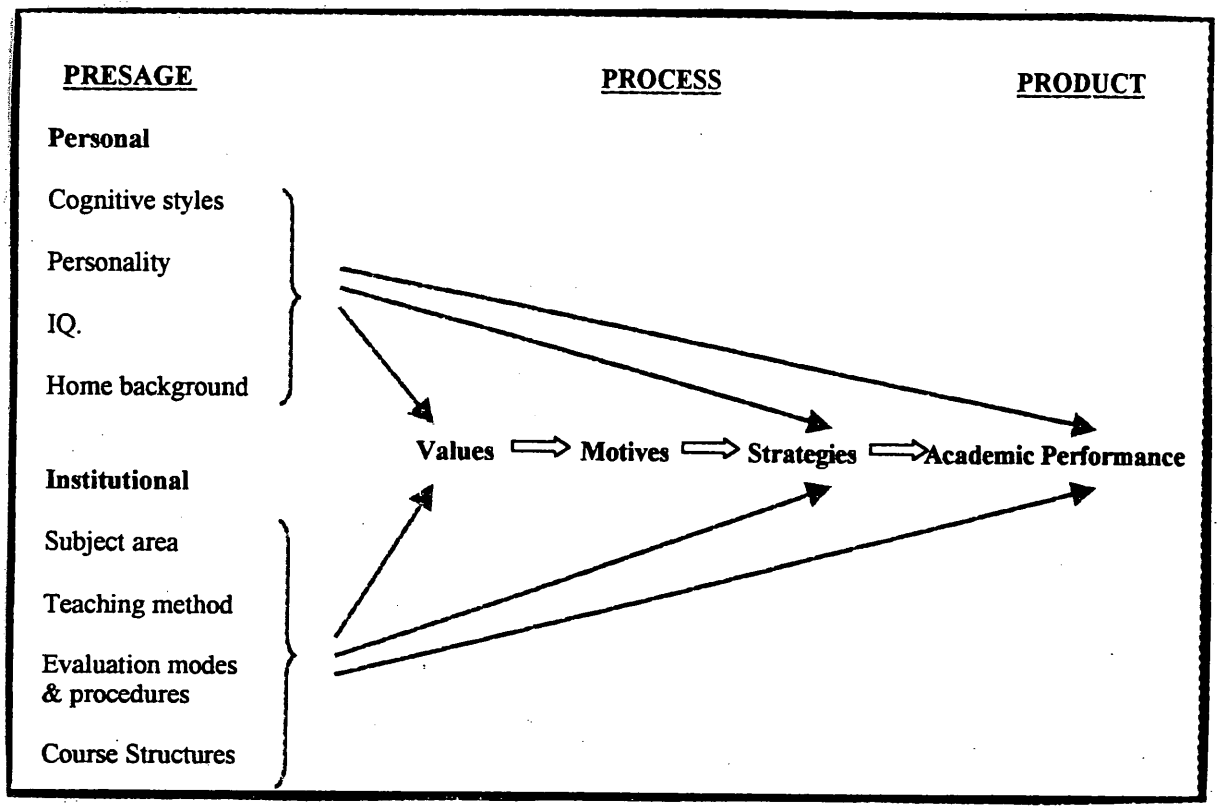


DIAGRAM 2(2)
THE 3P MODEL OF CLASSROOM LEARNING
(Biggs (1993), p.8) (Adapted from Figure 1 above)

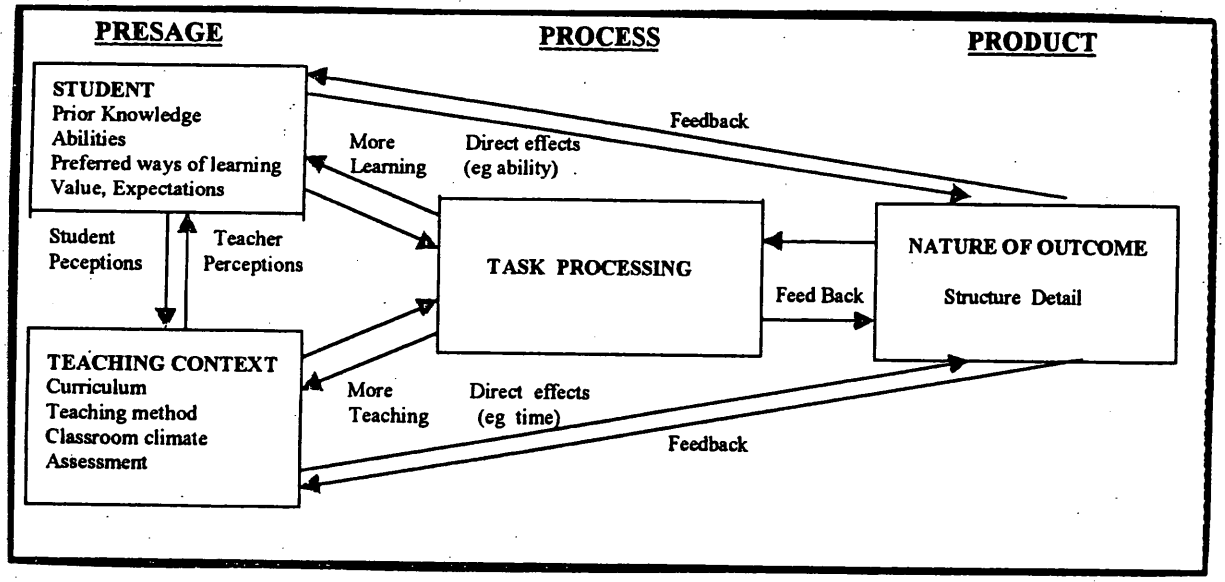


Diagram 2(1) (Biggs (1978)) is a general model showing the study process and is divided into presage, process and product variables. Presage variables are the qualities, experience and prior knowledge the student brings to the learning situation; process variables are those which occur during the learning process, for example, the students' values, motives and strategies concerning the task being performed; product variables are the outcomes of the learning situation and are concerned with the students' academic performance. Biggs's (1978) model makes the assumption that presage factors (i.e. the factors that form students' values and influence their motives for studying) can be divided into two general types, personal and institutional. Personal factors, according to Biggs (1978), include home background, personality, I.Q. and cognitive styles; institutional factors include subject area, teaching method, methods of marking and evaluating assignments and course structures. Students' values will also affect their motivation and will determine the strategies they use when studying, thus affecting their academic performance. Thus values, motives and strategies become part of the study process factors and academic performance is the product, or outcome.

As a point of criticism, however, Diagram 2(1), with its unidimensional arrows, emphasises a forward thrust and does not account for how academic performance can, in turn, affect presage factors as a student's study programme continues. Biggs remedies this in Diagram 2(2) (based upon Dunkin and Biddle's (1974) model) which shows a two-way flow between presage, teaching context, student learning processes (e.g. task processing), and the product or outcome of that process. The models are slightly different in content in that Diagram 2(2) shows relationships involving student, teaching context, processing of the learning task and nature of the learning outcome,

whereas Diagram 2(1) concentrates upon a one-way thrust from presage to process to product using personal and institutional components, values, motives, strategies and academic performance.

Biggs (1993) changed this unidirectional model to an interactive model where all components interact with all the other components. However, there still appears to be a forward thrust to Diagram 2(2) in that it moves irrevocably from presage to process to product without any loops or detours in a lateral direction. Also the interaction is limited to a reciprocal relationship between each variable in that the model is closed to other factors which may result from the interaction, i.e. the nature of the outcome may result in fluctuations (e.g. self esteem or relationships with teachers) which may then create another box of factors (e.g. a box which combines student-teacher factors) which could then be added to the model.

While these models are limited, they do highlight the difficulties inherent in trying to describe the multifarious factors involved in the study process. These difficulties are further compounded by attempts made to quantify these factors and measure the study process.

Formerly, study skills, i.e. such behaviours as note-taking, memorising and speed-reading, appear to have been measured by default; in other words, the efficacy of students' study skills has been implicitly measured by their success, or failure, in tests and examinations. More recently, however, in the past twenty years, some researchers have shown an interest in measuring these study skills per se. It was hoped these skills could be isolated, categorised and quantified, eventually providing a tool for diagnosing and correcting study habits to produce more effective learners.

One such measurement attempt was made by Jackson, Reid and Croft (1979) who developed their Study Habits Evaluation and Instruction Kit (SHEIK) which asked students 175 questions designed to assess study habits in seven areas:

(1) Place of Study

(2) Times of Study

(3) Organisation of Study

(4) Reading skills

(5) Note-taking

(6) Studying for examinations

(7) Examination technique.

(N.B. The words 'skills' and 'habits' have been used to differentiate between specific 'skills', as defined above, and 'habits' which denote related but more general behaviours such as when and where students study, how they motivate themselves, and their attendance at lectures. Biggs's (1987) Study Process Questionnaire (SPQ) replaced the SHEIK (1979) but concentrated more upon measuring the study process by incorporating students' values, motives and strategies as components of that questionnaire. In this way, Biggs claimed to measure study approaches which included study skills and study habits in addition to values, motives and strategies.)

Both the SHEIK and the SPQ, however, show a task-based approach to the measurement of the study process in that students are asked about their study behaviours in certain given situations. In the SHEIK, students are asked to respond on a 5-point scale where:

N = never, or almost never

1 = about one quarter of the time

2 = about one half of the time

3 = about three quarters of the time

A = always, or almost always

Below are some examples of the types of statements to be found in each of the seven categories:

Q2 I study in a room at home which other people walk through while I am studying (Place of Study)

Q28 I start my homework before it is time to have the evening meal

(Times of Study)

Q51 I try to relate things I learn in one topic to things I have learned in other topics or subjects (Organisation of Study)

Q76 When I want to find something in a text book I flip through the book until I find it (Reading Skills)

Q101 My notes for one subject are mixed up with my notes for other subjects (Note-taking)

Q148 I try to guess what questions are likely to be asked (Studying for exams)

Q174 In examinations I still have some questions, or parts of questions, left to answer when time is up. (Examination technique)

In Biggs's SPQ (1987), students again respond on a 5 - point scale where:

5 = always or almost always, true

4 = frequently true of me

3 = true of me half the time

2 = sometimes true of me

1 = never, or only rarely, true of me

Once again, task-based questions are asked, such as:

Q2 I find that at times studying gives me a feeling of deep personal satisfaction (VALUE)

Q15 I would see myself basically as an ambitious person and want to get to the top, whatever I do (MOTIVE)

Q23 I try to relate what I have learned in one subject to that in another (STRATEGY)

Q26 I usually become increasingly absorbed in my work the more I do (VALUE)

Q30 I test myself on important topics until I understand them completely (STRATEGY)

Q33 I see getting higher grades as a kind of competitive game, and I play it to win (MOTIVE)

Questions like these rely upon a student giving the researcher information on their preferred methods of completing tasks. The information is in three parts: the first addresses the student's strategy, a combination of study skills and habits (STRATEGY), the second is concerned with their attitudes towards a task (VALUE), and the third assesses his/her motivation for doing the task (MOTIVE). This type of self-report questionnaire depends upon students answering accurately and also upon their insight into their own study behaviours. In another task-based attempt at measuring study behaviours, Rossum and Schenk (1984), working independently of Biggs, gave students standardised tasks to perform and measured the students' results against their self-report questionnaires asking them how they performed the tasks (to be discussed later). This minimised reliance upon student self-report and placed emphasis on student performance, albeit on a standardised task selected by the

researchers. However, the earlier criticism made on the difference between learning and performance (pp25 and 26) would also apply here.

An alternative to the task-based method of measurement of study approaches, is the dispositional approach used by Honey and Mumford in their Learning Styles Questionnaire (1986). The LSQ asks students to report general behaviours, attitudes and feelings most consistent with their manner of approaching a learning situation, e.g. Honey and Mumford invite students to respond with a tick or a cross to statements which represent their dispositions, such as:

Q1 I have strong beliefs in what is right and wrong, good and bad.

Q2 I often act without considering the possible consequences.

Q5 I have a reputation for saying what I think, simply and directly.

Q8 I regularly question people about their basic assumptions.

These statements tap information related to the student's general personality, attitudes and behaviours, and make the assumption that a student's underlying dispositions determine their preferred learning styles and divide students into four different types of learner based upon their dispositions thus:

Activists - involve themselves fully in new experiences, thrive on challenge, are gregarious, active and seek to centre all activities around themselves;

Reflectors - like to stand back and to ponder experiences from many different perspectives, are cautious, prefer to take a back seat in meetings and discussions, have a slightly distant, tolerant and unruffled air about them and when they act, it is as part of a wide picture which indicates the opinions of others;

Theorists - adapt and integrate observations into complex but logically sound theories, are logical, perfectionists, prefer to maximise certainty and feel uncomfortable with subjective judgements, lateral thinking and anything flippant;

Pragmatists - are keen on trying out ideas, theories and techniques to see if they work in practice, positively seek out new ideas and take the first opportunity to experiment with applications, act quickly and confidently on ideas that attract them and are down to earth people who like making practical decisions and solving problems.

In summary, Activists and Pragmatists are doers while Reflectors and Theorists are thinkers.

Both task-based questionnaires (Rossum and Schenk (1984) and Biggs (1987)) and disposition-based questionnaires (Honey and Mumford (1986)) will be evaluated in Chapter Three, section 2; meanwhile, section 2.6 will provide a brief summary of research into the study process and attempts to measure it.

2.6 A brief summary of research into the study process and attempts to measure it.

To summarise, during the past twenty years, researchers have shown an interest in measuring the study process per se so that study activities may be isolated and categorised in order to correct study habits, enhance study skills and help students become more effective learners. It would appear that the selection of skills which comprise the study process complex vary depending on the researcher. Different researchers have isolated different areas of study which they consider important. They have also used different styles of questionnaire to elicit their information on student study practices. Table 2(3), below, shows these differences:

TABLE 2(3)

RESEARCH INTO THE MEASUREMENT OF STUDY APPROACHES

TASK-BASED QUESTIONNAIRES

SHEIK (Jackson, Reid and Croft (1979)) - Place of Study; Times of Study; Organisation of Study; Reading Skills; Note-taking; Studying for Exams; Exam Technique.

Rossum and Schenk (1984) - Self-report and student performance on set tasks.

SPQ (Biggs (1987)) - Value, Motive, Strategy

DISPOSITION-BASED QUESTIONNAIRES

LSQ (Honey and Mumford (1986)) - Activists, Reflectors, Theorists, Pragmatists.

The differences in study approaches identified in this chapter, and their measurement, indicate their complexity and the challenge involved in investigating them. Nevertheless, the research cited indicates an increasingly refined insight into this complex process, a refinement to which this research wishes to contribute. Chapter Three will present and evaluate research into the study process, already introduced in this chapter, as a starting point for this thesis.

SECTION TWO

The history and critique of task-based and disposition-based measures of the study process leading to the presentation of an argument for a new approach, and the aim and hypotheses for this thesis.

CHAPTER THREE

Task-based and disposition-based measures of the study process (Their history and critique)

3.1 Introduction

Chapters One and Two charted both the types of research which influenced my teaching practice and the means I used to measure the learning process. These latter methods included both task-based and disposition-based measures and in this chapter, both will be described and evaluated. Task-based measurements are assessments of students' study skills, habits, motives and strategies based upon their answers to questions, whereas disposition-based measurements, although also based on student answers, assess broader and more general personality characteristics. This chapter will show the progression of research into such measurements and their relative merits and shortcomings. An evaluation will also show how the limitations of the task- and disposition-based measures render them inappropriate techniques (on their own) for use with my students.

At the conclusion of Chapter Two, it was suggested (p46 and 47) that during the past twenty years, researchers have shown an interest in examining and measuring the study process, and that researchers have isolated a variety of skills and habits. These skills

and habits, however, possess an inherent similarity in that the task-based questions of the Study Habits Evaluation and Instruction Kit (SHEIK (1979)) measure, to a certain extent, the skills and habits later suggested by Buzan (1989) to be part of the study process: skills like organisation, reading and note-taking. Biggs's Study Process Questionnaire (SPQ (1987)), based on Marton and Saljo's research, elicits information on similar measures to the SHEIK (1979) but, since it also measures motives and strategies as well as study habits, it now supersedes the SHEIK (1979).

The following list shows the various measures of the study process which will be described in this chapter:

Task-based
1976 Marton and Saljo. Surface and Deep processing.
1979 SHEIK (Jackson, Reid and Croft). Seven factors.
1984 Rossum and Schenk.
1987 (year of completion). Study Process Questionnaire (SPQ)(Biggs). Similar to Marton and Saljo's research and developed over a ten year period thus:
1976 - Reproducing and Internalising approaches (similar to Marton and Saljo's Surface and Deep processing approaches).
1978 - Organising approach
1987 - Completed version: Reproducing renamed Surface
Internalising renamed Deep
Organising renamed Achieving

Disposition-based
1986 Learning Styles Questionnaire (LSQ)(Honey and Mumford). Four dispositions.

The next section will describe Marton and Saljo's (1976) research on task-based measures of the study process.

3.2 Task-based measures of the study process: Marton and Saljo (1976)

Marton and Saljo (1976) investigated students' approaches to learning by using an educational article which they gave to students at the University of Goteborg, Sweden. This article was a copy of 'The World Educational Crisis: A Systems Analysis'

(Swedish edition (1971)) by P.H.Coombs (English edition (1968)). In this article Coombs (1968) argued against 'the simplified notion of output of educational systems as being equal to the number of people who pass their examinations. He stressed the need for a large number of criteria in assessing the real influence of education on society,' (Marton and Saljo (1976)).

'The student was then given a series of open questions to elicit how s/he had tackled the process of reading, and asked to assess what had been understood,' (Marton and Saljo (1976)). Marton and Saljo's students were asked what they thought Coombs meant when he referred to 'the output of an educational system.' Their answers showed that 'different students obviously learn different things from one and the same text' (Marton and Saljo (1976)). Marton and Saljo proposed that this needed to be taken into account when approaching student learning:

'In our view a prerequisite for an analysis of *what is learned* is that one must take into account *the content* of the learning task or the discourse. This is necessary since our main interest is to describe how this same learning material (content) is comprehended by different subjects, that is, the individual meanings which students assign to a particular text, idea and so on' (Marton and Saljo (1976)).

They divided students' answers into two different levels of processing: Surface level (where the student focused on the content of a piece of work and recalled it) and a Deep level (where the student concentrated on what the piece was about). They quote the students' comments in each category, e.g.

Surface: 'Well I just concentrated on trying to remember as much as possible.'

'There were a lot of different lines of thought to follow and to try to memorise.'

Deep: '....I tried to look for....you know, the principal ideas.'

'....I thought about how he had built up the whole thing.' (Marton and Saljo (1976)).

Another researcher, using different methods, also divided students' study approaches into Surface and Deep processing and defined them in a similar way to Marton and Saljo. This was Biggs (1987). His research into study approaches began as early as 1978 with early versions of the Study Process Questionnaire, and thus it could be said to have pre-dated that of Rossum and Schenk. Biggs's SPQ will be described in more detail than either Marton and Saljo's or Rossum and Schenk's because it is one of the questionnaires given to my students and has been used to provide a baseline against which to compare my research to establish concurrent validity.

The next section will present and evaluate Biggs's SPQ.

3.3 Task-based measures of the study process: Biggs's Study Process Questionnaire (1987)

Biggs began work on his Study Process Questionnaire in 1978 and the final version was completed in 1987. Although it superseded the SHEIK (1979) (both introduced in Chapter Two), it was fundamentally different. Whereas the SHEIK (1979) concentrated upon seven factors (mentioned on p42 of this thesis) and categorised students on those factors, Biggs's SPQ (1987) divided students into different types of learner based upon their answers to his questionnaire thus going one step further in claiming that these types of learner were fairly consistent over time and approached learning tasks in different ways. In this manner, Biggs's SPQ (1987) is similar to Honey and Mumford's (1986) Learning Process Questionnaire (LSQ) in that it moves investigations into the study process away from an examination of the outward

accoutrements or tools of the learner and towards internal and more implicit qualities of the learner as a person.

Biggs's research from 1978 onwards followed a similar path to Marton and Saljo (1976) except that he initially named his learning approaches Reproducing (Marton and Saljo's Surface processing) and Internalising (Marton and Saljo's Deep processing). In addition, Biggs (1978) added an Achieving dimension which he originally named the Organising approach (later to be changed to the Achieving approach). This latter approach was concerned with the organising of the study environment (e.g. work space) and could be used with either of the other two approaches. Indeed, it is a motivational approach and, when combined with either of the other two approaches, shows that the student has the desire to succeed in that approach.

By 1987, when the final version of the SPQ was completed, Biggs changed the names of his Reproducing and Internalising approaches which brought them more in line with Marton and Saljo's (1976) research. He also changed the name of his third approach from Organising to Achieving. Marton and Saljo's research, on the other hand, did not take into account this third approach.

John Biggs developed the SPQ using about 1,000 Arts, Science and Education students in universities and further education colleges in Hong Kong. The early, 1978, version of the SPQ was further validated, in the United Kingdom, by O'Neil and Child (1984) who replicated Biggs's study of its internal structure using a British sample of students.

'The Study Process Questionnaire (referred to as SPQ) focuses upon students' approaches to learning and is designed to assess the extent to which a tertiary student

at college or university endorses, in practice, different approaches to learning and the more important values, motives and strategies comprising those approaches.' (Biggs (1987), introduction). It comprises a 42-item questionnaire that measures three approaches, three basic motives and three strategies for learning.

Table 3(1), below, shows an overview of these.

TABLE 3(1): Motive and Strategy in approaches to learning and studying (Biggs (1987) - SPQ Manual, p.3)

APPROACH	MOTIVE	STRATEGY
SA : SURFACE	**Surface motive(SM) is to meet requirements minimally; a balancing act between failing and working more than is necessary.**	**Surface strategy(SS) is to limit target to bare essentials and reproduce them through rote learning.**
DA: DEEP	**Deep motive(DM) is intrinsic interest in what is being learned; to develop competence in particular academic subjects.**	**Deep strategy(DS) is to discover meaning by reading widely, inter-relating with previous relevant knowledge.**
AA: ACHIEVING	**Achieving motive(AM) is to enhance ego and self-esteem through competition; to obtain highest grades, whether or not material is interesting.**	**Achieving strategy(AS) is to organise one's time and working space; to follow up all suggested readings, schedule time, behave as 'model student'.**

As can be seen in the table, each approach has an accompanying set of motives and strategies. Although Surface and Deep approaches are quite distinct in their characteristics and can both be used in different disciplines by the same student, the Achieving approach can be used in conjunction with either Surface or Deep approaches to enhance their efficiency and effectiveness. This approach was added in an attempt to introduce dispositional factors into the SPQ.

Biggs, on page three of his 1987 manual, claims that the three approaches, Surface, Deep and Achieving, are 'relatively consistent over situations.' This may, on the surface, appear to be at variance with my earlier statement that they can be used at different times by the same student. What Biggs means is that an individual student tends to use the same approach each time they do a similar task in the same subject. It does not, however, preclude them from using a different approach in a different subject or indeed, on occasion, varying their approach in the same subject if they have been unsuccessful in the past. In addition, Biggs (1976, 1978) found both sex and faculty differences in the use of different approaches in that females used a deep approach to the study of science subjects and a surface (rote learning) approach to arts subjects, whereas with males, it was vice versa.

Surface and Deep strategies describe the way a student performs the task itself, while the Achieving strategy describes the ways in which students organise their time and work space in order to carry out the task. The Surface approach enables the student to remember facts, the Deep approach allows an understanding of the complexity of the task and an Achieving approach (especially when combined with the Deep approach) leads to 'good examination performance, a good academic self-concept, and to feelings of satisfaction' (Biggs (1987)). Biggs incorporates these three strategies into what he terms his Three Process(3P) Model of learning (see Diagram 3(1), p55).

DIAGRAM 3(1): General model of student learning

(Biggs (1987) - SPQ Manual, p.6)

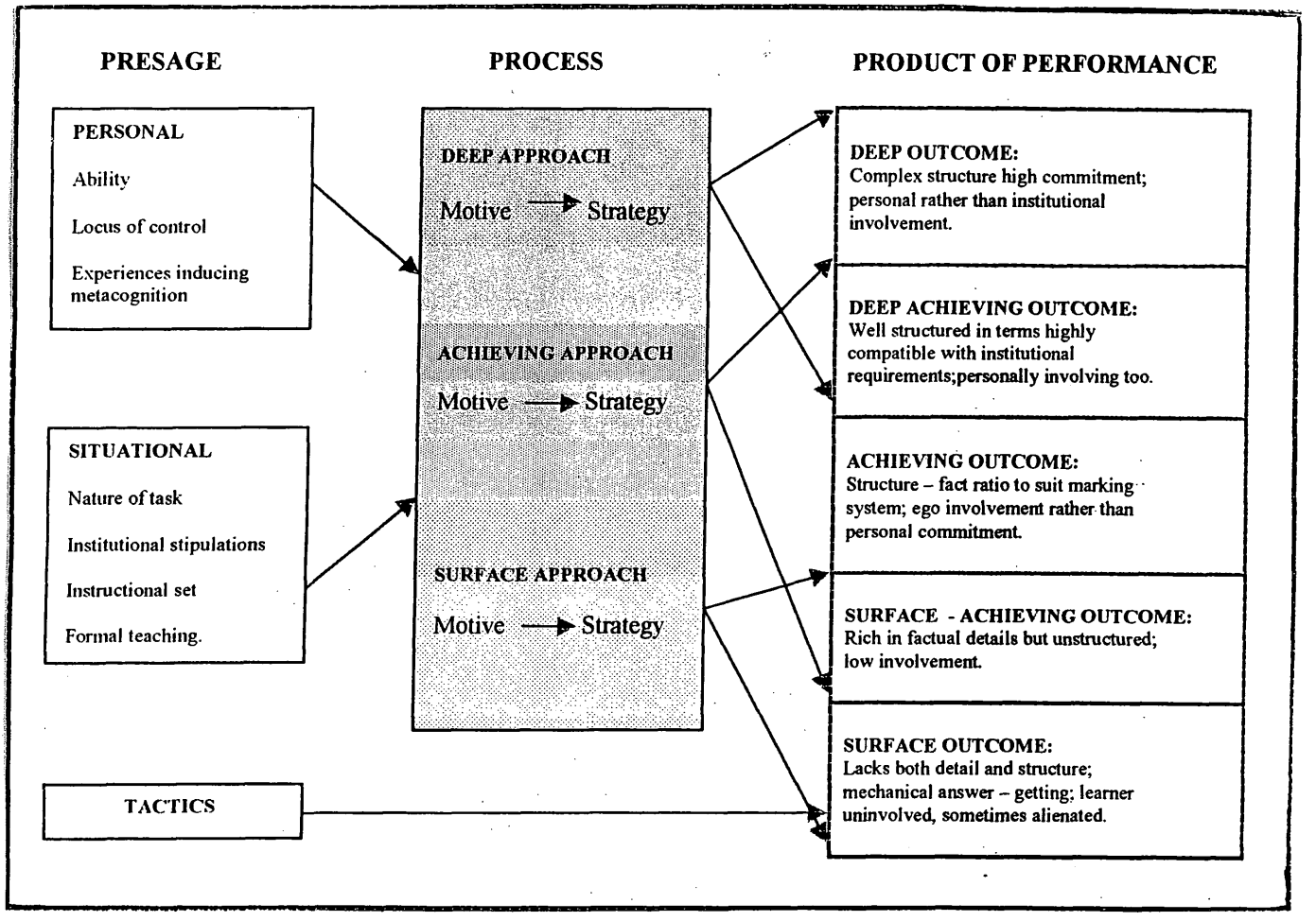


Diagram 3(1) shows these three Ps: Presage, Process and Product Performance and also how Biggs perceives their interrelation. The arrows have been drawn from Presage factors to Process and on to Product showing that students' personal and situational factors (factors such as past experience, personal characteristics, the type of task and environmental restraints such as institutional stipulations) affect the different approaches (Surface, Deep and Achieving) the student uses to perform a task. As can be seen, Surface and Deep approaches lead to different outcomes whereas the

Achieving approach can facilitate change in either of the two outcomes. It also has an outcome of its own in that a successful achieving approach can enhance a student's self-esteem, ego-enhancement and personal commitment to a subject or topic.

The criticism made on pp40 and 41 still applies, however, in that perhaps Biggs should make these unidirectional arrows multidirectional in any later models. My experience suggests that product performance affects presage and process factors for students: in other words, success or failure at a subject affects the way a student approaches future learning experiences.

The Three Processes, or 3Ps, in Biggs's (1987) Model (Diagram 3(1)) are explained, in more detail, below:

Presage Factors - factors independent of the learning situations. Biggs refers to them as personal factors (e.g. I.Q., home background, personality characteristics) and situational factors (e.g. curriculum content, teaching methods, evaluation of coursework and course structures).

Process Factors - the way a student goes about learning. These include students' approaches to learning and their strategies.

Product/Performance Factors - the outcome which comprises two broad dimensions - cognitive and affective (Biggs (1987)).

Biggs (1978) suggested that performance (or Product factors) was affected by Presage factors through Process factors like values, motives and strategies and supported the idea that study behaviour was the result of an interactive process between a person and his/her environment.

The 42 statements Biggs uses in his SPQ (for some examples, see pp43 and 44) were chosen from many such statements (designed to elicit responses about study

behaviours) by the process of Response and Questionnaire Analysis (R- and Q-analysis) whereby he gave 1000 students, from universities and tertiary colleges, many statements to consider about their study behaviours. Their responses were analysed for consistencies and similarities. This was the R-analysis. The similarities were then used to define criterial situations these consistencies would fit and provided the basis for a questionnaire on study approaches. This questionnaire was then used to determine whether or not other students possessed these qualities. This process was known as Q-analysis. These common factors were then used to find similar factors in other samples of students. However, this type of research is likely to homogenise out the unique qualities of student learning in favour of commonalties. In practical terms, this means that students' disclosures about their study behaviours were used as the content of further questionnaires which, in turn, tested more students.

Biggs's SPQ (1987) (like the SHEIK) was a questionnaire designed to place students into pre-selected categories based on how they reported performing tasks. Marton and Saljo (1976) had actually given students tasks to perform, then divided them into pre-selected categories. Rossum and Schenk (1984), like Marton and Saljo (1976), assessed students on the basis of how they actually performed tasks but also asked them to report on their study behaviours, like Biggs (1987), although the tasks they set their students were designed for their 1984 research, and have therefore not been generally used, unlike Biggs's SPQ. The next section will briefly describe the research of Rossum and Schenk (1984).

3.4 An overview of the research of Rossum and Schenk(1984).

Unlike Biggs whose SPQ (1987) requires students to answer questions on their study behaviours, researchers like Rossum and Schenk (1984) actually administered tasks to students and then asked them to report on their study behaviours while performing those specific tasks. Both techniques, however, were task-based.

Rossum and Schenk (1984), also make a distinction between first-order and second-order perspectives with regard to human learning research. They define the first-order perspective in terms of how the learner functions together with details of his/her study environment. This perspective gives an outsider's view of the learner and how s/he fits into given headings (as used by Biggs (1984), and Honey and Mumford (1986) - to be described in Section 3.5). The second-order perspective researches learning from the learner's perspective. This is 'not directed so much to reality as it is, but more so to how people view it' (Rossum and Schenk (1984)). Marton and Saljo (1976) and Rossum and Schenk (1984) examine learning from the second-order perspective in that their questions ask the learner how s/he views and understands the world around her/him and takes account of the learner from a phenomenological and experiential viewpoint. Consequently, this draws upon the Psychology of perception, i.e. how the student perceives his/her learning experiences. On the other hand, a first-order perspective uses a limited, pre-labelled questionnaire constrained by the closed yes/no questions in the LSQ and the seven-point scale of the SPQ). This also draws upon cognitive psychology in that students' cognitions about their learning approaches are being assessed. However, the cognitions measured by the set questions in these questionnaires may not be important to the student.

The major difference between Biggs (1987) and Rossum and Schenk (1984) is that the latter use various tasks and tests as well as their questionnaire. Rossum and Schenk (1984) also used Marton and Saljo's (1976) categorisations, i.e. Surface and Deep processing. They examined the extent to which these study strategies could be related to the views of students on learning itself and the quality of that learning outcome. Table 3(2), below, shows first and second order research.

TABLE 3(2): First and second order research into Surface, Deep and Achieving approaches to study.

MARTON & SALJO (1976) - Surface/Deep (Second Order) **BIGGS (1976 - 8, 1987) - Surface/Deep/Achieving (First Order)** **ROSSUM & SCHENK (1984) - Surface/Deep/Achieving(Second Order)** **+ students' reflections on a task (Second Order)** **HONEY AND MUMFORD (1986) - Activist/Reflector/Theorist/Pragmatist (First Order)**

Table 3(2) summarises the first and second order research into surface and deep and achieving processing which has been discussed in this section. The next section will present and evaluate the disposition-based research of Honey and Mumford (1986).

3.5 Disposition-based measures of the study process: Honey and Mumford's Learning Styles Questionnaire (1986)

The Learning Styles Questionnaire (LSQ) has achieved considerable popularity, and this section, will describe its main constructs but will criticise it because this test also looks at common factors among learners. In contrast to Biggs's SPQ (1987), a task-

based approach to study skills measurement, Honey and Mumford's LSQ (1986) is based more upon the dispositions of the student in that it asks about students' general attitudes rather than about their performances in specific task-based activities.

Statements are given to which a student answers Yes or No. Examples are given below:

'I am usually one of the people who puts life into a party.'

'It is best to think carefully before taking action.'

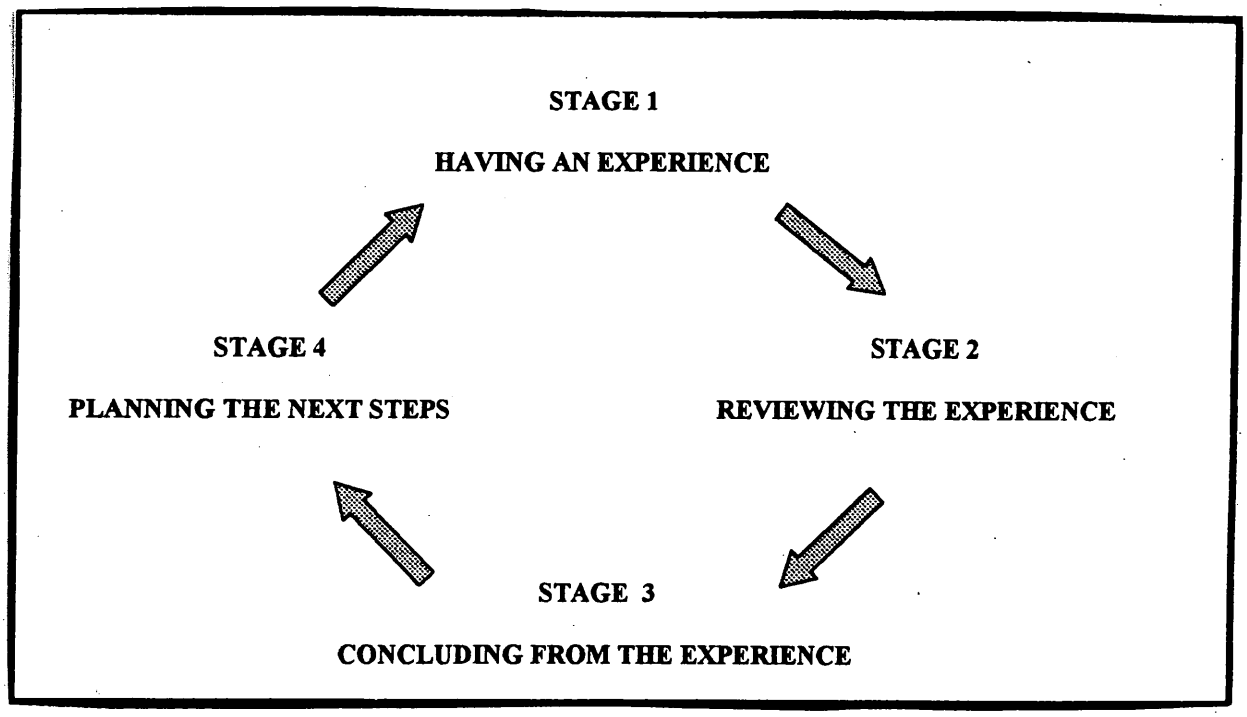
'I quickly get bored with methodical, detailed work.'

'I am always interested to find out what people think.'

The LSQ looks at the relative contributions of four learning styles to an individual's ability to learn. As mentioned on pp45 and 46, the four styles are Activist, Reflector, Pragmatist and Theorist. Once these styles have been measured, Honey and Mumford (1995) suggest that they can be used to strengthen a students' learning capabilities by increasing awareness of learning tasks which are congruent with their preferred learning style so that they are more able to select learning situations and experiences which will suit that particular style. The later manual (1992) for the LSQ states that it is designed for all trainers, educators and development advisers. Honey and Mumford work as management consultants and are involved in management training and development and the LSQ has been devised as a way of not only detecting and improving the preferred learning style of managers, trainers and teachers, but as a means of assessing the preferred learning styles of their workers or students and thus enabling those instructing to vary their approach in order to dovetail with the various learning styles of those being instructed.

Honey and Mumford (1986),using the work of David Kolb (1984), see learning as a continuous spiral of four stages (see Diagram 3(2)):

DIAGRAM 3(2): Kolb's Stages of Learning



In their Learning Styles Questionnaire, they do not ask direct questions about how people learn; the questions are directed towards revealing the underlying dispositions of the learner, i.e. the various characteristics of learners based upon their experiences of past learning situations together with innate personality and intellectual dispositions. Once the Learning Styles Questionnaire (LSQ) has been completed by the student, four scores of up to twenty marks per score are obtained. These scores are for the four learning styles identified by Honey and Mumford, namely Activist, Reflector, Theorist and Pragmatist. Students are given a scoring for each style which is then

compared to standardised scores (based on the scores collected from 3,500 people and the norms subsequently obtained from that sample). The students' scores for the four styles are them banded from A to E depending upon whether they show (A)very strong, (B) strong, (C)moderate, (D)low or (E)very low preferences for those learning styles.

Honey and Mumford (1995) argue that by dividing learning styles into four different types, they are easy to remember and 'reinforce the stages people need to go through in order to be balanced learners.' However, it could be counter-argued that by reducing learning to four styles, they have thus considerably limited the vast variety of learning dispositions to a factor of four. Thus the LSQ, like the task-based SPQ of Biggs, is likely to both homogenise out individual differences, and highlight student similarities. This can be seen when examining LSQ scores because students sometimes have equally high, or low preferences for more than one style. Since they score some marks for each style, albeit low scores, it shows each student has some preference for all styles. If students show a marked preference for one style, it is assumed that this is their preferred learning style. However, it is only the style preferred from the limited number of alternatives and within the limited confines of the specific situations given in the questionnaire to which students can only answer 'Yes' or 'No'. There may, however, be dispositions subsumed within that category which will pinpoint more exactly each student's preferences. On the other hand, the fact that some students show marked preferences for more than one style, indicates that some are eclectic in their learning styles and trying to categorise them as preferring one style and teaching them accordingly, would result in restricting their learning experience.

Honey and Mumford (1992, p18 and 1995, p7) state that the items on the questionnaire are a reflection of how learning style preferences 'underpin and are associated with' everyday behavioural tendencies. They see this as a demonstration of the fundamental importance of learning styles. However, it could be argued that once learning styles are established, they can be used to influence perception of learning behaviour due to either a labelling or a response bias. Therefore, Honey and Mumford's claim that these four learning style preferences 'underpin and are associated with' everyday behavioural tendencies may be only partially defensible. It is more likely that their LSQ had affected the perception of these everyday behavioural tendencies by giving the student pre-selected categories by which to label themselves.

Honey and Mumford (1992, p18 and 1995, p7) also claim that because the four styles underpin everyday tendencies, this helps demonstrate the fundamental importance of learning styles. However, this merely continues the somewhat flawed and circular argument in that they are using this unproven claim (that these four learning styles underpin everyday behavioural tendencies) to show this demonstrates the fundamental importance of learning styles without having shown that their four styles are the appropriate ones to underpin behavioural tendencies in the first place. It is therefore necessary to move outside the paradigm, associated with typologies (such as the LSQ and Biggs's SPQ) to find a means of studying learning styles which are as individual as the student they are describing. This will be discussed further in Chapter Four when I describe my adaptation of the Q-sort technique to try to address the issue.

To conclude this section, a table has been constructed to summarise the research presented in this chapter (see Table (3) below).

TABLE 3(3): Research investigations using first and second order perspectives.

RESEARCHER	BASIS	TECHNIQUES
MARTON AND SALJO (1976)	Task-based. Second order perspective.	Students were asked questions about an education article.
BIGGS (1987)	Task-based. First order perspective.	Questionnaire concerned with task-centred study behaviours.
ROSSUM AND SCHENK (1984)	Task-based (based on a standardised task given to students). Second order perspectives.	1) Pre-test. 2) Test. 3) Students asked to write down the types of questions they expect to be asked. 4a) Open questions asked to determine the approach to the test the student has taken. 4b) What the student has understood of the text and its structure. 5) Questionnaire meant to clarify how the student judged the questions. 6) Micro questions on the text. 7) An open question about the student's own learning conception.
HONEY AND MUMFORD (1986)	Disposition-based. First order perspective.	Questionnaire concerned with thoughts, feelings, and values inherent in the student as well as responses to study situations.

As can be seen in Table 3(3), Marton and Saljo (1976), Biggs (1987), Rossum and Schenk (1984) and Honey and Mumford (1986) elicited their information in various ways. Marton and Saljo (1976) and Rossum and Schenk (1984) used a second order perspective by assessing students' approaches to completing tasks and noting their comments while doing those tasks. On the other hand, Biggs (1987) and Honey and Mumford (1986) used a first order perspective to determine students' approaches to study by asking them pre-selected questions on how they performed tasks.

Before Chapter Three concludes, the next section will evaluate the work of Marton and Saljo (1976), Rossum and Schenk (1984), Biggs (1987) and Honey and Mumford (1986), in terms of their contributions to the understanding of student learning and its measurement.

3.6 An evaluation of the research of Marton and Saljo (1976), Biggs (1987), Rossum and Schenk (1984) and Honey and Mumford (1986)

This section will give an evaluation of the work of Marton and Saljo (1976), Rossum and Schenk (1984), Biggs (1987) and Honey and Mumford (1986) by analysing the underpinning research.

Marton and Saljo's (1976) sample size was small (40 female first year students and 30 students of Educational Psychology); the long-term retention of the task made it unclear whether or not the student's memory of the task, or the task itself, proved to be the deciding factor in the study process, i.e. did surface processors reproduce the text in their answers because they had good memories? did deep processors seek other information and look for principle ideas because they were unable to reproduce the text verbatim? Also, the research relied upon task-specific information in that students' answers depended upon their understanding of a given text and since this text was an educational article with political undertones, it may not have interested, or even been understood by, some of the students. (N.B. They were, however, students reading Educational Psychology so should have understood it.)

Biggs (1987), also relied upon task-specific information in that his questionnaire asked students for information on their study behaviour and also how they performed task-

based activities, although students were not given a specific task to perform (unlike Marton and Saljo's students). In addition, the factor analysis techniques Biggs used for eliciting his information tended to homogenise out individual factors in favour of common ones. Biggs did, however, suggest that an examination should be made of the mismatch between a student's values, motives and strategies of study in order to help underachievers with their study skills by re-aligning this mismatch. Thus his SPQ can be used for diagnostic purposes.

Rossum and Schenk (1984), like Marton and Saljo (1976), used a small sample (29 males and 40 females), the participants were not volunteers in that, for Year One students, participating in research was compulsory. In order to determine how people acquire their ideas about studying, this research needs to be replicated especially the generalisations made by Rossum and Schenk (1984) which suggest that memorising in secondary education needs to be made more explicit, i.e. memory techniques need to be elaborated upon, especially those that can be used to develop study techniques later. Although more research needs to be done in this area, a different system of assessing study approaches is also needed which will not only analyse individual student learning, but will assess what occurs inside the student to the same extent as it measures the interaction between the student and the learning environment. These are socio-cognitive factors which will be affected by teachers, parents and peers and will, in turn, influence study approaches within the student.

In contrast, the Learning Styles Questionnaire (1986), is concerned with dispositions inherent in the student as well as their reported responses to study situation choices. However, whilst it gives a learner's viewpoint, it is limited since the items on the questionnaire were formulated by the researchers to detect the four main learning

styles (Activist, Reflector, Theorist and Pragmatist) and therefore the answers were, to some extent, predetermined by the selection of questions. Like Biggs's SPQ, however, Honey and Mumford's LSQ also produces labels and typologies, and is a static model. Thus, neither model fulfils the criterion (p66) that a system of assessing study approaches needs to assess not only what occurs inside the student but also the interaction between the student and his/her learning environment.

Whereas Honey and Mumford's LSQ (1986) measures general dispositions, Biggs's SPQ (1987) measures the task-based potential of students' dispositions. In other words, Biggs (1987) sees dispositions as tack-ons to the different approaches, and equivalent to the motivational aspects of learning. He does not include peer group interactions or personality factors. Honey and Mumford's LSQ (1986), on the other hand, probes the extent to which students are social beings and taps the socialising qualities of individuals. Biggs (1987) developed a more cognitive approach and, while accepting the importance of dispositional factors, is more concerned with the task-based cognitions which influence a student's approach to study; in other words, what Biggs (1987) measures is a cognition within the student, rather than the interaction between the student and his/her learning environment. Yet there is an additional social environment (discrete from the learning environment, and partially measured by Honey and Mumford (1986)) which impinges upon, and affects, both the student and his/her learning environment. These social and learning aspects are the socio-cognitive factors mentioned on p66, factors such as social interactions with peers and teachers which influence study approaches. There needs to be a within (intra) and a between (inter) student learning approach to detect what occurs inside the student which is attributable to his/her interactions with both the learning and the social environment.

Biggs's SPQ (1987) and Honey and Mumford's LSQ (1986) also offer a fairly speedy way for a tutor to measure prescribed study approaches, whether task-based or disposition-based. In addition, they are coupled with diagnostic interventions. Biggs's SPQ (1987) is used to detect students whose styles have been mismatched (e.g. those students whose SPQ reveals that they are surface processors but who are struggling with a deep processing style, and vice versa) and who are offered remedial help. Honey and Mumford's (1995) manual, 'Using Your Learning Styles' addresses the issue of how students can choose learning activities to suit their preferred learning style and also how they can improve their learning styles. These interventions, however, are somewhat prescribed and presume that all study faults can be categorised and improved in similar ways.

Nevertheless, Biggs's later research, in 1993, considers such possibilities of a mismatch between the students' learning style and the type of material to be studied. He suggests that students who use an approach that is inappropriate for them may learn less than they are capable of doing. For example, if students are using an approach which is at variance with the type of approach usually employed in that subject, a mismatch will have occurred, according to Biggs (1993). Conversely, in Honey and Mumford's LSQ (1995, third edition, p17), there is the suggestion that students can make the most of their preferred learning style while also developing the styles which are underused in order to be "fully equipped to learn from experience". The LSQ was designed for management training, but has been used in education by Hudson (1991). (This research will be discussed in Chapter Four.) However, it is possible that students who are encouraged to learn in their preferred learning style may progress faster than students who are not. (Honey and Mumford (1992) suggested this may be the case for

management training.) Thus, students working in groups may be more productive when working with other students who have similar working styles. Also, if the work given is differentiated in such a way that it takes account of the variety of learning styles of the students, this may facilitate the learning process. Indeed, the four learning styles (Activist, Pragmatist, Reflector and Theorist), have been further divided into two main learning styles or orientations (doing (Activist and Pragmatist) and thinking (Reflector and Theorist)) and Honey and Mumford (1992, p17; 1995, p7) have made a comparison with right brain (intuitive, spontaneous, qualitative - Activist and Pragmatist) and left brain (factual, analytical and quantitative - Reflector and Theorist) thinking processes although this tends to oversimplify the concept of brain laterality. They also state that learning style preferences may change when people change jobs and/or orientations. However, they suggest that it may well be that their preferred (or first and second) learning styles may be retained, but their third and fourth styles may undergo change (1992, p18; 1995, p7). This was also my finding when using the LSQ with my students but this was a snapshot finding which lacked a dynamic element.

Honey and Mumford (1995, p7) say that since most people have never consciously considered **how** to learn, "it is not helpful to ask questions that directly inquire into this" and therefore ask questions which are, "indirectly indicative of preferred learning styles".

Honey and Mumford (like Biggs - see p54 of this thesis) found gender differences in learning style (as did Biggs) in that females were more likely to be Activist and males showed stronger preferences for Theorist and Pragmatist styles. They also found differences based on occupation in that 'A' level students were more likely to be

Reflectors/Activists while teachers were inclined to be Reflectors/Theorists (again in keeping with my findings).

The main difference between Biggs and Honey and Mumford's application of commonalties to individuals is that whereas Biggs used them to examine individuals' reports on their methods of performing certain tasks, Honey and Mumford tested individuals' everyday behavioural dispositions, albeit within four categories.

In conclusion, although Marton and Saljo (1976), Rossum and Schenk (1984) and Biggs (1987) measure the study process in a task-based way and Honey and Mumford (1986) in a dispositional one, neither type of approach (even when used in conjunction with each other) offers a complete picture of student learning for two main reasons:

1) Both rely upon pre-set questions which cannot always be answered fully by students. Even when students are trying to be as accurate in their answers as possible, there are many questions to which they would prefer to write 'sometimes' than either 'yes' or 'no'. Thus the answers they are constrained to give will be polarised.

2) The standardisation process may also serve to emphasise these extremes by creating the categories and the qualifying norms for each category.

Thus a means of assessing the study process is needed which would be as individual as each student, would act as a baseline against which students can chart their own progress, and could be used in conjunction with any other approaches to add a qualitative dimension. This thesis will present such a measure and refine it so that it can be used by students in tertiary and further education. This measure will be the Q-sort technique (originally used in counselling to measure a client's progress) which will be adapted to suit the requirements of this thesis. See Chapter Four for a more detailed description of this technique.

3.7 A summary of the research on study approaches mentioned in Chapter Three

As a conclusion to Chapter Three, a summary of the research on study approaches mentioned in Chapter Three will be given. Although my ideas on teaching were informed by Piaget, Skinner and Rogers (Chapter One), I began to seek, and later to question, the methods used to measure students' attempts to learn (Chapters Two and Three). Marton and Saljo (1976), Rossum and Schenk (1984), and Biggs (1987) used task-based techniques to measure study approaches, whereas Honey and Mumford (1986), used a disposition-based questionnaire to study underlying dispositions associated with four different styles of learning.

These approaches suggest that learning styles and study skills can, in part, be measured. However, there are shortcomings (as previously mentioned) which suggest that socio-cognitive factors (such as interactions with parents, teachers and peers) which influence study approaches, need to be considered when devising study assessment techniques. It is with this in mind that my research needs to be qualitative as well as quantitative.

Table 3(4), p72, summarises and evaluates measurements of study skills, habits and approaches from Jackson, Reid and Croft's SHEIK (1979) to Honey and Mumford's LSQ (1986).

TABLE 3(4): Summary and evaluation of researchers' attempts to measure the study process

RESEARCHER	FINDINGS	EVALUATION	FURTHER POINTS
Jackson, Reid and Croft (1979)	Developed SHEIK	Simplistic Static Outdated Interventionist - advice given at each of 7 stages First order perspective.	Now superseded by Biggs's SPQ.
Marton and Saljo (1976)	Divided students into Surface and Deep processors on the basis of their reading a text	Memory confounded results Small sample (70 paid students) Task-specific information based on students' understanding of a text Research based on learner's performance Second order perspective.	Student's understanding of a task and memory may have been confounding factors.
Rossum and Schenk (1984)	Students read texts and answer questions Then asked open-ended questions on their feelings about the text-based questions	Used a small sample (69 students) Used more than one measure of the study process Second order perspective.	Depends on one's definition of the second order perspective, i.e.to what extent do they view the learning process and its measurement from the learner's perspective?
Biggs (1987)	Developed the Study Process Questionnaire (SPQ) - Surface, Deep and Achieving.	Task-based Research based on learners' self-reports on how they perform tasks R- and Q-analysis homogenises out individual factors in favour of common ones Static model - uses labels and typologies Interventionist - attempts to change inappropriate uses of the approaches First order perspective	Finding that there are sex and faculty differences in study approaches, that one is more appropriate than the other, and that students can be taught to use the appropriate one.
Honey and Mumford (1986)	Disposition-based questions on learning approaches - designed for business management training Divided learners into Activists, Pragmatists, Reflectors and Theorists Found sex and faculty differences in learning approaches	Static Uses labels and typologies First order perspective	Even though the LSQ measures underlying dispositions, rather than the study approaches of the SPQ, it is no less static.

N.B. Both Marton and Saljo and Rossum and Schenk used small samples from which to obtain their data and participation in their research was compulsory for their students. In addition, they did not test their theories by using their own standardised tests, nor did they develop tests which could be used by other researchers, therefore

replication of their research would be more difficult than with either Biggs's SPQ or Honey and Mumford's LSQ.

However, a lateral step needs to be taken from the paradigms set out in Table 3(4), a new and individual measure of study approaches. Such a measure would:

1) assess individual students' ideas about their study approaches without being constrained by labels, typologies and pre-set questions; and

2) treat students as individuals enabling them to act as their own base-lines against which their future scores can be measured.

Chapter Four will examine one possible route forward. As a conclusion to Chapter Three, Table 3(5), below, shows a summary of my background research.

TABLE 3(5): Summary of background research.

CATEGORY 1 - BACKGROUND RESEARCH INTO THE LEARNING PROCESS
PIAGET (1958, 1968, 1972, 1973)
SKINNER (1953, 1958, 1968, 1971, 1974, 1981)
ROGERS (1951, 1959. 1974, 1983)
CATEGORY 2 - TASK-BASED MEASURES FOR QUANTIFYING STUDY APPROACHES TO THE LEARNING PROCESS
MARTON AND SALJO (1976, 1984)
BIGGS (1976, 1978, 1987, 1993)
ROSSUM AND SCHENK (1984)
CATEGORY 3 - DISPOSITION-BASED MEASURES FOR QUANTIFYING THE LEARNING PROCESS
HONEY AND MUMFORD (1986, 1992, 1995)
HUDSON (1991)

CHAPTER FOUR

Presenting an argument for a new approach and the aim and hypotheses

4.1 Moving aside typologies to make way for a new approach

Having evaluated existing research measuring study approaches, it has been suggested that they label students by creating typologies. In addition, they use quantitative, nomothetic measures rather than qualitative idiographic ones. If I wish to encapsulate the diversity and richness of my students' study approaches, I need to devise a measure which will be as unique as each individual student and which will vary, not only from student to student, but from discipline to discipline and from time to time.

Reason and Rowan (1990) critically evaluated the positivist tradition in scientific methodology by stating that it has been, "based upon the principle that the only reliable knowledge of any field of phenomena reduces to knowledge of particular instances of patterns of sensation.". In other words, positivists paid attention only to "logical structure and empirical consequences," (Reason and Rowan (1990), p4). By using questionnaires which result in labelling students, as did Biggs (1987), and Honey and Mumford (1986), I would be falling into the Positivist trap, in that I would be reducing a wealth of knowledge to a few typologies.

Classification systems like that of Biggs (1987), and Honey and Mumford (1986), would constrain my data into pre-selected categories and systems and would inevitably fail to make sense of data which does not fit, perhaps reducing the validity of my research.

While the SPQ and LSQ are established questionnaires and not without merit, their validity could be enhanced by experiential research describing data (obtained from

students) which does not fit into pre-selected categories. It is hoped that, through a process of self-generated statements and interviews with students, further areas of research will be opened. It is also my intention to use introspective data gained by asking students to describe how they felt and what they thought of test items, as did Rossum and Schenk (1984). In other words, students will be asked to describe their own study behaviours.

Study skills, habits and approaches do not suddenly arrive in a student's repertoire of behaviours but are likely to have evolved over time and therefore research into such behaviours needs to take into consideration a historical perspective, by asking students to generate ideas from their past experience about the qualities required to be a good learner. Whatever succeeds with one particular student will be accepted as a good study strategy for that student. Those who have succeeded in the past will be less likely to give up their study approaches, even after being told that there are different strategies that can be adopted. This demonstrates Thorndike's Law of Effect which states that what happens as a result of behaviour will influence that behaviour in the future (Gross (1996)). However, if students can describe their preferred approaches, far from being persuaded to adopt a different approach, it may be possible to adapt successful students' approaches for use by those less successful while still enabling students who fail, to protect and enhance their self-esteem.

Miller and Ross (1977) refer to this as the 'self-serving attributional bias.' This may be defined as:

(a) the self-protecting bias which protects our self-esteem and

(b) the self-enhancing bias which enhances self-esteem.

It has been my experience that students blame themselves when they fail and attribute their success to their lecturer. Abramson et al. (1978) found that depressed people, too, tend to explain their failure in terms of their own inadequacies and their successes more in terms of external factors. This would make them more likely to seek external help to improve their study approaches. There is also evidence that women are more likely than men to cope with stress by blaming themselves for their plight and attributing their achievements to external factors (Davison and Neale (1994)). The majority of 'A' Psychology level students I have taught have been female (though I doubt if they have all been depressed) but my experiences would provide some support for the findings of Davison and Neale (1994). Thus some female students who have failed their exams are also likely to be depressed about this and are more likely to blame themselves and believe that others know more. If this is the case, then these students may be more likely to change their approach to learning. The Q-sort technique (to be described in Section 4.2) takes account of these differences in self-esteem, as well as affect and gender. The next section will introduce this approach.

4.2 Introducing a new approach: the Q-sort technique

While commonalties can be helpful, they tend to be static and therefore label students. Any measure of student approaches to learning needs to take into consideration not only the individuality, but the developmental changes in individuality, of each student. A possible way forward comes from a measure which has been used, not in education, but in therapy. It is called the Q-Sort technique and it was designed by Stephenson (1953), to measure a person's self-concept. (The 'Q' in Q-sort was arbitrarily chosen and has no particular meaning.) Using this technique, clients are

given a pile of cards, each of which describes a personal quality (e.g. "Is well-liked", "Evades responsibility", "Works diligently"). They are asked to sort the cards in order from those they feel are most like them to those they feel are least like them. This procedure is sometimes followed by a further step in which clients sort the cards a second time to describe their ideal selves, the kind of person they would like to be. Repeated Q-sorts have been used to measure changes in self-concept as a result of therapy, (especially Rogerian therapy). Rogers (1959) showed that the discrepancy between Actual and Ideal Q-sorts decreases as therapy progresses and can be a measure of its success, either because clients become more realistic about their Ideal selves or because their self-concepts increase and alter their opinions of their Actual selves (Rogers (1959); Rogers and Dymond (1954). Cited in Bootzin and Acocella (1988), p158-9).

It is my intention to use the Q-Sort Technique in a novel way, to individualise approaches to measuring students' concepts of their approaches to learning. However, one methodological problem is that students sometimes choose statements which will present themselves more favourably. In order to avoid this, they will not be given already prepared statements, but will be asked to generate their own. Thus, students will act as their own baselines against which to compare their ideal scores and also their future scores. Through this process of self-generation of statements, students will not be constrained by typologies. In addition, since students' statements are individual, unique and confidential, and will be used to help them become more effective learners, it will not be in their interests to misrepresent themselves.

Students will be asked to generate 20 statements about learning. The first 10 will begin, "A good learner is .....", or,"A good learner does ....."The second 10 will begin, "A poor learner is .....", or, "A poor learner does ....."(See Appendix 1 (pp300-303).)

In the first ordering of the Q-Sort, students will be asked to put their 20 statements in order from Those Most Like Them to Those Least Like them now (Actual Learner).

A second Q-sorting of the same 20 statements will be made, ordering statements from Those Most Like to Those Least Like the learner they would like to be (Ideal Learner).

The Q-Sort will be used to test students in Year 1 and Year 2 of their course, and also in one-year courses. It will also be administered more often if required. If statements need to be removed or added by individual students then notes can be made of what they are and why they were changed. This, in itself, will also be a gauge of student progress and change.

Comparisons can be made between:

Q-Sort 1 (Year 1) and Q-Sort 2 (Year 2) (same student) - actual learner intra student comparison.

Q-Sort 1 (Year 1) and Q-Sort 2 (Year 2) (same student) - ideal learner intra student comparison.

Q-Sort 1 (Student 1) and Q-Sort 1 (Student 2)(different students) - actual/ideal learner inter student comparison. (Year One)

Q-Sort 2 (Student 1) and Q-Sort 2 (Student 2) (different students) - actual/ideal learner inter student comparison. (Year Two)

Some statements can be combined if they are similar. Trends may be seen both within and between students and may also be detected in the generation of certain statements

as opposed to others between year groups. Since the Q-Sort Technique can be used to quantify the differences between each student's Actual and Ideal Learner scores, it can also be used as a measure of a student's self-reported progress, for target-setting and for the use of interventionist measures.

If a student's Actual and Ideal scores are similar, it may either mean that they are not stretching themselves, or that they are working very hard to achieve their goals. If their Actual and Ideal scores are very different, it may mean that they are not working hard enough to achieve their goals, or that they have set themselves unrealistic goals.

Students' Q-sort scores can be compared with lecturer predictions of their examination grades, SPQ and LSQ scores, and actual examination grades, to establish both predictive and concurrent validity. In addition, interventions may be determined in the following way:

(a) If students' Actual scores are high and the lecturer's predictions are for successful examination outcomes, then little intervention will be necessary (True Positives); these students will probably succeed.

(b) If students' Actual scores are high but the lecturer's predictions are for unsuccessful examination outcomes then, although intervention should be offered, it will be unlikely to succeed since these students may not think they need help (False Positives); these students will probably fail.

(c) If students' Actual scores are low but the lecturer's predictions are for successful outcomes then these students may seek subject-specific help and also intervention in the form of confidence-building information on their ability to succeed (False Negatives). These students are likely to succeed.

(d) If students' Actual scores are low and the lecturer's predictions are for unsuccessful outcomes then these students will be more likely to leave the course before their 'A' level Psychology course is completed (True Negatives). These students may also leave college.

Intervention is defined, in this thesis, as sharing with the student their SPQ, LSQ and Q-sort results together with the lecturer's prediction and a recommendation to some students to attend additional learning support sessions which are held at various times throughout the week in the Learning Centre at college, where subject-specific help is given to students by specialist lecturers. However, caution needs to be exerted when recommending intervention, since each Q-sort will be different and therefore lacking in generalisability from one student to another. Caution also needs to be applied when considering the reliability of the Q-sort because I have found that students who have failed in the past are often more likely to seek and accept advice on how to change their approach because they lack confidence in their own study abilities. Thus they will be more likely to change their Q-sort statements which will then show little consistency over time. (Section 4.6 will present the hypotheses and interventions in more detail and the reliability of the Q-sort will be discussed in Chapters Ten and Twelve.)

Having now described the Q-sort technique, the next section will present an argument supporting this new approach.

4.3 Argument supporting the new approach

In Section 4.1, it was mentioned that the new approach would take account of self-esteem, affect and gender differences. It could also take into consideration socio-

cognitive factors such as parents and home background, and attitude to teachers and peers, in that students' statements can include whatever they think impinges upon their study approaches. My teaching experience also leads me to think that methods for measuring study approaches need to consider age in that students' approaches sometimes change as they grow older. Piaget thought of intellectual development as a spiral, implying a continuous process with later stages built upon earlier ones (Gross (1996)). If this is the case, then stages of intellectual development may go hand in hand with the development of study skills, in that students delve more deeply into a subject the longer they study it; in which case, a Deep study approach may develop at a later stage than a Surface one (Marton and Saljo (1976); Biggs (1987)). In order to test the hypothesis that students change their study approaches as they grow older and gain more study experience, any method used to measure this experience would need to be flexible enough to register change due to age and also changes due to different subject-specific requirements. It may be the case that students change their approach as a function of age, time, experience and subject being studied. This hypothesis could be tested by comparing Q-Sort results not only within each student, but between students; and from year to year within and between disciplines.

It seems appropriate, when developing the Q-sort, to begin testing students during their first year in tertiary/further education during their transition from GCSE to 'A' level, the period expected to coincide with a change in study strategy to cope with the different demands of the two types of course. As well as a longitudinal study measuring each student's progress, a cross-sectional approach can be used to compare students.

However, since the Q-sort uses an idiographic approach to research into study approaches, as opposed to the nomothetic approaches of Biggs (1987) and Honey and Mumford (1986), it therefore involves a departure from the historically accepted method of assessing study approaches. Before I made this departure, and in order to ascertain which measures could be used to give background information about the students and to concurrently validate the Q-sort, a pilot study was carried out using Honey and Mumford's Learning Styles Questionnaire and replicating a study by Hudson (1991), a Psychology lecturer who administered the Learning Styles Questionnaire to his students to find if there was a predominance of any one preferred learning style among his Psychology students; in other words, if learning styles were subject-specific.

The next section will present this pilot study and show its implications for the main study of this thesis.

4.4 Pilot study

In September 1995, Honey and Mumford's LSQ was administered to twenty-two first year and twenty-one second year 'A' level Psychology students, replicating Hudson's (1991) study to determine whether there was a predominance of any one preferred learning style among the students, i.e. whether preferred learning styles were subject-specific. It was thought that if preferred learning styles found in students were subject-specific, i.e. varied from subject to subject, then the Q-sort would also vary accordingly. In addition, Hudson found that his students' preferred learning styles reflected his own and if this was shown to be the case when my students were administered the LSQ, then their Q-sorts may also contain statements about learning

which may reflect my own attitudes. When later cohorts were given Q-sorts, they were asked to complete one for each subject to detect if attitudes varied between lecturers. In addition, I completed my own Q-sort to see if my statements were similar to the students. To return to the pilot study, when the 1995 students were administered the LSQ, the following results were found:

Year One - 12 out of 21 students were predominantly Activists, (12 Activists; 8 Reflectors; 1 Theorist; 0 Pragmatists)

Year Two - 12 out of 22 were predominantly Reflectors, (6 Activists; 12 Reflectors; 0 Theorists; 4 Pragmatists)

Three possible explanations may account for this:

(a) 'A' level Psychology students, in general, may be Activists and Reflectors, or a combination of both. These students were, however, taking an assortment of other subjects for 'A' level and GCSE. The LSQ was measuring underlying dispositions and students reported that the answers they gave to the questionnaire were applicable to all their subjects, suggesting the LSQ was not measuring subject-specific study approaches (like Biggs's SPQ) but was measuring dispositions underlying learning approaches in general.

(b) 'A' level Psychology students may become Reflectors in their second year as a maturational process.

(c) My students had adapted to my own preferred learning style (Reflector) between the first and second years of their course. (It so happens that my learning style is reflected in my teaching style. Hudson (1991) suggested that his students also showed evidence of using their lecturer's learning style - this point will be discussed later.)

Hudson (1991, p8-12) administered Honey and Mumford's TLS questionnaire to 70 Psychology students in three higher education institutions in Bristol and found that 70% were Activists, Theorists, or a combination of both (Hudson's own learning style combination). Two possible reasons for this could be:

(a) Psychology undergraduates may generally be a mixture of Activists and Theorists; and

(b) the undergraduate students had learned to adapt their learning styles to match Hudson's preferred style.

My findings were at variance with Hudson's in the following ways:

(a) data indicating that my 'A' level students had become Reflectors as a process of maturation from Year One to Year Two was at variance in that Hudson found his students to be Activists/Theorists. They were one year older than my students and studying for their degree and they were not Reflectors, nor had their Activist approach been left behind as a process of maturation; and

(b) the data indicating that my Psychology students were predominantly Reflectors differed from Hudson's finding that his students were predominantly Activists/Theorists thus showing that there does not appear to be any one dominant style adopted by Psychology students.

However, one of my findings supported Hudson in that both his students and mine showed evidence of using the learning style of the lecturer: Hudson's learning style is Activist/Theorist and I am a Reflector. Perhaps my students had been adapting over time to my learning style (which is also my teaching style); however, not all teachers teach in their own learning style so student adaptation may not have accounted for Hudson's findings. In addition, Honey and Mumford's (1986) norm tables, suggest

that preferred learning styles remain constant, in which case students would not alter their styles to match their lecturer. However, according to Honey and Mumford's norms (1986), 'A' level students are mainly Activists or Reflectors, while teachers are predominantly Reflectors or Theorists. Since most teachers will have studied for 'A' levels, it seems inevitable that they will have, at some point, been Activists or Reflectors, if Honey and Mumford's norm tables (1986) are correct. Their progression to Reflectors and Theorists, as teachers, must then represent a change in their Preferred Learning Styles (PLS), a factor which shows that PLS are not constant.

Honey and Mumford (1995,p7) state that although some learning style preferences may change when people change jobs and /or orientations, they suggest their preferred learning styles, as shown in the two main styles they use, are more likely to be retained and their third and fourth choice learning style preferences more likely to undergo change. The evidence would suggest, however, that Preferred Learning Styles are just as subject to change as secondary learning styles. This would support the argument that study approaches should be studied idiographically so that individual differences may be detected and change over time monitored.

Although it was decided to use the LSQ in the main study, it will be used with caution in an exploratory manner to see if, when combined with the Q-sort, both tests give similar, or complementary, information. It is, however, thought the SPQ will provide a more precise measure of students' study approaches and a more discriminatory method of concurrently validating the Q-sort. Since, at the time of carrying out the pilot study, the SPQ was still in the process of being ordered from Australia, it could not be used in the pilot study, but will be used to concurrently validate the Q-sort in the main study.

In addition, first and second year 'A' level Psychology students in the pilot study were also given a questionnaire (Teachers and Learners Questionnaire - Appendix 9 (p333)) designed to investigate whether students preferred the teaching/learning situation to be task-based (as Biggs suggested) or disposition-based (as Honey and Mumford suggested).

The results of the questionnaire were as follows:

(a) Students' self-expectations and goals were task-based, i.e. they saw their primary goal as university or employment and their 'A' levels as a means of achieving this. They also perceived their 'A' levels as a secondary goal gained through the completion of assignments.

(b) They preferred interactive teaching/learning situations to be disposition-based, i.e. while they saw lectures as part of a task-based process, they viewed interactive situations like group work and class discussions as disposition-based since during these activities, social skills acquired a more important role.

(c) Students' expectations of their teachers and their assumption about their teachers' expectations of them were a combination of task-based and disposition-based.

One finding of interest was that students preferred friendly, helpful teachers who were task-based but could be side-tracked. In other words, they did not wish to be taught by a teacher who was not goal-orientated and task-based and who deviated from the point of the lecture, but they did want the option of being able to distract the teacher should they become tired or bored with the lecture. The students therefore wished to possess some control over how they were taught. They felt that, since they had made the effort to attend the lecture, the teacher should concentrate on the task in hand and give value for money. However, the students wished to reserve the option of being

able to distract the teacher should they feel the need for that diversion. In other words, students are individual learners and wish to retain their uniqueness when learning.

This also suggests that, while more research needs to be done in the area of teaching and learning styles to disentangle these disparate variables, it would benefit from being idioigraphically orientated since, according to the 1995 pilot study, some students change their learning styles. However, the pilot study used an independent measures design in that it compared first and second year students. When a repeated measures design was used during the main study of this thesis, and year one students were re-tested in year two, it was found that their preferred learning styles remained the same but their secondary learning styles were less constant, the same finding reported by Honey and Mumford (1995, p7).

In the main study, the Study Process Questionnaire (Biggs (1987)), and the Learning Styles Questionnaire (Honey and Mumford (1986)) were both administered to 'A' level Psychology students in both year one and year two of their studies, in a repeated measures design to concurrently validate the Q-sort.

In summary, at the end of this pilot study, it was decided that, since learning styles do not always appear to be consistent over time, and since their measurement needs to be flexible and individual, the main study in this thesis will use a technique (i.e. the Q-sort) which is both flexible and individual and part of a repeated measures design eliciting students' attitudes to their study in a longitudinal way.

4.5 A summary of my research so far

It has now been suggested (Section 4.4) that research into study approaches could be further enriched by information gained from a more flexible, individual and longitudinal approach:

The background research which has influenced this decision is summarised below.

Piaget, Skinner, Rogers (1950s and 60s)

Marton and Saljo (1976), Rossum and Schenk (1984), Biggs (1987)

Honey and Mumford (1986), Hudson (1991)

Piaget, Skinner and Rogers, in their various ways, all influenced theorising about the teaching/learning process, whereas Marton and Saljo (1976), Biggs (1987), and Rossum and Schenk (1984), devised ways in which this learning process could be measured. Hudson (1991), using Honey and Mumford's Learning Styles Questionnaire (1986), compared the measures of students' learning styles in Psychology classes with those of the teacher (Hudson, himself).

Biggs's task-based approach and Honey and Mumford's dispositional approach led to my initial tentative and exploratory research with 16 to 19 year old students in a tertiary college using the LSQ.

This pilot study gave support to the idea that ideographic research would add richness of data to research into study approaches. A Q-sort technique was thought to be flexible enough to take into account the uniqueness of each student.

Having established a rationale for the use of the Q-sort, the next section will present the aim and hypotheses of this thesis.

4.6 Presenting the aim and hypotheses of this thesis

Aim

The **aim** of this thesis is to devise a method of helping students become more effective learners by assessing them as individuals through their unique, self-generated statements. This method will use the Q-Sort Technique. A menu of interventionist measures can be offered to the student to reduce the discrepancy between Actual Learner scores, Ideal Learner scores and lecturer predictions thus aiding progress.

This aim will lead to the following hypotheses:

Hypotheses

It is predicted that:

(1) Students whose Good Learner Q-sort scores are high and whose lecturer predicts a successful Psychology examination outcome, will be more likely to succeed. Since these students will generally seek help, intervention will be in the form of giving them the results of their SPQ, LSQ and Q-sort test battery. **True Positive (+ +)**

(2) Students whose Good Learner Q-sort scores are high but whose lecturer predicts an unsuccessful Psychology examination outcome, will be more likely to fail unless they change their self-perceptions of their study approaches. These students tend to think they do not need help because they think they are performing better than they actually are. Intervention will be in the form of giving them their SPQ, LSQ and Q-sort results and advising them to attend Additional Learning Support sessions. **False Positive (+ -)**

(3) Students whose Good Learner Q-sort scores are low but whose lecturer predicts a successful Psychology examination outcome, will be likely to succeed. **False**

Negative (- +). (This group of students, since they have insight into their needs for help, will be more likely to seek, and use, the help on offer, i.e. Additional Learning Support, and will probably find the help more beneficial than some of the other groups. Intervention will be in the form of giving them their SPQ, LSQ and Q-sort results.)

(4) Students whose Good Learner scores are low and whose lecturer predicts an unsuccessful Psychology examination outcome, will be most likely to leave the course before the 'A' level Psychology examination is taken. It is predicted that most of this group will leave before intervention can be applied, but if they stay on the course, intervention will take the form of giving them their SPQ, LSQ and Q-sort scores and advising them to attend Additional Learning Support sessions. **True Negative (- -)**

(N.B. As noted from the hypotheses and as mentioned earlier on p80, Intervention is defined as the sharing with the student of information obtained from the results of their Q-sort, SPQ and LSQ scores, together with the lecturer's prediction and a recommendation for various courses of action such as advising students to attend Additional Learning Support (ALS) sessions. However, the process of completing Q-sorts may also be considered to be a form of intervention in its own right in that it encourages students to focus upon their attempts at studying and whether these have been successful in the past.)

Chapter Five will consider the reliability and validity of the Q-sort and the statistical quantification used in this thesis.

SECTION THREE

The first phase of my data-collecting process beginning with the reliability and validity of test instruments used. Points, raised by my students in group discussions, provide additional information about their approaches to learning. Then the predictive validity of the Q-sort and sex differences in assessment results are discussed together with a proposal of interventionary measures and their ethical implications.

CHAPTER FIVE

The reliability and validity of test instruments used with my students and statistical significance of findings.

5.1 A discussion of ways to establish the reliability and validity of the Q-sort and a description of how Biggs (1987) and Honey and Mumford (1986) established the reliability and validity of the Study Process Questionnaire and the Learning Styles Questionnaire, respectively.

Reliability of the Q-sort will be established in the following ways:

(1) by comparing the Q-sort with Biggs's SPQ (1987) and Honey and Mumford's LSQ (1986) to determine if concurrent validity can be established;

(2) by giving cohorts of students the Study Process Questionnaire, the Learning Styles Questionnaire and the Q-sort in year one, re-testing them in year two and comparing both sets of test results as a test-retest measure of reliability; and

(3) by comparing the students' Q-sort results with both lecturer predictions of their future examination success and student performance in the final examinations, as a measure of the predictive validity of the Q-sort.

In May 1997, my first adapted version of the Q-Sort (see Appendix 1 (pp300-303) for Q-Sort forms), was given to two groups of students in a large College of Further Education. One group was composed of 16 Year One 'A' level students and the second group comprised 15 GCSE students. The students were also given Honey and Mumford's Learning Style Questionnaires (September 1996 and May 1997), and Biggs's Study Process Questionnaire (May 1997). Since these tests were claimed by their originators to be both reliable and valid measures of learning and study approaches, it was my intention to make comparisons between all three assessment procedures.

My first criterion for establishing the validity and reliability of my Q-sort was to compare it with Honey and Mumford's LSQ (1986) and Biggs's SPQ (1987). Honey and Mumford (1986) state that the reliability of the Learning Styles Questionnaire was obtained using the test-retest method and was found to be consistent over time. Biggs (1987) used two indices of reliability, namely test-retest and internal consistency. He found that correlations showed the Study Process Questionnaire to be as reliable as would be expected, i.e. that some abilities such as a student's motives, might be expected to change over time, and that any variations in test results need to have this aspect taken into consideration. However, internal consistency was shown to be high.

With regard to validity, although Honey and Mumford (1986), mention the word 'validity', their manual does not address the validity of the Learning Styles Questionnaire in detail. There is only a passing reference to the questionnaire's face validity, (p80 of their 1992 Manual). Honey and Mumford state: "Face validity (as opposed to real

validity) for the questionnaire (the LSQ) is not in doubt. It is rare for us to encounter anyone who disputes the accuracy of their questionnaire result." However, because a questionnaire looks like it is measuring learning styles does not mean that it can claim other, higher levels of validity such as content, concurrent, construct or predictive validity. In addition, because it is rare for Honey and Mumford to encounter anyone who disputes the accuracy of their questionnaire result, does not mean that disputes on accuracy do not exist. They also mention 'technical validity' which they define as 'validity on courses' (1992 Manual, p80) and attempt to support by predicting how students with various Learning Styles profiles will learn on their courses. Indeed, their 'Manual of Learning Styles' (1992), on the strength of this 'technical validity' claim, proffers advice on how students with different learning styles can learn most and least from various types of activities.

Biggs (1987), on the other hand, dwells in detail upon the validity of his Study Process Questionnaire and claims that 'a large number of items attest to the construct validity of the Study Process Questionnaire,' i.e. the extent to which the Study Process Questionnaire scores relate to other measures that can be predicted on theoretical grounds. He states:

'For example, it has been found that students high on Deep and Achieving approaches plan to continue their education, whereas those high on Surface intend to leave soon after their first degree; that Achieving, and especially Deep, approaches increase with age and with 'intense' learning experiences such as immersion in a foreign language.' (p24 of the Manual). Biggs adds that patterns such as these and others are quite consistent with underpinning theory and can be related to student performance in 'consistent and predictable ways,' (p25 of the Manual). Biggs also details results of analyses which refer

to the 'factorial' validity of the Study Process Questionnaire being satisfactory (i.e. the way factors which contribute to the three approaches (Surface, Deep and Achieving) relate to one another and to predictions of student study behaviour.)

Support for the concurrent validity of my Q-Sort will be established by comparing its results with those of the Learning Styles Questionnaire and the Study Process Questionnaire. However, it is expected that the SPQ will show itself to be a better measure of validity than the LSQ. In addition, this battery of three tests (the LSQ, SPQ and Q-sort) will be used to give a more complete picture of student learning.

The criterion for establishing the reliability (or consistency) of the Q-sort, the test-retest method, will be applied when my students are given the opportunity to change their Q-sorts in their second year, should they wish to do so. However, when given this opportunity in their second year, most students said they did not wish to change their Q-sort, but whether this was a measure of its reliability, the student's entrenched and unchangeable attitudes about their learning, their lack of motivation in not wanting to be bothered to make changes, or a criticism of the requirements of the Q-sort, is still open to review and comment and will be discussed later in this thesis. Test/re-test may not be an appropriate measure of reliability for the Q-sort.

Establishing the predictive validity of the Q-sort will be done by comparing student Q-sorts with lecturer predictions of examination performance for each student, and also with the student's final examination performance. It is the latter which will provide the yardstick against which to compare both student Q-sorts and lecturer predictions. However, this needs to be done with caution since even an examination mark is not always a definitively reliable measure of students' abilities since:

(a) it can only measure a students' performances on the day of the examination, and

(b) examiners, even after the standardisation of their marking, can vary in the marks they award.

Notwithstanding, when the Q-sort is used in conjunction with the lecturer prediction for each student (another imperfect measure because not only can lecturers get it wrong, but they can also show bias) it was hoped that the two measures would be slightly more reliable than either one on their own.

The first two cohorts of students (the 1996-8 'A' level and the 1996-7 GCSE students) were administered the following:

Honey and Mumford's Learning Styles Questionnaire (September 1996 and May 1997)

The Q-sort (September 1996 and September 1997)

Biggs's Study Process Questionnaire (May 1997 only).

The second two cohorts (the 1997-9 'A' level students and the 1997-8 GCSE students) were administered the following:

Honey and Mumford's Learning Styles Questionnaire (September 1997 and September 1998)

The Q-sort (September 1997 and May 1998)

Biggs's Study Process Questionnaire (September 1997 and September 1998).

The reason Biggs's Study Process Questionnaire was administered twice to the second cohorts and only once to the first cohorts of students, was because it was necessary to order its purchase from Australia, and by the time it arrived, it was administered only once to the first cohorts of 'A' level and GCSE students. It was, however, administered twice to the second cohort of 'A' level students, though only once to the second cohort of GCSE students since this is a one-year course.

The next section will present the tables of results for the testing process with the first cohorts of students (i.e. the 1996-8 'A' level and 1996-7 GCSE students).

5.2 Presenting tables of results for the test battery given to the first cohorts (the 1996-8 'A' level and 1996-7 GCSE students).

Tables 5(1) and 5(2) (pp97 and 98) present the results of the testing process with the first cohorts of students. The first eight columns of these tables show the results of the September 1996 and the May 1997 Learning Styles Questionnaire which compares each student's scores on four learning styles, (Activists, Reflectors, Theorists and Pragmatists), over a nine-month period. The letters beside the numbers in these columns show how each number corresponds to strength of learning style thus:

a - Very Strong

b - Strong

c - Moderate

d - Low

e - Very Low

ASSESSMENT RESULTS FOR 'A' LEVEL STUDENTS IN YEAR ONE - 1996-1998 COHORT

	September 1996-LSQ				May 1997-LSQ				May 1997-SPQ			September 1996 - Q-Sort Ratios							AL IL	June 1997	Jan 1998
Student No.	A	R	T	P	A	R	T	P	S MS	D MS	A MS	G:P (AL)	G:P (IL)	G:P (AL)	G:P (IL)	G:P (AL)	G:P (IL)		G:P G:P (TOTALS)	For results see Table 7(1), p149.	
1	14c	11d	12c	12c	20a	11d	15b	12c	- 0	0 -	0 0	6:4	9:1	6:4	9:1	6:4	9:1	(+-)	18:12/27:03		
2					13c	10d	5e	2e	- -	0 -	0 -	6:4	10:0	6:4	10:0	6:4	10:0	(+ -)	18:12/30:00		
3	15b	14c	13c	13c	15b	14c	14b	16a	+ -	0 -	+ -	3:7	8:2	3:7	8:2	3:7	7:3	(- +)	09:21/23:07		
4	13c	17b	10c	9d	18a	10d	11c	14b	0 0	+ +	0 0	7:3	10:0	7:3	10:0	7:3	10:0	(++)	21:09/30:00		
5					12c	13c	11c	6e	- -	+ +	0 -	8:2	9:1	8:2	9:1	8:2	10:0	(++)	24:06/28:02		
6	7d	16c	9c	8d	9d	8e	5e	6e	+ -	+ +	+ +	9:1	10:0	10:0	10:0	10:0	10:0	(++)	29:01/30:00		
7					14c	12d	10c	7e	+ +	- +	0 0	6:4	10:0	6:4	10:0	6:4	10:0	(+ -)	18:12/30:00		
8	9d	17b	14b	5e								7:3	10:0	10:0	10:0	10:0	10:0	(+ -)	27:03/30:00		
9	14c	7e	7d	11c	9d	11d	10c	9d	+ -	0 -	- -	5:5	10:0	7:3	10:0	0:10	10:0	(- -)	12:18/30:00		
10					7d	13c	4e	6e	+ +	0 0	+ +	7:3	10:0	7:3	10:0	7:3	10:0	(++)	21:09/30:00		
11	17a	7e	7d	10c	13c	14c	11c	13c	0 -	0 0	- 0	8:2	10:0	8:2	9:1			(+ -)	16:04/19:01		
12	8d	11d	12c	10c	8d	18b	15b	16a	+ +	+ 0	+ +	10:0	10:0	10:0	10:0	10:0	10:0	(++)	30:00/30:00		
13	16b	12d	7d	13c	18a	13c	9c	12c	+ 0	- -	0 -	5:5	10:0	5:5	10:0	5:5	10:0	(- -)	15:15/30:00		
14	10c	15c	9c	14b	12c	15c	12c	17a	+ +	+ 0	+ 0	9:1	10:0	10:0	10:0			(++)	19:01/20:00		
15	10c	10d	3e	3e	9d	16c	9c	7e	0 0	+ -	+ +	9:1	10:0	9:1	10:0	9:1	10:0	(++)	27:03/30:00		
16	8d	15c	13c	12c	6e	17b	15b	13c	0 +	0 0	0 +	9:1	10:0	9:1	10:0	9:1	10:0	(++)	27:03/30:00		

KEY TO ABBREVIATIONS IN TABLES 5(1) AND 5(2).

LSQ	Learning Styles Questionnaire (Honey and Mumford, 1992)		
A	Activist	M	Motive
R	Reflector	S	Strategy
T	Theorist	Q-sort	Students' self-generated and ordered statements
P	Pragmatist	G:P	Good:Poor Learner statements
SPQ	Study Process Questionnaire (Biggs, 1987)	AL	Actual Learner
S	Surface	IL	Ideal Learner
D	Deep	H	Higher level GCSE examination
A	Achieving	F	Foundation level GCSE examination
+	Above average	(++)	True Positive
0	Average	(- -)	True Negative
-	Below average	(+ -)	False Positive
		(- +)	False Negative

TABLE 5(2)

ASSESSMENT RESULTS FOR GCSE STUDENTS - 1996-1997 COHORT

Name of	LSQ								SPQ			Q-Sort Ratios							Totals		Exam Result
	September 1996				May 1997				May 1997			September 1996							AL	IL	June 1997
Student No.	A	R	T	P	A	R	T	P	S MS	D MS	A MS	G:P (AL)	G:P (IL)	G:P (AL)	G:P (IL)	G:P (AL)	G:P (IL)		G:P	G:P	See Table 7(2), p150.
1									++	0 -	+0	6:4	10:0	8:2	10:0	5:5	10:0	(++)	19:11/30:00		
2					18a	18b	14b	18a	++	++	++	10:0	10:0	10:0	10:0	9:1	10:0	(+)	29:01/30:00		
3	11c	15c	5e	6e	11c	10d	3e	3e	0 -	+0	0 0	8:2	10:0	10:0	10:0	8:2	10:0	(++)	26:04/30:00		
4	14c	8e	5e	6e																	
5	16b	12c	10c	14b	16b	16c	14b	16a	0 0	++	+0	10:0	10:0	10:0	10:0	0:10	10:0	(++)	20:10/30:00		
6					13c	17b	12c	14b	+0	- -	++										
7					8d	18b	14b	7e	++	++	0 +	5:5	10:0	10:0	10:0			(- +)	05:05/30:00		
8	8d	15c	10c	8d	4e	13c	6d	5e	0 0	0 -	0 -	6:4	10:0					(+ -)	06:04/10:00		
9					5e	10d	7d	5e	++	- -	0 -	3:7	10:0					(- +)	03:07/10:00		
10	5e	19a	16a	13c	6e	19a	13c	8d	+0	- 0	0 0	10:0	10:0					(++)	10:00/10:00		
11					9d	19a	13c	13c	++	0 0	++	10:0	10:0					(++)	10:00/10:00		
12					17a	4e	7d	8d	+0	- 0	0 0	7:3	10:0	7:3	10:0	7:3	10:0	(+ -)	21:09/30:00		
13					17a	2e	4e	8d	+ -	- 0	+ -	6:4	10:0					(+ -)	06:04/10:00		
14					12c	14c	11c	12c	++	- -	0 0	7:3	10:0					(+ -)			
15					8d	15c	8d	13c	+0	0 0	0 +	6:4	10:0					(++)	06:04/10:00		

KEY TO ABBREVIATIONS IN TABLES 5(1) AND 5(2)

	LSQ Learning Styles Questionnaire		(Honey and Mumford, 1992)
A	Activist	M	Motive
R	Reflector	S	Strategy
T	Theorist	Q-sort	Students' self-generated and ordered statements
P	Pragmatist	G:P	Good:Poor Learner statements
SPQ	Study Process Questionnaire (Biggs, 1987)	AL	Actual Learner
S	Surface	IL	Ideal Learner
D	Deep	H	Higher level GCSE examination
A	Achieving	F	Foundation level GCSE examination
+	Above average	(++)	True Positive
0	Average	(- -)	True Negative
-	Below average	(+ -)	False Positive
		(- +)	False Negative

The next three columns show the results of Biggs's Study Process Questionnaire, in terms of the Surface, Deep and Achieving(S, D, A), approaches. It detects both a student's motivation(M) towards their study approaches and his/her strategies(S) for achieving them, and presents these as: (-) below average; (0) average; and (+) above average. There are two signs for each process, the first sign for Motive and the second for Strategy used. The next six columns are concerned with the Q-Sort.

Although the date the Q-sort was given pre-dates that of the SPQ, the results have been placed after the SPQ so that they can be compared more easily with the results of the examinations taken in June 1997. G:P stands for the ratio of Good to Poor Learner statements for each student. These are generated by each student (10 statements beginning, 'A Good Learner.....' and 10 beginning, 'A Poor Learner.....'). They are sub-divided into Actual Learner (AL) and Ideal Learner (IL) orderings. The first two columns relate to Psychology (which all the students take) and the next four columns relate to their other subjects. Once students have generated their 20 statements, they are asked to order them from Those Most Like.... to Those Least Like..... themselves Now, and also make a second ordering from Those Most Like.... to Those Least Like.... how they would ideally like themselves to be. These orderings are presented as a ratio of Good to Poor Learner statements and these ratios vary depending upon how students view their learning capabilities and how many Poor Learner statements they place in their first ten ordered statements, i.e. if when students order their statements, they have 7GL and 3PL statements in the first ten orderings, then the ratio will be 7:3. It is expected, however, that no Poor Learner statements should appear in the first ten orderings of their Ideal Learner statements.

In addition, Good:Poor Learner statements can be correlated in that statements made about one subject can be correlated with statements made about other subjects. In addition, future statements can be correlated with present ones. Students' progress can be assessed as True Positive (when they are making good progress and are aware of this); True Negative (when they are making poor progress and are aware of this); False Negative, (when they are making good progress but believe they are not); and False Positive, (when they are not making good progress but believe they are). The next section will take the reader through two examples from Tables 5(1), p97.

5.3 Detailed analysis of two examples taken from Table 5(1)

In order to clarify Tables 5(1) and 5(2), two examples will be considered. Firstly, student number 1 (Table 5(1) ,p97), although apparently showing a consistent spread of scores on Honey and Mumford's Learning Styles Questionnaire (1986), tends to be highest on the Activist dimension in the second administration of the test (A = 20 which, when compared with 'A' level student norms (Honey and Mumford (1986)) shows an Activist dimension in Band A of the norm tables for students, i.e. Very Strong). He also scores Strong on his second Theorist score, Low on both Reflector dimensions and Moderate on the remainder of the scores.

With regard to his Study Process Questionnaire scores, this student is below average for 'A' level students on his use of the Surface approach but possesses average strategies to deal with a Surface approach should he choose to use one. He is average on the use of a Deep approach, but possesses below average ability to use that type of strategy. He is also average on the Achieving approach. There would, therefore, appear to be a mismatch between this student's choice of learning approach and his ability to use

strategies to facilitate efficiency in that approach, i.e. he has a set of strategies for an approach he does not use and, in addition, has adopted an approach for which he has not developed a strategy.

With regard to the Q-sort for this student, there is a discrepancy between his orderings for the way he learns now and the way he would like to be able to learn. However, since there are more Good than Poor learner statements in the first ten orderings for how the student thinks he currently learns, this suggests the student has a view of his learning which is more positive than negative. On the other hand, his profile on the battery of tests and his year's work would suggest either a poor examination pass grade or a fail in the 'A' level module in June, 1997. This student would therefore profile as a False Positive (+ -); in other words, he thinks he is more proficient than he really is. This would give support to the mismatch found in this student's Study Process Questionnaire results and would suggest that the Q-sort and the Study Process Questionnaire are detecting discrepancies between this student's attitudes towards his studies (Biggs calls this 'Motive') and their actual study behaviour (Biggs calls this 'Strategy'). The main difference between the two techniques is that the Study Process Questionnaire does this quantitatively whereas the Q-sort does it qualitatively though with an element of quantifiability.

On the other hand, student no.12 (Table 5(1)) scored Moderate on the Theorist and Pragmatist dimensions on the first administration of the LSQ, but Low on the Activist and Reflector dimensions. However, on the second administration of the LSQ, she scored Strong on the Reflector and Theorist dimensions, Very Strong on the Pragmatist dimension but again Low on the Activist dimension.

When tested on the SPQ, student number 12 scored above average on her use of the Surface approach and also on the strategies she used to accomplish this. She was above average on her use of the Deep approach, but only average on her strategy for maximising its successful application to her learning. She is also above average on the Achieving approach. There is virtually no mismatch in this student's SPQ scores.

With regard to her Q-sort, there is also no discrepancy between the way this student views herself as a learner now and the way she would like to be. Since this student's coursework has improved throughout the year, she appears to present a True Positive (++) profile and should therefore pass her 'A' level module in June 1997. Once again, the Study Process Questionnaire and the Q-sort are in agreement, i.e. there is no mismatch with this student, either quantitatively or qualitatively.

In this manner, Tables 5(1) and 5(2) and other similar tables may offer a way of charting and diagnosing a student's future examination performance and it may be possible to devise interventions in the form of helping strategies to improve a student's grades. In addition, as mentioned above, the Study Process Questionnaire, the Learning Styles Questionnaire and the Q-sort show a certain complementarity with each other, and the possibility arises of using them as a diagnostic test battery to measure students' approaches to learning. This will be discussed in the next section.

5.4 Uses for the LSQ, the SPQ and the Q-sort as a test battery

As mentioned in the previous section, the LSQ, SPQ and Q-Sort could be used, as a three-test battery, to give a more complete picture of student learning than could be gained from only one of the tests given in isolation. There appears to be a certain complementarity between the tests in that the LSQ, as a measure of underlying student

predispositions towards learning, is concerned with learning style; the SPQ, by dividing students into Surface, Deep and Achieving processors, measures approaches to study and therefore examines the learning process. The Q-Sort, as a self-generated measure of study approaches, utilises students' own ideas of the ideal learner and their comparison between themselves and this ideal. The Q-Sort would appear to measure student self-perceptions of their study approaches and learning outcome in that students' ideas of their learning abilities are recorded and these may be derived, in part, from a comparison between their work efforts and their achievements in past examinations.

The three-test battery may be summarised as follows:

LSQ - based on underlying pre-dispositions - a measure of learning style

SPQ - based on study approaches and task performance - a measure of the learning process

Q-Sort - self-generated (by the students themselves) - a measure of study approaches and learning outcome, especially when combined with lecturer assessment.

In the next section, statistical tests were calculated on the students' Q-sort results as presented in Tables 5(1) and 5(2) and a Summary Table of these results can be seen in Table 5(3) (p.104). These tests measured whether perceived differences within and between subjects were significant.

5.5 Findings of statistical tests (calculated from the GL:PL columns in Tables 5(1) and 5(2)).

Statistical tests were calculated on students' Q-sortings. Students wrote down 10 statements about good learners (GL statements), and 10 about poor learners (PL statements). They then sorted the 20 statements in order from those most, to those least,

like them as they are now (Actual Learner), and most to least like they would like to be (Ideal Learner). The proportion of GL to PL statements placed in the top ten was then calculated. The students' first Q-sorting was done for 'A' level or GCSE psychology then they repeated Q-sortings for the other subjects they were studying.

If it was found that the students were placing more Good than Poor Learner statements in the top ten, they were given a Positive (+), and if there were more Poor than Good Learner statements in the top ten, they were given a Negative (-). The lecturer then gave each student a Positive or Negative based upon her assessment of their assignments and coursework. Each student then had two signs thus : + + (True Positive), + - (False Positive), - + (False Negative), or - - (True Negative).

TABLE 5(3): Summary table of results.

TEST	VALUE	N	CV	DF	P
Chi Square 1 Ideal Learner 'A' Level	**3208.3**	**447**	**6.64**	**1**	**p<0.01 (one-tailed)**
Chi Square 2 Actual Learner 'A' Level	**22.53**	**331**	**6.64**	**1**	**p<0.01 (one-tailed)**
Chi Square 3 Ideal Learner GCSE	**Cannot be calculated because Cell D is 0.**				
Chi Square 4 Actual Learner GCSE	**Cannot be calculated because Cell D is 0.**				
Spearman's Rho 1 'A' Level Actual Learner Subjects 1 and 2	**+0.879**	**16**	**0.635**	**-**	**p<0.005 (one-tailed)**
Spearman's Rho 2 'A' Level Actual Learner Subjects 1 and 3	**+0.92**	**14**	**0.675**	**-**	**p<0.005 (one-tailed)**
Spearman's Rho 3 GCSE Actual Learner Subjects 1 and 2	**+0.471**	**6**	**0.83**	**-**	**non-significant**
Spearman's Rho 4 GCSE Actual Learner Subjects 1 and 3	**+0.225**	**5**	**0.90**	**-**	**non-significant**

N.B. Ideal Learner correlations were all significant - perfect correlations (+1).

(See Appendix 11 (p335) for Chi Square tables.)

Chi Square tests were calculated, on the Q-sort raw data for the various categories shown in the first four rows in Table 5(3), to detect levels of significance in the number of Good Learner self-perceptions found in students' first ten statements. This was done for both Actual and Ideal Learner categories by adding all the Good Learner statements in the first ten statements for each student and placing them in the four categories (or cells) for the True and False Positives and the True and False Negatives (see Table 5(4), p106). They were used to detect whether the number of Good Learner statements differed significantly among the four categories (True Positive ++; True Negative --; False Negative - +; and False Positive + -) and varied between the Actual and Ideal Learner statement orderings. In other words, in the Actual Learner Chi Squares, there should be a significant difference between the Good/Good Learner statements for the True Positive (++) students and those of the other three categories of students. The Null hypothesis would predict that there would be no significant difference between the categories. The results in each cell were independent and discrete, and it would appear that the proportional split of frequencies between the different categories differed significantly from that which would be expected by chance - see Table 5(3), p.104 (Calculations were performed from formulae given by Radford and Govier (1987).) The cells for all four Chi Squares (one each for Actual and Ideal Learner - 'A' level; and one each for Actual and Ideal Learner - GCSE) each contained the total number of Good Learner qualities found in the first ten sortings of all students' statements (True Positive, False Positive, False Negative and True Negative), as shown in Table 5(4), p106:

TABLE 5(4): Cell categories for the four Chi Square Tests.

	+	–	TOTAL
+	(Cell A) -Total number of Good Learner qualities for True Positive students.	(Cell B) - Total number of Good Learner qualities for False Positive students.	
–	(Cell C) - Total number of Good Learner qualities for False Negative students.	(Cell D) - Total number of Good Learner qualities for True Negative students.	
TOTAL			GRAND TOTAL

It was predicted that the total number of Good Learner qualities in Cell A (for True Positive students) would be significantly greater than the Good Learner qualities in each of the other three cells in the Actual Learner conditions for 'A' level and GCSE students, but that all four types of students would probably have chosen ten Good Learner qualities to place in their first ten statements for the Ideal Learner condition so there would not be a significant difference in the Ideal Learner conditions for either 'A' level or GCSE students. Unfortunately, since one of the cells (Cell D) in each of the GCSE Chi Squares contained zero scores, tests could not be calculated. However, both Chi Squares for the 'A' level group were significant (see Table 5(3), p104). This showed that, with the 'A' level students, the GL qualities for the True Positive students were significantly greater than for the other three categories both for Ideal and Actual learner Q-sortings.

In addition, all students seemed to be fairly confident about the qualities they believed made a good learner and that this is how they would like to be. One finding, however, was contrary to expectation in that it had been predicted that all the statements in the first ten for the Ideal Learner conditions would be GL statements for both 'A' level and GCSE students in all four categories (True Positive, False Positive, False Negative and

True Negative. However, some students placed some Poor Learner statements before Good Learner ones. It is possible either that they misunderstood what was required, or that their idea of an Ideal Learner was one who fulfils most though not necessarily all the Good Learner requirements.)

Although Chi Square tests could not be calculated for the GCSE group, it could be seen that, with regard to the Actual Learner Chi Squares, more of the 1996-8 cohort of True Positive 'A' level students' statement sortings were in the Good/Good Learner (++) cell than was the case with the GCSE students, showing that the 'A' level students believed they possessed more Good Learner qualities (or Ideal Learner qualities) than did the GCSE students. Perhaps since the 'A' level group was composed of students who have already gained good GCSE grades (the GCSE students were re-sitting to gain higher grades), they felt more confident about their Good Learner qualities.

Spearman's Rank Order Correlation (Rho) was then used to calculate the correlation between each student's Q-sort ratios in their various subjects, i.e. to determine if there were positive correlations of Good Learner scores across subjects for each student. (The formula used was that given by Heyes, Hardy, Humphreys and Rookes (1990)). The level of measurement of my Q-sort scores was ordinal (students rank ordered their Q-sort statements), therefore a non-parametric correlation was used, i.e. Spearman's Rho, as opposed to Pearson's Product Moment Correlation. Spearman's Rho can be used to calculate correlations both within a student's sortings for one subject (i.e. when the Q-sort is given twice to determine test-retest reliability or consistency for the Q-sort as a test), and between sortings of different subjects for one student. It can also be used to detect similarities between students. In this instance, it was used to calculate correlations between the various subject sortings of the Q-sort for the same students, i.e. to detect

relationships between students' self-perceptions of their study process in psychology and in their various other subjects.

The results showed high significant positive correlations between 'A' level students' perceptions of their GL qualities in one subject and in their other two subjects. Subject one was Psychology for all the students participating in this research but subjects two and three were not always the same, therefore the high positive correlations were not subject-specific, i.e. the correlations were all calculated between psychology and other subjects, but the other subjects varied for each student.

This was not the case, however, with the GCSE students where there appeared to be no significant correlation between their perception of their GL qualities in one subject and in other subjects. The next section will examine some possible reasons for these findings.

5.6 Some possible explanations for these findings

Some possible explanations for these findings are given below.

(1) Some GCSE students need to successfully re-sit English, Mathematics and Science in order to gain employment, or progress to 'A' Levels and then to Higher education. This practice had already been established in the schools with the introduction of the National Curriculum, that is, children were expected to be educated to GCSE level in English, Mathematics and Science. Later, in the 1990s, (1992 - 1993), teacher training requirements changed in that the pre-requisites for the B.Ed. degree were at least two National Curriculum 'A' levels, together with GCSEs which included English Language and Mathematics. In 1994 - 1995, the further addition of GCSE Science to these pre-requisites ensured that students wishing to become teachers gain qualifications in these subjects. Nor is teacher training the only university course which has laid down pre-

requisites. Many courses require prior knowledge in specified subjects, as can be seen in Careers directories. Thus students, who do not have the necessary qualifications, return to college to re-take GCSEs before they can progress to 'A' levels. Since these subjects are compulsory, there may be little consistency in each student's perceptions of their study approaches and thus non-significant correlations as a result.

(2) It has been my experience, based upon what 'A' level students have told me, that they take subjects they need for their chosen career paths (and sometimes Psychology is one of these subjects). Once they have found which subjects are necessary for their careers (if Psychology is not one of these subjects), they sometimes opt for Psychology as an extra subject because they think it will be interesting. Most of these students have already succeeded at most, if not all, of the GCSE subjects they need, including the compulsory National Curriculum ones. (Evidence for this can be seen in the course record (CRd) which includes details of previous examination results recorded by lecturers at the beginning of each academic year.) Prior success would either suggest that they have developed good study habits already, or are clever enough to have succeeded even without good study habits, (since GCSE does not require the level of knowledge and skills demanded at 'A' level), or have already learned how to successfully play the 'examination game', i.e. how to keep the examiners happy by learning to produce the right type of answers. This could be one explanation of the high positive correlations between a student's 'A' level subjects, that is, students are taking their chosen subjects.

(3) The CRd profiles taken by lecturers also show that GCSE students have failed some subjects and are coming to college to re-sit them, or are coming back into education after many years in order to take GCSE qualifications. Concerning GCSE Psychology, some

students tell me they are taking this subject either because they were not able to take it in school, or because it is an extra subject taken in conjunction with their compulsory ones, to give them enough hours of lectures to ensure them full-time students status (thus gaining such benefits as a maintenance award, a bus pass, and continuation of their mother's family credit or family allowance.) In addition, since GCSE Psychology is not taught in many schools, most students have not already failed it and can begin without preconceptions, although some have already taken this subject at college, however, and failed, but they are in the minority. However, whatever the reasons the students have for taking Psychology, their Q-sortings do not show any relationship between this and other subjects with regard to students' self-perception of their study approaches, as shown by the non-significant correlation between their Good:Poor Learner sortings in each subject. (See Table 5(3), p104). One reason for this finding could be that the sample size from which correlations could be calculated was small (six students having a second subject, and five having a third).

(4) 'A' level students have passed at least five GCSEs and C grade or higher and they will sometimes say they feel more confident about their study skills. This is supported by their Q-Sort statements which are more consistently positive between 'A' level subjects and have shown high significant positive correlations. Some support for, and explanations of these findings can be found in the background literature and will be discussed in the next section.

5.7 Background research supporting these findings

A search of the background literature would suggest some support for, and explanations of, my findings. Firstly, with regard to the GCSE students, Piaget thought that the most

significant developments took place during the first fifteen years (Gross (1993)). Due to the interaction between the child and the environment, a continuous process of assimilation and accommodation enables the child to equilibrate.

'For Piaget the cognitive structures involved in knowing are given neither in the object nor in the person, but in the interaction between them' - Kenneth Lovell (1973) (see p5 of this thesis).

The process whereby assimilation and accommodation interact, creates a form of cognitive conflict which fine tunes cognitive adaptation to a higher level of thinking. Lovell (1978) (see p6 of this thesis) states that: 'In the school situation his (Piaget's) notion of cognitive conflict argues that the curriculum or task presented to the pupil should demand cognitive skills slightly more advanced than those available in order to induce conflict.'

It would therefore seem that in the first fifteen years, the teacher attempts to give the child the cognitive skills to achieve targets set down by the education system, namely the various key stages and the GCSE examinations. However, since students enrol at a college of further education to resit some, if not all, of these GCSEs, this would suggest that not all children achieve their most significant developments in their first fifteen years; nor does the process of assimilation and accommodation create enough cognitive conflict to fine tune cognitive adaptation to a level of thinking high enough for some pupils to cope successfully with GCSEs.

Some children may not wish to achieve their GCSEs and leave school either before they have sat them, or after they have failed them. Others either achieve their targets or persist until they do. These pupils are the ones who continue to further or higher

education; however, they bring with them their past experiences which may either help or hinder any future learning.

Some, if not all, of these students may feel that their goals can only be attained if they are broken down into smaller steps, as found in self-paced individual instruction using teaching machines presenting small amounts of information (Skinner (1971, 1974, 1981)) (see p12 of this thesis). The 1988 Education Reform Act laid down targets, such as key stages, to be attained by children and culminating in the GCSE examinations. However, the fact that some students need to re-sit their GCSEs would suggest that either the targets set are too great for them to achieve, or they may be unmotivated to achieve them. Each student is an individual, and the work that appears easy to some will be difficult for others, thus small steps, or targets, should be individually tailored to suit specific needs. The Q-Sort could help achieve this by enabling students to identify their individual needs prior to setting goals for remedial help.

The Q-Sort can also help establish students' ideas of their real and ideal selves. Rogers (1951,1959,1974) (see p16 of this thesis) thought that we each possessed the innate potential and ability to know what is best for us. He calls this being a 'fully functional person', while Maslow (1954, 1968) refers to this as self-actualisation. Rogers (1983) argues that learning is more successful when it is under the control of the learner. My Q-Sort has shown that most students can specify Good Learner qualities possessed by an Ideal Learner and know that there is a gap between this Ideal and the Actual Learner qualities they possess. Use of the Q-sort moves the emphasis (in a Rogerian way) to the learner's experience of the learning process and enables the teacher to facilitate that process. It means being with the student in a sensitive understanding of his/her own

interests, desires and directions. 'It involves being a real person in the teacher-student relationship, rather than playing a role'(Rogers (1983)).

Rogers (1983) (see p17 of this thesis) writes that an atmosphere of trust should be developed in the classroom in an attempt to nourish the student's natural desire to learn, to increase his/her self-esteem and to allow both student and teacher to grow as people. His argument is that organismic safety frees energy that would have been divided towards safety in a way that permits the risk-taking involved in learning.

'We discovered that failure is just a word, that there is a difference between failure and making a mistake, and that mistakes are part of the learning process,' (Rogers (1983) p53). The Q-Sort allows students to examine their self-esteem, to grow as people and to recognise that making a mistake is part of the learning process.

Rogerian client-centred therapy aims to make the real or actual self more congruent with the ideal self. The Q-Sort helps students to make their self-knowledge more explicit and see any differences between their actual and ideal learning selves. This is one of the first steps on the road to self-discovery, and one reason for using the Q-Sort to complement the nomothetic data elicited by the LSQ (Honey and Mumford (1986)) and the SPQ (Biggs (1987)), since it would permit the collection of idiographic data. The three could be used together to give a more complete understanding of study approaches. Indeed, the Q-sort combines both a qualitative and quantitative measure since it describes as well as measures. Quantitative measures can be obtained using inferential statistics to compare Good Learner statements while qualitative elements, which are contained within the individuality of students' Q-sort statements, help to add an extra dimension to both the quantitative Q-sort scores and also to the restrictive typologies measured by the SPQ and LSQ. However, it was also decided that additional qualitative data should also

be obtained. This decision was taken because, as Reason and Rowan (1990, p31) state: 'Empirical research on persons involves a subtle, developing interdependence between propositional knowledge, practical knowledge and experiential knowledge. The research conclusions, stated as propositions and laying claim to be part of the corpus of empirical knowledge about persons, necessarily rest on the researchers' experiential knowledge of the subjects of the enquiry.' They go on to say that this should involve both researcher and participant in 'a relationship of reciprocal and open inquiry.'

In other words, research suffers from being over or under conceptualised on the one hand and from the phenomenological aspects being either inhibited and restricted, or being diffuse, unfocused and ambiguous. Research, therefore, needs to combine theory and conceptualisation with focused phenomenology in the correct proportions. Thus, the appropriate balance of quantitative and qualitative data is needed to strengthen my arguments and enhance the validity of my data, using quantitative measures, on the one hand, and qualitative, experiential data from the participants, on the other. This would add to the qualitative data already obtained from the Q-sort and further redress the qualitative-quantitative balance.

This qualitative data was collected in 1997 from Year One 'A' level students (1996-8 cohort). The GCSE students had already left College and were on study leave.

Appendix 2 (pp304-307) contains a summary of the discussion topics and Appendix 3 (pp308-314) shows a summary of the taped group discussions with Year One 'A' level students in June 1997.

Chapter Six will present the points raised by students during these group discussions.

CHAPTER SIX

Points raised in group discussions with Year One 'A' level students (1996-8 cohort) in June 1997 providing additional information about approaches to learning.

6.1 From the elicitation of discussion topics to the formulation of a flowchart describing the students' points concerning their studies

Chapter Six will be concerned with the topics raised in discussions with Year One 'A' level students (1996-8 cohort) in June, 1997. These students' ages ranged from 17-19 years, and all were taking psychology as one of their 'A' level subjects. The discussions took place in three small groups: Group 1 contained three students (two male and one female); Group 2 contained five students (four male and one female); and Group 3 contained three students (all female).

The discussions with each group occurred at separate times and were taped. The tapes were transcribed and discussions points were summarised in Appendix 3 (pp308-314). Quotations taken from students' comments were collated under topic headings in Appendix 4 (p315-323).

At the beginning of each discussion, students were invited to discuss their feelings towards their 'A' level courses to avoid placing constraints upon them in the form of researcher-oriented categories. They could discuss any of their courses but tended to concentrate on 'A' level psychology since the discussions occurred during the times they were usually being taught that subject.

If there was a lapse in the discussion, topics, chosen from students' Q-sort statements, were available as discussion prompts. All three groups availed themselves of this list (see Appendix 10 (p334)).

These topics (also shown in heavy print on the left of each page of Appendix 2 (pp304-307)), were elicited from the students' Q-sort statements, written on a separate piece of paper, photocopied and given to the students as prompts for their discussion groups. A summary of the related points raised by the students in addressing these topics are typed on the right side of each page of Appendix 2). A fuller version of each discussion point is given in Appendix 3 (pp308-314), where the taped group discussions have been summarised.

The students' comments have also been sorted into study activities and incorporated into Diagram 6(1), below, to show the conclusions reached by the students and the order in which they would prefer to be taken through their 'A' level psychology syllabus by their lecturer.

DIAGRAM 6(1): POINTS RAISED IN GROUP DISCUSSIONS WITH YEAR ONE 'A' LEVEL STUDENTS (1996-8 COHORT) IN JUNE 1997

ACTIVITY	OUTCOME
(1) Students read text/see videos ---------->	Introduces topic
(2) Teacher discusses / gives an exposition of the text ---------->	Deepens knowledge of topic
(3) Class discussion ---------->	Enables students to bounce ideas off each other and the teacher
(4) Students' questions answered ---------->	Clarifies details related to topic
(5) Students underline important parts of the text and make notes or mind maps ---------->	Increases knowledge and understanding
(6) Students write essays ---------->	Consolidation of knowledge and understanding of the text
(7) Students answer time questions ---------->	Practice for mock/real examinations
(8) Mock examinations ---------->	Tests knowledge of the subject and gives practice for the real examination
(9) Real examination	

To give a clearer idea of the order in which the students would prefer to journey through their learning of 'A' level psychology, the reader is invited to consider this process, from the student's viewpoint, by going through Diagram 6(1) (based on students' comments), and discussing the significance of each step. This will be explained in detail in Section 6.2 but a summary will be given in this section.

As can be seen, the students said they preferred the introduction of new topics to be accompanied by watching a video. Some also said that they preferred to read the appropriate chapter in the text before the lesson so they could prepare questions to ask about the topic.

Next, the students preferred the lecturer to go through the text and discuss ideas and concepts with the group, because students thought that discussions helped them to gain different viewpoints and to see connections between ideas and concepts: 'It can help you see connections,' was a comment made more than once. In addition, the remark was made that, 'in examinations, some of the discussion points come back to me,' (see Appendix 4 (pp315-323) for further statements from the students). Other comments about discussions included students' views that their questions were more likely to be given an airing during discussion time and answers would be made explicit and clear to understand. Class discussion also enabled students to try out ideas by testing them on each other as well as on the lecturer. As a follow-up to class discussion, students then preferred to be shown the important points in their text which they highlighted, i.e. underlined with a pencil, and to which they added annotations in the margin. These highlights became the nucleus of their notes or mind maps, serving to consolidate their knowledge and understanding of the text. In addition, students said that essay-writing

helped with this consolidation, especially when the essay was given immediately after the completion of the topic.

Students also expressed the view that time questions (essays written in class within a given time limit) and mock examinations were a necessary evil in that, while they did not enjoy having to do them, they found them beneficial in preparing for the real examination.

Diagram 6(1) shows the stages of learning a new topic in the order in which students said they preferred the process to occur. The following quotations from the students, discussed in Section 6.2, are used to exemplify parts of the diagram, and are given the headings from the latter. Some of these headings are combined where exemplars consist of student quotations concerning more than one aspect of the diagram.

6.2 A discussion of student quotations used to exemplify parts of Diagram 6(1).

(1) Students read text / watch video

It can be seen from the diagram that 'Students read text/watch video' comes first. This is because those students keen enough to read the text book **before** the lecture, felt they had benefited more from teacher explanations and discussions than on the occasions when they had not initially read the text. They had been able to prime themselves with the questions they needed to ask in order to enhance their understanding.

Remarks were made such as:

'It helps to read the book first, then come to the lecture,' (made by Group 3 students).

Students also suggested that videos were helpful in introducing and explaining topics and that discussions afterwards helped to clarify points raised:

'It helps you when you talk in groups' and 'Everyone remembers different things then you bring it all together,' were comments made by Group 1 students. Group 2 students the 'videos were useful.'

(2) Teacher discusses text, (3) Class discussions and (4) Students' questions answered

Class discussions generally proved popular with the students. 'The discussions were good....the interaction....getting different points of view,' were sentiments expressed by Group 2 students. Other comments were: 'Discussing helps me to learn' (Group 1), and 'In the exam, some of the discussion points come back to me' (Group 2).

It was felt that class discussions served a number of purposes:

a) a feeling of increased class co-operation: 'It helps you when you talk in groups.' (Group 1);

b) an increase in students' feelings of self-confidence, (see comment in (a));

c) a consolidation of knowledge: 'Discussing it helps me to learn,' (Group 1): and 'It helps you see connections,' (Group 2);

d) enabling students to bounce ideas off each other in a safe environment: 'Discussions were good....the interaction....getting different points of view,' (Group 2).

Other purposes that discussions served appeared to be:

e) keeping students' attention and interest; and

f) promoting enjoyment in the topic or subject.

In order to be successful, however, class discussions need ground rules and students need to feel safe to share their ideas. The following ground rules were agreed by the group in September 1996:

a) students allow each other time and space to make comments;

b) each comment is considered as a positive contribution;

c) students should, at any time, feel free to enter into, or withdraw from, a discussion;

d) differences of opinion should not be taken personally;

e) all questions and comments should be taken seriously and answered in a patient manner (no matter how apparently bizarre the question or comment); and

f) students should feel safe enough to be able to admit when they do not understand any concepts.

(5) Students highlight important parts of the text and make notes or mind maps, (6) Students write essays and (7) Students answer time questions

Students found it helpful to highlight important areas of the textbook (as directed by the lecturer) and turn these into either notes or mind maps. They also found that essay-writing helped to consolidate and reinforce their knowledge. Although not popular at the time, students, with hindsight, saw the benefits of essay-writing:

'The essays we did this year were the most helpful for the exam. If we hadn't done them, we would just be sitting in the exam not knowing what to do,' (Group 3).

'If you can put it down in an essay, it starts to make more sense,' (Group 3).

'Essays helped me sum up everything,' (Group 3).

'It makes you learn it (the topic),' (Group 1).

'You really have to read the book to write an essay,' (Group 1).

'You have to read all you're going to write about before you start, because what I'd do when I first started was to get the book, see from the title what my essay was about and start writing from the book. Now I read it, I read all of it first. If you read it first, then go over it as you write it, you learn it and you can remember writing your essay and you have extracted only the relevant bits,' (Group 1).

'Helped to get it together in my mind,' (Group 2).

'Helps you to retain the information,' (Group 2).

Students suggested that note-taking, discussions and essay-writing contributed towards the initial learning of new topics, while time questions and mock examinations contributed towards their performance in examinations.

It is worthy of comment that the concept of time is, in the ways described below, important to the student in that their comments show two distinct uses of the word 'time', i.e. firstly, time in a developmental sense, and secondly, time as a collection of minutes during which their performance is tested. For instance, the remark (on p.120) that at the time, students, with hindsight, saw the benefits of essay-writing, shows that some students fail to grasp, at the time, the significance of advice given or assignments set. Whether this first use of the word 'time' suggests there are developmental trends towards heeding advice as maturity progresses (adult students tend to ask for, and make use of, advice), or whether younger students find it difficult to learn vicariously, by gleaning help from those who have been through similar situations in the past, i.e. the lecturers, is a possible consideration for future research. However, if heeding advice is a developmental stage, discrete from other stages, and qualitatively different, then failing an examination could be categorised as a developmental milestone in that it may lead to a future change in behaviour, whether that behaviour is to give up the course, or to recommence it with a different attitude. Whichever the case, 'time' appears, in this sense, to have a developmental connotation in a similar way to that proposed by Piaget (Piaget and Inhelder (1958); Piaget (1972)).

In Piagetian terms, this would suggest that students of sixteen years plus should be functioning at the level of formal operational thought and should be assimilating and

accommodating abstract concepts and ideas. In a psychology essay, examiners mark according to the students' demonstrations of two skills, Skills A and B. Skill A is demonstrated when students show their ability to recall and describe research; Skill B is the use of critical and evaluative skills and requires a more abstract and often a novel approach to the questioning of research on methodological grounds as well as from the viewpoint of opposing research. This requires the students to create their own 'moderate novelty' (Piaget and Inhelder (1958); Piaget (1972)) for others to assess.

To return to the two uses of the word 'time' in this section, the second use of the word 'time' conveys a much more transitory meaning in that it is the capsule of time in which students attempt to write an essay to convince an examiner that they are worthy of a good grade in the examination. However, since examinations do not often measure students' learning, but are more likely to measure their performance at that moment in time, then time, in this sense of the word, takes on an even more crucial element, i.e. that of a moment which has the power to change lives temporarily or permanently for better or worse.

(8) Mock examinations and (9) Real examination

As stated in the previous section, students thought that time questions helped their examination skills. They also thought that mock examinations helped their performance in the real examination.

'The mock helped me in that when I get to the real examination, I'll look at the paper and carefully study it before I choose my questions,' (Group 3).

They found that time questions and mock examinations, although disliked, allowed them to make mistakes without any dire consequences. They also felt they had benefited from reading 'good' essays and examination answers written by others.

The "Psychology Review," a quarterly magazine written for students by examiners, helped.....'looking at a good answer shows you what you need to do in your essays,' (Group 3).

The next section will present some additional points which emerged from the students' discussions and which also shed light upon their study processes.

6.3 Additional findings from students' statements

One interesting finding was that many students kept their notes in chronological order based on the date they received them, even when some later notes were clearly relevant to earlier ones. Although this meant that some topics were spread out throughout their files rather than being kept together, students were able to retrieve their notes by remembering the date and context in which they were given (perhaps a third use of the word 'time' discussed on p122). If they were to remove them to lend them to other students, they said that they would leave markers in the empty space and return them to the same place: 'I've got my notes ordered into the dates we did it,' (Group 3); and 'I put paper in to mark where I take notes out, so I know where to put them back in,' (Group 3). This would suggest that teaching students to mind-map might be an important factor in enabling them to put their notes together more effectively and in a more connected way (Buzan and Buzan (1993) - Mind-mapping).

This would also raise the question of how students revise when their notes are arranged chronologically. Do they finally put them together under topic headings? Remarks like: 'I don't look at my book (textbook) once I've made the notes. I just keep saying the notes over and over in my head and when I get into the exam., I remember them,' (Group 3), would show how they attempt to remember their notes, but it does not

explain how they organise their notes for revision. The answer to this puzzle might be found in their comments on essay-writing. Comments like: '(Essays) helped me to get it together in my mind,' (Group 2), 'helped me to retain the information,' (Group 2), and 'the essays we did this year were the most helpful for the exam. If we hadn't done them, we'd just be sitting in the exam. not knowing what to do,' (Group 3), would suggest that it is the re-structuring of the information into the formulation of essays that is instrumental in helping a student to organise and collect his/her notes together. However, this dependence upon essays can become a double-edged sword. Comments like, 'If you write them for a certain question, you remember the answer,' (Group 2), shows the importance students appear to attach to essays - perhaps wrongly so. Although essays may be an excellent method of enabling students to organise notes, they may also be the means of precipitating their failure because, if a student were to learn an essay rather than general notes or a mind map, they would only be able to answer the examination question by reproducing the learned essay rather than by defining and answering the set question, a mistake which would lead to the inclusion of irrelevancies into the examination answer, and subsequently, a lower mark. This was borne out by one student's comment: 'I look for the question I'm hoping for,' (Group 2). This problem of essay-learning is thus allied to the game of question-spotting in examinations, and my own reflections upon this problem would lead me to value further the use of mind-maps and to encourage students to use them.

That is not to say that students are unaware of the benefits of mind-maps, and many of them have adapted to that mode of taking down and collating information. (They were given lectures and a video on mind-mapping in the Autumn term - Buzan's video, 'Getting Ahead'.) Comments like: 'Everything is there on one page,' (Group 1); 'I

think mind maps are great,' (Group 2); 'I have certain colours I keep for definitions and other things on my mind maps,' (Group 3); and 'you can see the links,' (Group 1), show that some students have seen the benefits. However, others find that mind-mapping is easier to do for some subjects than for others: comments like, 'information in Psychology is easier to mind map,' (Group 3), and 'I can't do mind maps for Chemistry,' (Group 3), suggest that, although Buzan and Buzan (1993), show that mind-mapping skills can be applied with great versitility (see p37 of this thesis, and this is also mentioned in Buzan's video), students tend to find some subjects easier to mind map than others. However, with reference to mind-mapping in psychology, one of the students in Group 1 went on to gain a grade A in her examination and she was a very positive proponent of the benefits of mind-mapping.

In addition, mind maps have proved very useful with psychology students for revision: 'I go from the book to a large mind map, then make it smaller, then down to key words,' (Group 3). The advantage of mind maps appears to be that they reduce revision time which is helpful when students do not appear to spend a great deal of time revising. 'I start revision about a week before the exam.,' (Group 3), was a general comment together with, 'I stick to one subject, then when I've done that exam., I stick up the mind maps for the next subject,' (Group 3), and 'I don't panic until the last minute. It'll be three days before the exam. and I'll think, "Oh God! I've got to start to revise!" ' (This came from the A Grade student in Group 1 who found mind-mapping useful.) She also remarked, 'I didn't spend a week (revising) before the last mock, I didn't spend a week (revising) before this mock either,' and added, 'I'd have to be panicked to make it sink in. I'd read through it, (my notes), and it wouldn't sink in because I'd know I had another

couple of weeks.' This student found mind-mapping useful because she said it enabled her to revise quickly.

Another student (Group 2) said, 'All the revision I did was the night before the (mock) examination. I sat up a bit late and read the book.' Other students who had spent time reading the book, however, admitted that the bits they were reading were not related to the topics set for the current module, adding, 'The bits you have to do get talked to death in the classroom, so I read other bits when I get home.' Ironically, the extra 'bits' to which this particular student referred were in Comparative Psychology, an area the students had generally found to be a little tedious and unrelated to themselves, as can be seen in this interchange:

'You don't see many gorillas and chimps walking down the streets.'

'You must be going to the wrong places, ------.' (Group 2).

The students enjoyed Social Psychology more than Comparative Psychology: 'Aggression clicks with you - you understand it,' (Group 2), and, 'I enjoyed pro- and anti-social behaviour. I could get into that,' (Group 2).

In general, however, the text book ('Psychology for 'A' Level' by Cardwell, Clarke and Meldrum, 1996), proved to be very popular. One student commented, 'Of all the text books I've read in the past, that is the best by far,' (Group 2); 'Reading the book helps you with your life,'(Group 2); 'The text book is really good,' (Group 3); 'Read it till one in the morning,' (Group 3).

When looking at motivation, or reasons why students want to study, especially Psychology, comments were made like, 'It's not just for University....I want to be clever,' (Group 2). (This student said he thought that being able to say he studied psychology made him feel clever.) Most students, however, agreed with the sentiment,

'The main incentive to do well is to get the grades to go to university,' (Group 2). This may be one explanation of why some students get very anxious before examinations. 'As soon as I go into an examination, I know I know it but my mind goes blank. I can't remember anything,' (Group 1), and 'I've just got everything going round in my head and I can't associate with that question. Just everything gets muddled up together,' (Group 1). Another reason for anxiety is that students are unaware of what will be on the paper: 'They aren't testing you on everything you know. It's not fair, in a way;' 'If you get the right questions, you're OK,' and 'It's luck really,' (Group 3). This, however, all appears to be a part of the lottery of the Examination Game and a reason why some students don't work too hard. One student's comment encapsulated that sentiment: 'If I worked hard and failed, I wouldn't come back, but if I failed because I hadn't worked hard enough, I would re-sit.' As a researcher it would be excessive to claim that such student comments allow me to conclude that, by working for a week before the examination, students can avoid reducing their self-concept further by thinking that their failure was a result of lack of preparation rather than a lack of ability. Nevertheless, it appears to be a hypothesis worthy of consideration or investigation at some future time and sheds light upon the study approaches used by my students. The next section will be concerned with relating the comments made by my students to the propositional knowledge presented as background to this thesis.

6.4 Relating the propositional knowledge presented as background to this thesis with the experiential knowledge of my students

This section will relate the information gained from my students to the propositional knowledge presented as background to this thesis. As mentioned on p113 and 114 of

this thesis, Reason and Rowan (1990), maintained that empirical research involved an 'interdependence between propositional knowledge, practical knowledge and experiential knowledge'. In Chapter Six, the experiential knowledge of my students has been presented; Chapter Five showed the statistical quantification of Q-sort findings, thus adding to my knowledge of student practice; Chapters One and Two introduced the body of background, or propositional, knowledge upon which this thesis is based. I will now refer to that propositional knowledge and relate it to the experiential knowledge gained from my students; in other words, the theoretical bases which underlie the comments made by my students during the taped group discussions.

When transcribed, these comments fell into categories as follows:

(1) coming to the lesson prepared;

(2) viewing a video as introduction to a new topic;

(3) class discussions and lecturer explanations to clarify concepts;

(4) highlighting the textbook for note-taking or mind-maps;

(5) practice at essay-writing skills;

(6) practice at examination work using time questions.

Students' comments relating to these areas were further divided into:

(1) self-preparation;

(2) feeling safe to clarify points and ask questions; and

(3) practice, through essay-writing, to improve the standard of examination answers.

Referring to Chapter 1, Tables 1(1) and 1(2), p22, the idea of student self-preparation could be explained, in Piagetian terms (Piaget (1958,1972)) as students wishing to construct internal schemas about a new topic before the lecture so they can more quickly assimilate information imparted during the lecture rather than struggle with large

amounts of new information in an attempt to accommodate it. This would then leave them more able to accommodate any information that was too difficult for them to understand during their self-preparation, and an opportunity to ask questions about any concepts which still remained too complex for them to accommodate during the lecture. In addition, in Rogerian terms (Rogers (1969,1983)), it would also enable them to maintain their congruence by reducing the novel complexities of the new topic, (Rogers (1969,1983)). Rogerian theory would also offer an explanation for the popularity of discussions with students because, through that medium, they feel safe to share their ideas about topics with each other and with the lecturer. In a non-directive manner, congruence can be developed between internal feelings about a topic and the external discussion environment. Points could therefore be clarified and questions asked and answered.

With regard to practising essay-writing and time questions, if work is marked and returned quickly, students who monitor the comments made about their work and see the mark it merits, could feel partially reinforced (Skinner (1958, 1968)). However, students who hand in assignments to avoid the consequences of not doing so, are learning through negative reinforcement (Skinner (1958, 1968)). Nevertheless, whichever type of reinforcer stimulates students to work, one question I ask myself is: 'What should I, as a teacher, do to facilitate my students' progression through the study route they suggested for themselves, as shown in Diagram 6(1), p116?' Certain possibilities are:

(1) In the self-preparation stage, students should be given the opportunity, in class, to have a self-preparation session whereby they can be given the chance to use different materials, articles and books in their own way, to become familiar with new topics before the teacher formally introduces them. This would be an extension and a formalisation of

the usual introductory lesson where teachers ascertain students' basic knowledge of a topic so that they can build upon this knowledge. (Piaget's concept of moderate novelty - Piaget and Inhelder (1958); Piaget (1972).) My suggestion based on comments made during student discussions is that this introductory stage should be given more time and importance in the lecturer's year plan and teaching schedule.

(2) Teaching environments need to be safe places in which learning can be encouraged, (Rogers (1983); Brandes and Ginnis (1992)), therefore the emphasis should be upon learning (rather than teaching) environments. Teachers should be encouraged to develop counselling skills to enable them to form relationships with their students so that the latter feel safe to ask questions. In addition more work needs to be done in establishing group relationships between students so that discussions can be friendly and helpful for them. This has been supported by students' comments that they feel safer talking about topics in groups than they do when being asked questions as individuals.

(3) Practice at essay-writing and time questions can only be helpful if feedback is given quickly, (Skinner (1968, 1974, 1981)), and if teachers' comments are carefully read and seriously considered by the students. My students have also found it helpful to role-play being an examiner and mark their own work before I mark it, using the examiner's mark scheme. If there is a discrepancy between their mark and mine, I give them the opportunity to argue their case and am prepared to change my mark if their arguments are justified. I also encourage students to read each other's essays to see how the marks have been awarded, and what entails a good essay. These suggestions are all directed towards encouraging students to take notice of the marks and comments on their work rather than just putting their essays into their files and promptly forgetting them.

To summarise this chapter so far, it has examined the experiential knowledge gained from the students' discussion groups and has compared it with the propositional knowledge mentioned in my literature search (e.g. Piaget (1958,1972); Rogers (1968,1983); Skinner (1958, 1968)). It has been written to complement the practical knowledge gained from students' Q-sortings and statistically analysed in Chapter Five.

In addition, the experiential data suggests stages with each one hooking into parts of the background research in the following ways:

(1) Student reads text / sees video - introduction of 'moderate novelty' (Piaget and Inhelder (1958)); enabling students to feel safer with the content of the work and happier to attend lectures (Rogers (1969, 1983)).

(2) Teacher discusses text - helps students to assimilate and accommodate (Piaget (1972)); gives instruction about how to understand and remember (Skinner (1958, 1968)); makes learning safe (Rogers (1969, 1983)).

(3) Class discussion - safe environment (Rogers (1969, 1983)).

(4) Students' questions answered - assimilation and accommodation (Piaget and Inhelder (1958)); immediate feedback, (Skinner (1958, 1968)); reducing incomgruence - (Rogers (1969,1983)).

(5) Students underline / highlight important parts of the text and make mind-maps - these help to accommodate information (Piaget and Inhelder (1958)); step-by-step links (Skinner (1958, 1968); Buzan (1989, 1993)).

(6) Students write essays; (7) students answer time questions; (8) mock examinations; (9) real examinations - practice (Skinner (1958, 1968)).

In the next section, I will discuss the complementarity of the two methods I have used for data-gathering, (i.e. the inferential data generated by the test battery and the

experiential data from the group interviews) and will further compare this data with that of the researchers mentioned in my background literature.

6.5 Complementarity of my two methods of data-gathering and a further comparison between data and findings of researchers mentioned in the background literature.

Current models of gathering information about student approaches to learning (namely the SPQ and LSQ) are inadequate to explain my findings in that the wealth of qualitative data gained from students as individuals, cannot be contained by typologies. On the contrary, students' Q-sorts are testaments to their uniqueness and, while comparisons can be made between students on commonalties in their Q-sorts, it is the differences in each Q-sort which provides the clue to each student's self-perceptions and needs. Each student therefore acts as his/her own control or base line against which to compare his/her progress.

This does not mean that students cannot be compared in a cross-sectional manner; however, a longitudinal examination of each student's progress in study skills prevents the homogenising out of unique qualities, a problem with questionnaires which look at typologies. Thus, having moved outside the paradigm so far set by Honey and Mumford (1986) and Biggs (1987), I have adapted a method using the Q-sort as a technique of assessment to gauge the feelings of students about their study approaches. I have refined it and made it unique to this particular study; and have also reduced the time taken to carry it out. When it was used by Stephenson in 1953 (and also by Rogers to measure the progress of his clients during therapy), it was in a different format in that clients were given pre-printed cards containing statements which they were asked to sort

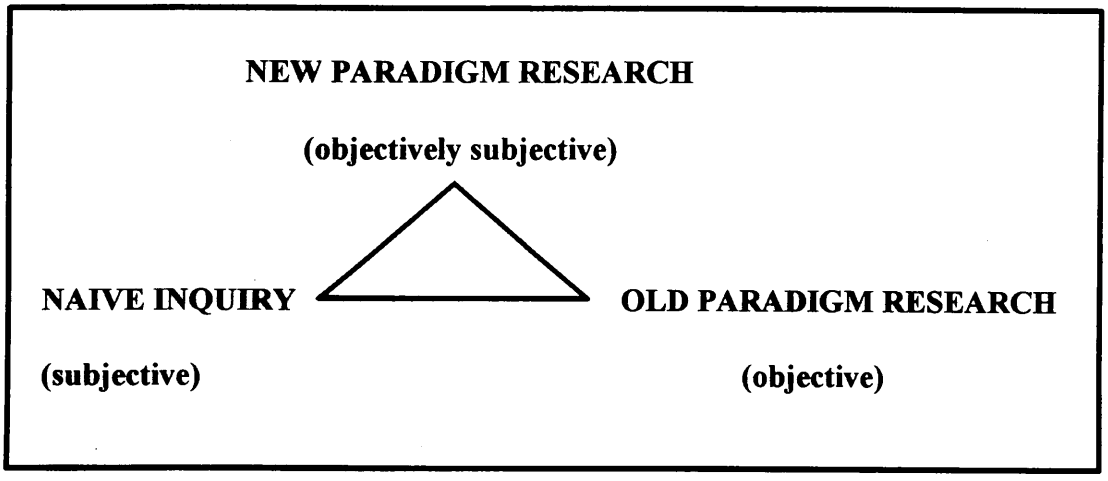
into two piles: How I Am Now and How I Would Like To Be. My students, however, used the Q-sort in a different way (described in Section 4.2, p76-80) and then took part in group discussions to expand upon their Q-sort statements. Thus two complementary methods of data-gathering (quantitative and qualitative) were used. Psychometric tests (like the SPQ and LSQ) supplied quantitative data, the Q-sort provided quantitative and qualitative data, and group discussions gave qualitative data. (N.B.The Q-sort provides both objective information (students' statements can be compared) and subjective information (each student creates a unique set of statements).)

Reason and Rowan (1990, pxiii - foreword), argue that "so-called objective research," in its attempt to get away from "the subjectivity and error of naive inquiry," while countering some of the problems, also "kills off everything it comes into contact with, so what we are left with is dead knowledge." In other words, "so-called objective research" which included the experimental method and statistical quantification, "also kills off everything it comes into contact with" by attempting to manipulate one variable (the independent variable) while holding all other variables constant, and measuring the effect upon the dependent variable using inferential statistics which measure the probability of the results occurring by chance. However, it is sometimes the variables being held constant which may be the important factors. In addition, since psychologists are prepared to accept their experimental hypothesis on the basis of a five per cent probability of chance factors having contributed to the results (rather than the independent variable), it would follow statistically that one in every twenty experiments show either a Type I error, i.e. a significant result not caused by the manipulation of the independent variable, or a Type II error, i.e. a non-significant result supporting the null hypothesis when a significant result should have been the outcome. Since empirical

research and experimentation relies upon the replication of research to support or falsify previous investigations, it is only the effects of the manipulation of the independent variable which is important to experimenters.

Reason and Rowan wish to move away from the paradigm of empirical research but also feel unable to embrace a very subjective paradigm. They, therefore, search for "objective subjectivity" in an attempt to have the best of both worlds. They thus search for a new paradigm which is objectively subjective and a synthesis of naive inquiry and orthodox research, (Reason and Rowan (1990)). They illustrate this in triangular form thus:

DIAGRAM 6(2): The triangular relationship between old and new paradigm research and naive inquiry



My thesis began with my own subjective observations (naive inquiry), progressed to objective, (old paradigm) research and is currently attempting to achieve objective subjectivity (new paradigm research) with the Q-sort, i.e. an approach to inquiry which is a systematic, rigorous search for truth, does not kill off all it touches, but which uses a new paradigm to illuminate the meanings of the raw data collected.

Although generalisation is possible from the Q-sort, it should be borne in mind that the aim of this thesis is to examine the progression of individual students through their two-year 'A' level courses by means of their self-generated statements (as well as the progress of groups of one-year GCSE students using the same technique). It should therefore be a primary aim of this study to question whether generalisation is a necessary procedure, or merely an adjunct to the qualitative measures and to be used in a more secondary manner. Allport ('The general and the unique in psychological science', cited in Reason and Rowan (1990, p65)) suggests that when conducting research, researchers should ask whether generalisations are really relevant to the case under study and in what ways the individual is "the asymptote of all our general laws". They suggest that research should start with individual behaviour as "a source of hunches," and then seek out generalisations, but finally return to the individual.

My research began with a hunch about how students learned and progressed from the background literature, which examined typologies in general terms, to an adaptation of a method for eliciting information in a unique way from each student's Q-sort. Therefore, the main thrust of my research is concerned with individuals. However, when posing the question of whether or not generalisations are really relevant to this study, it would be pertinent to say that, in order to enable the research to be used with a wide variety of students in an interventionist manner, it would be helpful to be able to draw conclusions from one group which would have applications to another similar group. This applicability would also be useful in allowing predictions to be made from the past behaviours of one group of students to the future behaviour (i.e. examination success) of that same, or even a different, group of students. From this generalisability, a return to

the individual would be possibly enriched by the additional knowledge gained from the general information acquired nomothetically.

The Q-sort has the benefit of being a procedure which can lend itself to both nomothetic and idiographic research in that quantification can be achieved through statistical generalisability or individually through student group discussions, (as shown earlier in Chapters Five and Six).

The rationale behind the statistical tests chosen is that, since the level of measurement of the Q-sort is ordinal in that students have rank-ordered their Good / Poor Learner statements into Most to Least Like Me statements, it has only been possible to use nonparametric statistics, e.g. the Chi Square and the Spearman Rho (Radford and Govier (1987)). Since these tests are less sensitive than parametric tests, some statistical significance may remain undetected, even though 0.01 and 0.005 levels of significance have been selected and the margin for error is less than 1 in 100 and 5 in 1000 probability that chance has influenced the results.

The existence of this small probability of error is one reason why qualitative data should be considered and the group discussion technique was selected as a means of adding richness and diversity to the pool of data gained from the Q-sort. John Heron ('Philosophical basis for a new paradigm,' cited in Reason and Rowan (1990, p23)), suggests that if we want to explain behaviour, 'we should inquire through dialogue, interaction and co-operative endeavour, how they symbolise their experience of the world'. Heron was referring to the behaviour of researchers, and he goes on to say that: 'To understand an autonomous or conventional culture, we need to participate in it through dialogue and interaction with those who exemplify it. Any cultural explanation

needs to be checked with those within the culture,' (Heron, cited in Reason and Rowan (1990), p.24).

It was therefore decided to ask students to participate in group discussions about their learning experiences. However, certain caveats were borne in mind; for instance, Heron suggests that people may 'misconstrue the world' and that 'each individual is not necessarily the best authority on the validity of his / her own constructs and interventions.' This would suggest that, although group discussion material may be a rich source of information, it is restricted to one individual's perception. In addition to this, since the students participated in group discussions, this would suggest that individual perceptions could have changed through the processes of either norm formation (Sheriff (1935), the Autokinetic Effect), or conformity, (Asch (1952)). Thus, on topics where students are not sure how they should reply, there may be a tendency to accept the ideas of the group as a norm, (Sherif (1935)). On the other hand, some students with a contribution to make, may not do so if their comments are contrary to those of the group, (Asch (1952)). However, in the case of the group discussions conducted for this research, it would appear that most students were willing to put forward their viewpoint, and it should also be mentioned that students chose group members with whom they were comfortable (the three group discussions were conducted to accommodate the students' preferences) in order to share their views among their friends. This, in itself, might ironically pose the problem of students being with a group whose norm they already share, yet at the same time making individual points which are independent of that group. It will, however, be difficult to disentangle the two variables, i.e. that of deciding whether the students' comments were (1) a faithful representation

of what they thought, or (2) an unconscious adaptation to the norm of their group of friends.

Having presented a rationale for, and critique of, my two methods, the following points may now be made as a consequence of using both methods in a complementary way:

(A) Although all students, during their group discussions, displayed knowledge about the qualities required by good learners and declared that their intentions were to apply themselves to developing more of these qualities, the results of their batteries of tests (especially the SPQ) did not always support this. In addition, the Q-Sorts showed that not all students placed all the 'Good Learner' statements in the top ten. This discrepancy between discussion results and test scores could be accounted for in the following ways:

(1) Students in groups will be more conforming to each other's views than when they are making statements individually. This is borne out by empirical research: Wicker (1969), reviewed forty-two studies and found that correlations between measured attitudes and behaviour rarely reach 0.30 and average only about 0.15; he concluded that attitudes are typically unrelated, or only slightly related, to overt behaviours. Gross (1996), asks the question: "Given that attitudes can only be inferred from what a person says and does, once we have established people's attitudes, are we then in a position to accurately predict how they will behave?" Given Wicker's (1969), findings, the answer to Gross's (1996), question may well be, 'No'.

Although, as mentioned on p137, early research would suggest that students in groups will be more conforming than they would be individually (Sherif (1935) and Asch (1951)), however, more recent studies would suggest that the conformity issue is not as clear cut as early research claimed. For instance, Perrin and Spencer (1981) found very low ratios of conformity (one out of 396 trials) for a group of British students (reading

Engineering, Mathematics and Chemistry), but much higher rates of conformity in young offenders on probation. Brown (1985), makes the suggestion that perhaps the experiments have changed as much as the students in that they may not **expect** as much conformity and this may have reduced the demand characteristics of the experiments. Whatever the conclusions may finally be for research into conformity, the latter may only partially explain, (if at all), the discrepancy between my students' group discussion data and their test scores.

(2) A second explanation could be that students will possibly be more protective of their self-concept in a group situation and will be less inclined to reveal some of their flaws. According to Rogers (1951), we learn to feel and act in ways that win the approval of others and suppress those parts of ourselves which are unacceptable to others; thus there will be a discrepancy between our Actual (or Real) selves, and our Ideal selves. It would, therefore, be expected that students will present more of their Ideal selves to others and more of their Actual (or Real), selves to themselves. In other words, group discussions may elicit more information about the students' Ideal selves, and the Q-Sort about their Actual selves.

(B) Although Q-sorts showed variations in Good:Poor Learner statements, all students possessed knowledge of some Good Learner qualities even though these might not outweigh the Poor Learner qualities. However, even though statements students generated showed their understanding of what they should do to improve their learning capabilities, knowledge of what should be done, and actually doing it, are two different things.

Rogers (1951), uses the term, 'congruence', to refer to the consistency between our Ideal and Actual selves. However, in striving for self-fulfilment, people often set themselves ideal standards which are difficult to achieve and, in this way, set themselves up to fail. Perhaps Rogers's humanistic model can explain my findings that students are able to identify Good Learner qualities, but sometimes fail to achieve them. In this way, therefore, it is possible for students to set themselves up for failure by setting standards which are too high for them to achieve. This would account also for students' needs to protect their self-concept, (as was mentioned in **(A)**(2), p139), especially in a group situation where their incongruence between Real and Actual selves is in danger of becoming public knowledge. This can also be seen at the end of section 6.3 (p127), when students say they would prefer to think they had failed due to lack of preparation or revision rather than to lack of intelligence.

(C) The Chi Square Tests for the 'A' level students showed a significant difference between the Good Learner statements for the True Positives and those of the other three categories of students, namely, False Positives, False Negatives and True Negatives, i.e. showed that those students who stated they used more Good Learner than Poor Learner qualities and who had also been identified by the lecturer (on the basis of their assignment marks) as potential succeeders, identified significantly more Good than Poor Learner statements as applying to themselves. It has been mentioned that all students were able to identify Good Learner qualities and possessed these qualities to various degrees. This could also be detected in their group discussions since they were all able to identify Good Learner qualities and practices. However, many of them were honest enough to admit that they did not practise what they preached. This was borne out in the

Q-Sort results, as discussed in **(B)**(p139-140). The Chi Square Test is therefore statistical confirmation of the qualitative data obtained from the 'A' level students in their group discussions and Q-Sort findings.

The fact that all students could identify qualities they thought Good Learners should have, but did not possess some of these qualities or habits themselves, is interesting in the light of the findings of Maddox (1963), i.e., that poor students often have the most impeccable study habits, yet failed their examinations, (p.32 of this thesis). The difference between my findings and Maddox's is that his students were actually using good study habits and failing, whereas mine could identify them but weren't using them. However, I will return to this point later in my thesis, when my current first year students receive the results of their first 'A' level module. It may yet be the case that some of the students who practise good study habits, fail their examinations, while some students with poorer study habits succeed. (It is fortunate for the purposes of this thesis that there is the option of taking the Associated Examining Board 'A' level Psychology in modular form, whereby students can take one, or even two modules, in their first year, and a double module in the June of their second year. Thus students' progress can be monitored externally throughout their two-year course.)

Biggs (1987) measures the discrepancy between students' learning styles and the material to be studied, e.g. see Tables 5(1) and 5(2) (pp97 and 98). Here, under the SPQ heading, it has been shown whether or not students' strategies and motives are matched. S, D and A stand for Surface, Deep and Achieving approaches, and each approach has two of the three signs (- Below Average, 0 Average, and + Above Average). If a student is Average or Above Average in the use of the Surface Strategy but Below Average in the motivation to use that strategy, then this is a Mismatch. If a student has

equal ratings in both Strategy and Motive, this is a match. Biggs (1987) suggests that mismatches prevent a student from achieving his / her full potential. He also suggests that students who use an approach that is appropriate for them, (whether a Surface or a Deep approach), may learn more effectively; if the approach is inappropriate, then that will lead to underachievement. I gave all my students Biggs's (1987), Study Process Questionnaire to complete during the first year, thinking that those students who showed greatest discrepancies between their Actual and Ideal selves might also show a mismatch in their SPQ scores, (see Table 5(1) and 5(2), on pages 97 and 98 of this thesis). As can be seen with students 4, 10, 12, 14 and 16 in Table 5(1), and students 5, 11 and 15 in Table 5(2), their SPQ scores have no negative mismatches, their Q-Sort ratios are positive and they show True Positive scores overall. This confirms Biggs's findings. In other words, students who show 0 (the norm), or + (above the norm) on Surface, Deep and Achieving approaches (for both Motive and Strategy) are not mismatched, unlike students who have -(negative, below the norm) scores.

However, some students come out as True Positives but show mismatches on Biggs's SPQ, while other students show no mismatches on the SPQ but do not come out as True Positives on the Q-Sort. It would seem that more work needs to be done in this area, because students using approaches which are inappropriate to the subject matter will, according to Biggs (1987,1993), learn less effectively.

(D) The Spearman Rho showed significant positive correlations between students' Q-Sorts for different subjects for 'A' level students, though not for the GCSE students. This suggests that the 'A' level students enjoy more consistency in their study approaches across their choice of subjects, a finding also supported by comments made during group discussions. This does not mean to imply that all students enjoy, or are

equally competent, in all three 'A' levels, only that they are more consistent in their attitude towards, and approaches to, study in their various subjects.

Honey and Mumford (1986) found that, when the Learning Styles Questionnaire was administered to 'A' level students, most were predominantly Reflectors or Activists. This would suggest some constancy among 'A' level students. However, they also found that females tended to be Activists while males tended to be predominantly Reflectors or Pragmatists. These findings were not consistent in themselves, as was shown in the pilot study (see pp82-87). However, my findings have shown a consistency between students' feelings about one 'A' level and their other 'A' level subjects.

In concluding this section, it can be stated that the quantitative and qualitative data have been found to complement each other in that the psychometric tests (especially the SPQ and Q-Sort) show some similar findings, (see Tables 5(1) and 5(2), pp97 and 98) and have, to a certain extent, concurrently validated each other, (see also the discussion of Tables 5(1) and 5(2), pp99-100).

A summary of these findings are:

(1) There was a significant difference between the Good:Poor Learner statements of True Positive 'A' level students and the other three categories, namely, False Positive, False Negative and True Negative. This means that True Positive students appeared to practise significantly more Good Learner habits and there was significantly less discrepancy between their Ideal and Actual Learner behaviours. My statistical evidence for making this statement can be seen in Table 5(3), p104 - Summary Table of Results. These findings did not occur in the False Positive, True Negative or False Negative cells of the Chi Squares. However, those students who came within the False Positive range,

i.e. thought they would pass when their lecturer thought they would fail, saw themselves as possessing more Good than Poor Learner qualities, although this was not large.

(2) There are significant positive correlations in 'A' level students' Q-sorts between their different subjects, but this does not apply to the GCSE students. My statistical evidence for making this statement can be seen in Table 5(3) on p104. The Spearman Rho showed significant positive correlations for the 'A' level students between their Actual Learner statements for all their subjects. With the GCSE students, however, no significant correlation occurred. Since the Actual Learner correlations were significant and positive for 'A' level students, it showed that they were all clear about the study behaviours they thought Good Learners should use. The correlations also showed that students thought these behaviours did not vary to accommodate different subjects, but remained the same.

(3) All students were able to identify Good Learner qualities, although when applying these qualities to themselves, many students assessed themselves as having less of these qualities than they would ideally like. This can be seen by examining the Q-Sort ratios for Actual and Ideal Learners in Tables 5(1) and 5(2) on pp97 and 98. The ratios of Good:Poor Learner statements are predominantly 10:0 for students' Ideal Learner categories, whereas these ratios fluctuate from 0:10 to 10:0 for the Actual Learner categories.

(4) Students made some very positive comments in the group discussions (and some negative ones, too) even though they didn't always practise what they preached. This can be seen in the earlier part of this chapter in the statements the students made.

The final section in this chapter comments on the originality of my contribution to the current body of knowledge in the area and on my research methodology justification.

6.6 The originality of my contribution to the current accumulation of knowledge, and justification of my research methodology.

The aim of this thesis is to devise a method of helping students become more effective learners by assessing their study approaches through their self-generated statements. A reduced version of my hypotheses is shown in Table 6(3), below. (For the full hypotheses, see Chapter Four, pp89 and 90.)

TABLE 6(3): Hypotheses for this thesis.

	Student Q-sort	Lecturer prediction	Examination outcome	Intervention
Hypothesis 1	**Good Learner score high - True Positive (+ +)**	**Success**	**Success**	**None. (Additional Learning Support, if needed.)**
Hypothesis 2	**Good Learner score high - False Positive (+ -)**	**Fail**	**Fail**	**Attempt to change student's self-perception. Offer Additional Learning Support**
Hypothesis 3	**Good Learner score low - False Negative (- +)**	**Success**	**Success**	**Student will seek help with work - Additional Learning Support. Attempt to change student's self-perception.**
Hypothesis 4	**Good Learner score low - True Negative (- -)**	**Fail**	**Fail/Students may leave course**	**Student may leave before intervention given. Otherwise, intervention like Additional Learning Support.**

To summarise, the four categories of students shown in Table 6(3), (namely, True Positives, False Positives, True Negatives, False Negatives) can be determined using the Q-sort in conjunction with lecturer prediction of examination outcome. The Q-sort can be used with the LSQ and SPQ in a test battery, to select students who would benefit from intervention; for example, the LSQ indicates the type of predispositions students

have towards learning, whereas the SPQ shows the different approaches they use and whether there is a mismatch between their motives and strategies. The Q-sort uses an individual technique of statements generated by the students themselves and shows whether there is a discrepancy between students' Actual learning statements and lecturer predictions. (Chapter 7 will discuss this in more detail when it compares students' examination results with their Actual learner scores and lecturer predictions.)

My research has moved away from the paradigms of pre-dispositional based learning (the LSQ) and of Surface and Deep motives and strategies for learning (the SPQ), away from dependence on typologies and into the realm of the student as an individual. It has borrowed Rogers' student-centred approach to learning and combined it with a revised version of Stephenson's (1953) Q-sort technique (also used by Butler and Haigh (1954) and Block (1961/78)). However, whereas the Q-sort technique has been used to show how clients have progressed in their Rogerian-type client-centred therapy, and also in psychiatry, I have adapted the technique to ascertain how students feel about their own learning process.

My research methodology has been discussed earlier in this chapter, where I argued that I used propositional, practical and experiential knowledge of my participants to support my aim and hypotheses. I also combined quantitative and qualitative measures to assess the reliability and validity of the data obtained from the Q-sort. In other words, I began with my literature search (propositional knowledge), gave my students a battery of tests (practical knowledge) and interviewed the students (experiential knowledge). This group discussion information was described and the Q-sort results were statistically quantified.

Chapter 7 will be concerned with students' examination results and whether or not the test battery showed itself to be a successful predictor of these results. Sex differences in accuracy of predictions will be discussed, interventionary measures proposed and their ethical implications considered.

CHAPTER SEVEN

The predictive validity of the Q-sort compared to lecturer predictions, sex differences in Q-sortings, interventionary measures and their ethical implications.

7.1 The predictive validity of the Q-sort when compared to lecturer predictions and sex differences in accuracy of student self-perceptions.

Chapter Seven will be concerned with the examination results of the 1996-1998 cohort of 'A' level and the 1996-7 cohort of GCSE students and whether or not the Q-sort showed itself to be a successful predictor of these results. In addition, sex differences in Q-sort scores will be discussed, some interventionary measures will be proposed and ethical implications considered.

Firstly, however, the examination results for both cohorts of students were added to Tables 5(1) and 5(2), first presented in Chapter Five, pp97 and 98. These completed tables now appear as Tables 7(1) and 7(2) on pp149 and 150.

The examination results for the 'A' level students, shown in Table 7(1) on p149, are the marks gained in the first module of their 'A' level examination taken at the end of Year One, rather than the final grades which they will receive at the end of Year Two. The examination results of the GCSE students are shown in Table 7(2) on p150. Table 7(3), on p151, shows the number of correct and incorrect student and lecturer examination predictions for both 'A' level and GCSE students, and Table 7(4), also on p151, shows the proportion of correct to incorrect predictions of male and female students (both 'A' level and GCSE) and their lecturer.

TABLE 7 (1)

ASSESSMENT RESULTS FOR 'A' LEVEL STUDENTS (1996-8 COHORT) IN YEAR ONE

	September 1996-LSQ				May 1997-LSQ				May 1997-SPQ			April 1997-Q-SORT RATIOS							AL IL	June 1997	Jan
Student No.	A	R	T	P	A	R	T	P	S MS	D MS	A MS	G:P AL	G:P IL	G:P AL	G:P IL	G:P AL	G:P IL		G:P G:P (TOTALS)	/120	/120 (Re-sit)
1	14c	11d	12c	12c	20a	11d	15b	12c	- 0	0 -	0 0	6:4	9:1	6:4	9:1	6:4	9:1	(+ -)	18:12/27:03	23 (U)	LEFT
2					13c	10d	5e	2e	- -	0 -	0 -	6:4	10:0	6:4	10:0	6:4	10:0	(+ -)	18:12/30:00	75 (C)	
3	15b	14c	13c	13c	15b	14c	14b	16a	+ -	0 -	+ -	3:7	8:2	3:7	8:2	3:7	7:3	(- +)	09:21/23:07	72 (C)	
4	13c	17b	10c	9d	18a	10d	11c	14b	0 0	+ +	0 0	7:3	10:0	7:3	10:0	7:3	10:0	(++)	21:09/30:00	34 (U)	LEFT
5					12c	13c	11c	6e	- -	+ +	0 -	8:2	9:1	8:2	9:1	8:2	10:0	(++)	24:06/28:02	48 (E)	64
6	7d	16c	9c	8d	9d	8e	5e	6e	+ -	+ +	+ +	9:1	10:0	10:0	10:0	10:0	10:0	(++)	29:01/30:00	69 (D)	
7					14c	12d	10c	7e	+ +	- +	0 0	6:4	10:0	6:4	10:0	6:4	10:0	(+ -)	18:12/30:00	23 (U)	
8	9d	17b	14b	5e								7:3	10:0	10:0	10:0	10:0	10:0	(+ -)	17:03/20:00	20 (U)	
9	14c	7e	7d	11c	9d	11d	10c	9d	+ -	0 -	- -	5:5	10:0	7:3	10:0	0:10	10:0	(- -)	12:18/30:00	7 (U)	LEFT
10					7d	13c	4e	6e	+ +	0 0	+ +	7:3	10:0	7:3	10:0	7:3	10:0	(++)	21:09/30:00	111 (A)	
11	17a	7e	7d	10c	13c	14c	11c	13c	0 -	0 0	- 0	8:2	10:0	8:2	9:1			(+ -)	16:04/19:01	40 (N)	76
12	8d	11d	12c	10c	8d	18b	15b	16a	+ +	+ 0	+ +	10:0	10:0	10:0	10:0	10:0	10:0	(++)	30:00/30:00	68 (D)	
13	16b	12d	7d	13c	18a	13c	9c	12c	+ 0	- -	0 -	5:5	10:0	5:5	10:0	5:5	10:0	(- -)	15:15/30:00	LEFT	LEFT
14	10c	15c	9c	14b	12c	15c	12c	17a	+ +	+ 0	+ 0	9:1	10:0	10:0	10:0			(++)	19:01/20:00	36 (N)	LEFT
15	10c	10d	3e	3e	9d	16c	9c	7e	0 0	+ -	+ +	9:1	10:0	9:1	10:0	9:1	10:0	(++)	27:03/30:00	93 (B)	
16	8d	15c	13c	12c	6e	17b	15b	13c	0 +	0 0	0 +	9:1	10:0	9:1	10:0	9:1	10:0	(++)	27:03/30:00	48 (E)	

KEY TO ABBREVIATIONS IN TABLES 7(1) AND 7(2).

LSQ	Learning Styles Questionnaire (Honey and Mumford, 1992)		
A	Activist	M	Motive
R	Reflector	S	Strategy
T	Theorist	Q-sort	Students' self-generated and ordered statements
P	Pragmatist	G:P	Good:Poor Learner statements
SPQ	Study Process Questionnaire (Biggs, 1987)	AL	Actual Learner
S	Surface	IL	Ideal Learner
D	Deep	H	Higher level GCSE examination
A	Achieving	F	Foundation level GCSE examination
+	Above average	(++)	True Positive
0	Average	(- -)	True Negative
-	Below average	(+ -)	False Positive
		(- +)	False Negative

TABLE 7(2)

ASSESSMENT RESULTS FOR GCSE STUDENTS (1996-7 COHORT)

	LSQ								SPQ			Q-Sort Ratios							Totals	Exam	
	September 1996				May 1997				May 1997			April 1997							AL IL	June 1997	
Student No.	A	R	T	P	A	R	T	P	S MS	D MS	A MS	G:P AL	G:P IL	G:P AL	G:P IL	G:P AL	G:P IL		G:P G:P		
1									++	0 -	+0	6:4	10:0	8:2	10:0	5:5	10:0	(++)	**19:11/30:00**	H	D
2					18a	18b	14b	18a	++	++	++	10:0	10:0	10:0	10:0	9:1	10:0	(+ -)	**29:01/30:00**	F	P
3	11c	15c	5e	6e	11c	10d	3e	3e	0 -	+0	0 0	8:2	10:0	10:0	10:0	8:2	10:0	(++)	**26:04/30:00**	F	E
4	14c	8e	5e	6e																	X
5	16b	12c	10c	14b	16b	16c	14b	16a	0 0	++	+0	10:0	10:0	10:0	10:0	0:10	10:0	(++)	**20:10/30:00**	H	C
6					13c	17b	12c	14b	+0	- -	++									F	G
7					8d	18b	14b	7e	++	++	0 +	5:5	10:0	10:0	10:0			(- +)	**05:05/30:00**	H	B
8	8d	15c	10c	8d	4e	13c	6d	5e	0 0	0 -	0 -	6:4	10:0					(+ -)	**06:04/10:00**	F	C
9					5e	10d	7d	5e	++	- -	0 -	3:7	10:0					(- +)	**03:07/10:00**	H	A
10	5e	19a	16a	13c	6e	19a	13c	8d	+0	- 0	0 0	10:0	10:0					(++)	**10:00/10:00**	H	C
11					9d	19a	13c	13c	++	0 0	++	10:0	10:0					(++)	**10:00/10:00**	H	B
12					17a	4e	7d	8d	+0	- 0	0 0	7:3	10:0	7:3	10:0	7:3	10:0	(+ -)	**21:09/30:00**	H	D
13					17a	2e	4e	8d	+ -	- 0	+ -	6:4	10:0					(+ -)	**06:04/10:00**	F	G
14					12c	14c	11c	12c	++	- -	0 0	7:3	10:0					(+ -)		F	U
15					8d	15c	8d	13c	+0	0 0	0 +	6:4	10:0					(++)	**06:04/10:00**	H	B

KEY TO ABBREVIATIONS IN TABLES 7(1) AND 7(2)

	LSQ Learning Styles Questionnaire (Honey and Mumford, 1992)		
A	Activist	M	Motive
R	Reflector	S	Strategy
T	Theorist	Q-sort	Students' self-generated and ordered statements
P	Pragmatist	G:P	Good:Poor Learner statements
SPQ	Study Process Questionnaire (Biggs, 1987)	AL	Actual Learner
S	Surface	IL	Ideal Learner
D	Deep	H	Higher level GCSE examination
A	Achieving	F	Foundation level GCSE examination
+	Above average	(++)	True Positive
0	Average	(- -)	True Negative
-	Below average	(+ -)	False Positive
		(- +)	False Negative

SUMMARY OF FINDINGS

Table 7(3):Correct and incorrect predictions (for 1997 psychology examinations) of students and lecturer for 'A' level modular (1996-8 cohort) and GCSE (1996-7 cohort).

'A' level students				GCSE students			
Student No.	SP	LP	O	Student No	SP	LP	O
M1 (+ -)	X	C	F (U)	M1 (++)	X	X	F (D) h
M2 (+ -)	C	X	P (C)	M2 (+ -)	X	C	F (P) f
M3 (- +)	X	C	P (C)	M3 (++)	X	X	F (E) f
M4 (++)	X	X	F (U)	M4	-	-	W (X)
M5 (++)	C	C	P (E)	M5 (++)	C	C	P (C) h
M6 (++)	C	C	P (D)	M6	-	-	-
M7 (+ -)	X	C	F (U)	M7 (- +)	X	C	P (B) h
M8 (+ -)	X	C	F (U)	M8 (+ -)	C	X	P (C) f
M9 (- -)	C	C	F (U)	F9 (- +)	X	C	P (A) h
F10 (++)	C	C	P (A)	F10 (++)	C	C	P (C) h
F11 (+ -)	X	C	F (N)	F11 (++)	C	C	P (B) h
F12 (++)	C	C	P (D)	F12 (+ -)	X	C	F (D) h
F13 (- -)	C	C	W (W)	F13 (+ -)	X	C	F (G) f
F14 (++)	X	X	F (N)	F14 (+ -)	X	C	F (U) f
F15 (++)	C	C	P (B)	F15 (++)	C	C	P (B) h
F16 (++)	C	C	P (E)				
SP = Student Prediction made from Q-sort ratios; LP = Lecturer Prediction made from student assignment marks and mock examination results; O = Outcome (grade and level).							
M = Male; F = Female; X = Wrong Prediction; C = Correct Prediction							
P = Pass; F = Fail; W = Withdrew from examination; f = foundation level; h = higher level.							

Table 7(4): Proportions of correct to incorrect predictions of male and female students and their lecturer for the June 1997 psychology examinations - 'A' level modular (1996-8 cohort) and GCSE (1996-7 cohort).

'A' LEVEL (n=16)	GCSE (n=13)
males - correct 4 : wrong 5 females - correct 5 : wrong 2 females - correct more often than males (5:4) females - wrong less often than males (2:5) students: correct=9; wrong=7 (males N = 9 ; female N = 7)	males - correct 2 : wrong 4 females - correct 3 : wrong 4 females - correct only slightly more often than males (3:2) females - wrong as often as males (4:4) students: correct=5; wrong=8 (males N = 6 ; females N = 7)
lecturer correct more times than students (13:9)	lecturer correct more times than students (10:5)
examination outcome for females proportionally more successful than for males: females 4 out of 7; males 4 out of 9	females proportionally more successful (at C grade and higher) than males: females 4 out of 7; males 3 out of 6
lecturer correct more times than wrong (13:3)	lecturer correct more times than wrong (10:3)

The results in Tables 7(3) and 7(4) were calculated in the following way:

After the 'A' level modular and GCSE results were published, student statements (from their Q-sortings) were compared with lecturer predictions (based on an examination of student assignments and coursework). For the descriptive purpose of this study, students were classified as + + (True Positive) where student and lecturer predicted success, + - (False Positive) where the student but not the lecturer predicted success, - + (False Negative) where the lecturer but not the student had predicted success, and - - (True Negative) where both the student and lecturer both predicted failure. Classifying students in this way made two assumptions: (1) that students who assessed themselves as having more Good than Poor Learner qualities, were indirectly predicting a successful outcome to their examinations; (2) the lecturer was using assignment and coursework marks to predict similar examination success. If both lecturer and student agreed on a successful outcome, the student was classified as a True Positive.

This chapter will propose, show some statistical support for, and attempt to explain, the following findings:

(1) sex differences in accuracy of predictions of examination success and the suggestion of a possible relationship with students' self-confidence; and

(2) differences in accuracy of predictions of examination success between students and lecturer, and hence a test for the predictive validity of the Q-sort.

These findings were based on a comparison between:

(a) students' Q-sortings and the lecturer's marks for students' assignments and time questions; and

(b) students' and lecturer's predictions compared with the results of the students' first modular examination ('A' level) and final examinations (GCSE).

This chapter will also discuss interventions to help students improve their approaches to studying. However, it needs to be remembered that the Q-sort on its own, is not intended to provide a comprehensive measure of students' approaches to study. It can be used with the Study Process Questionnaire and the Learning Styles Questionnaire, in a complementary way to provide one part of the picture. Further information elicited from students after gaining their results can be considered, i.e. whether or not students undergo any change in their thoughts about their abilities and whether this change is reflected in later Q-sort statements.

This raises the question of the reliability and predictive validity of the Q-sort. It must be stated at this point that since the Q-sort is an individual measure of a student's uniqueness, it can only be as reliable as the individual student who is completing it. In addition, when considering its predictive validity, the Q-sort will vary from student to student and from time to time, i.e. some students are more accurate predictors than others of how successful they will be, but also students, as they gain more experience of passing and failing examinations may change their ideas about their study approaches and whether they are using successful ones as a result of that experience. This, in turn, will alter their Good to Poor Learner ratios and consequently, their predictions of examination success or failure.

With regard to the 'A' level students, the females were correct in their predictions more often than were males. With GCSE students, the male/female difference was not so pronounced. With both 'A' level and GCSE students, the lecturer was correct about the students more often than the students were correct about themselves. The

next step will be to quantify statistically this data so that any significant differences can be detected. The next section discusses this statistical quantification and its implications for my hypotheses.

7.2 Statistical quantification of the data and its implications for my hypotheses

Since the lecturer was correct about examination outcomes more times than the students, and since female students were correct more times than males, Chi Square tests were used to quantify the raw data. Four tests were calculated, namely:

'A' level: (1) lecturer/students // correct/wrong;

(2) female/male // correct/wrong;

GCSE: (3) lecturer/students // correct/wrong;

(4) female/male // correct/wrong.

The level of measurement was nominal and each category contained discrete variables. However, only two Chi Squares, namely those for lecturer/student ('A' level and GCSE) contained frequencies high enough to allow valid test calculations and neither produced a significant result. The results were as shown in Table 7(5), below:

TABLE 7(5): Results of Chi Square Tests showing significance in accuracy of predicting examination outcome by male and female students and their lecturer.

Groups	Test	n (number in group)	Chi value	cv (critical value)	p (probability level)	Support for Exp. or Null Ho.
'A' level lecturer/student correct/wrong	Chi Square (2*2)	16	1.31 (df = 1)	3.84 (0.05)	non-significant	Null
'A' level females/males correct/wrong	Chi Square (2*2)	16	Expected frequencies not high enough to allow valid test calculations to be made.			
GCSE lecturer/student correct/wrong	Chi Square (2*2)	13	2.52 (df = 1)	3.84 (0.05)	non-significant	Null
GCSE female/male correct/wrong	Chi Square 2*2	13	Expected frequencies not high enough to allow valid test calculations to be made.			

(See Appendix 12 (p336) for Chi Square tables.)

The terms 'correct' and 'wrong' predictions refer to the Q-sort scores thus:

if there are five and below five Good Learner statements in the first ten statement sortings then students are understood to be predicting an unsuccessful outcome;

if there are above five Good Learner statements in the first ten statement sortings then students are understood to be predicting a successful examination outcome.

Lecturer predictions were made on the basis of marks gained in assignments and time questions.

Although the lecturer was correct more often than the students, this was not significant. Likewise, although females were wrong less often than males, this was also not significant. However, when converted to a percentage, these differences can be seen thus:

'A' level

Lecturer correct 13 times out of 16.....81.25%

Students correct 9 times out of 16.....56.25%

Female students correct 5 times out of 7.....71.43%

Male students correct 4 times out of 9.....44.44%

GCSE

Lecturer correct 10 times out of 13.....76.92%

Students correct 5 times out of 13.....38.46%

Female students correct 3 times out of 7.....42.86%

Male students correct 2 times out of 6.....33.33%

From these percentages it can be seen that the lecturer (using assignment and time question marks) was correct more often than the students (when using their self-generated Good Learner statements as an indicator of how positively the students perceived their ability to study). The exception was the female 'A' level students who appeared to possess more accurate self-perceptions than the male 'A' level students and both male and female GCSE students.

These 1996-1997 findings would support the idea that lecturer prediction is more reliable than student Q-sortings (apart from the 'A' level female students) and that female 'A' level students have a more realistic idea of self-worth than the male students in that their Q-sortings were more accurate. It is therefore suggested that if these findings were to be replicated in 1997-1999 with a different sample of students, then they would have a greater level of predictive validity than if they were present in the 1996-1998 findings only.

This replication will be done with 'A' level and GCSE students. The next section will discuss drawbacks of, and explanations for, these findings.

7.3 Drawbacks of, and explanations for, these findings.

Although the sample was small and therefore generalisability unreliable (16 'A' level and 13 GCSE students), an eyeball examination of the results would suggest that females studying 'A' level have more accurate self-perceptions than males about their study abilities. In other words, females with positive Q-sorts, are more successful at 'A' level psychology than are males with the same profiles. Q-sort profiles are designed to reveal students' ideas about their study approaches and this may be linked to their knowledge of self and self-worth. It would then follow that, if there is a

relationship between knowledge of the self (and self-worth) and knowledge of how much study is necessary to succeed in examinations, then females may have a more realistic idea of their self-worth than males, i.e. they do not claim to use study approaches they do not possess. (Although this is not a focus of this study, it could be a focus for future research. These results were collected during 1996-1998 and it is my intention to replicate this study using a different samples of students in 1997-1999.)

Thus the current results would show that underconfidence in one's abilities (or rather a clearer and more critical understanding of one's shortcomings, as shown by female 'A' level students) is possibly more clearly related to success than is an appearance of overconfidence (or the absence of self-knowledge as shown by the protection of the self by a refusal to accept one's shortcomings, or a denial of them). Those students who showed themselves to be false negatives, (i.e. those students whose self-generated statements showed that they felt they were Poor Learners while the lecturer predicted they would be successful), succeeded better than those who appeared as false positives, (i.e.those students whose self-generated statements showed that they felt they were Good Learners while their lecturer predicted failure). It may be the case that under-confidence leads to extra preparation for examinations, and perhaps more so with the females whose Q- sorts tended not to fall into the False Positive category. (Although this was not the case with the GCSE students, with the 'A' level students, only one female fell into this category, as opposed to four males). This may be where the sex difference lies, in that females have been thought, in the past, to have less self-confidence than males (Burns (1979)), and that this, when compared to males, has, therefore, been considered to be a deficit in females. However, this may turn out to be

an advantage for the females in that, far from showing underconfidence in their abilities, their knowledge of their shortcomings may provide the motivation for thorough examination revision. Indeed, self-knowledge of shortcomings may have been confused with underconfidence in the past.

Burns (1988, p195-6) said: "Girls who identify with both the stereotypical feminine model and the achievement model will experience role conflict and, hence, have lower self esteem than boys." He said that males rated themselves, consistently, more favourably than females on physical appearance, convergent mental ability, divergent mental ability, social relations, social virtues and school performance. This shows that, as early as middle childhood, females were beginning to evaluate themselves less favourably than males.

However, the error Burns (1988) made, was that he used the males as the model for comparison rather than the females. In other words, he made the assumption that the level of confidence shown by males was the normative level and that females' levels of confidence (when measured as less) was therefore deficient. Tavris (1993) shed some light on this when she said: "The bias of seeing women's behaviour as something to be explained in relation to the male norm makes sense in a world which takes the male norm for granted." Moreover, it is the male norm which frames the questions experimenters ask. The answers to these questions then give the impression that women are deficient or have problems if they differ from the male norm. Thus the idea that women have less self-confidence than men is an assumption based upon the male level of self-confidence as being the norm. If women's levels of self-confidence were substituted as the norm, it could be alleged that men were more conceited than women.

Gross (1995) stated: ".....describing women's deficiencies is not usually seen as biased and derogatory, because the male norm is the standard against which women are being judged. As soon as a female norm is used to set the standard, the bias becomes apparent: only then do we become aware of the bias that was there all the time!" Tavris (1993) asks: "Why has it been so difficult to notice the same negative tone in the way we talk about women?" She goes on to answer this question by saying: "We are used to seeing women as the problem, and to regarding women's differences from men as deficiencies and weaknesses."

Gross (1995) suggests that in psychology in general, and in the study of gender in particular, there is "a strong bias towards publishing studies which have produced 'positive' results," i.e. where the null hypothesis has been rejected. So, in the case of gender, studies which find sex differences will be published, while those that do not, will not. The far more convincing evidence for sex similarity "is, therefore, ignored, creating the very powerful impression that differences between men and women are real, widespread, and 'the rule'. Indeed, the very term 'sex similarities' sounds rather odd."

Thus, if sex similarities are more widespread than sex differences, any differences found may be even more important. Also, if the norm is moved away from a male one and in the direction of a female one, then it may be said that females have a more realistic concept of their abilities than males in that what has appeared to be under-confidence in females can now be seen as realistic self-understanding. This would then suggest that some males have an over-confident concept of themselves and thus fail to commit themselves to the required amount of pre-examination preparation. It is interesting to observe that a male in the 'A' level group who achieved one of the best

scores, tended to be under-confident about his abilities when compared to other males in the group, was often heard to say that he wasn't clever and believed he would fail. This was also the case with one of the males in the GCSE cohort.

At this point in the thesis, the reader may wish to reacquaint him/herself with a summary of the statistical tests applied to the data and the implications of these findings for the hypotheses.

7.4 Summary of statistical tests applied, and their implications for my hypotheses

Firstly, before summarising the statistical tests, a reminder will be given of the hypotheses:

Hypotheses

It is predicted that:

(1) Students whose Good Learner Q-sort scores are high and whose lecturer predicts a successful psychology examination outcome, will be more likely to succeed. Since these students will generally seek help, intervention will be in the form of giving them the results of their SPQ, LSQ and Q-sort test battery. **(True Positive + +)**

(2) Students whose Good Learner Q-sort scores are high but whose lecturer predicts an unsuccessful psychology examination outcome, will be more likely to fail unless they change their self-perceptions of their study approaches. These students tend to think they do not need help because they think they are performing better than they actually are. Intervention will be in the form of giving them their SPQ, LSQ and Q-sort results and advising them to attend Additional Learning Support sessions. **(False Positive)**

(3) Students whose Good Learner Q-sort scores are low but whose lecturer predicts a successful psychology examination outcome, will be likely to succeed. **(False Negative).** (This group of students, since they have insight into their needs for help, will be more likely to seek, and use, the help on offer, i.e. Additional Learning Support, and will probably find the help more beneficial than some of the other groups. Intervention will be in the form of giving them their SPQ, LSQ and Q-sort results.)

(4) Students whose Good Learner scores are low and whose lecturer predicts an unsuccessful psychology examination outcome, will be most likely to leave the course before the 'A' level psychology examination is taken. It is predicted that most of this group will leave before intervention can be applied, but if they stay on the course, intervention will take the form of giving them their SPQ, LSQ and Q-sort scores and advising them to attend Additional Learning Support sessions. **(True Negative)**

For the purpose of this thesis, and to test these four hypotheses would require me to:

(a) Measure the proportion of' Good Learner statements which appear in the first ten statements in the students' Q-sorts (Actual Learner category), i.e. to show whether the Good Learner statements for True Positive students significantly outnumber the Good Learner statements for the other students. (Chi Square Test).

(b) Measure the co-variance between the students' Q-sorts for 'A' level Psychology and those of their other subjects, i.e. the correlation between their Good Learner statements in different subjects. (Spearman's Rho).

(c) Measure the significance in accuracy of: (i) the students' Good:Poor Learner statements as a predictor of their examination success and (ii) the lecturer's use of students' assignments and mock examination marks as a predictor of success. (Chi Square Tests.)

(d) Compare the students' final results with their Actual Good Learner scores and their lecturer's predictions to see which predictions were accurate. (Percentages.)

The results of the first set of Chi Square tests (p104) showed that although both 'A' level and GCSE students were able to formulate statements relating to Good Learners qualities in both the Ideal and Actual learner categories, it was the True Positive 'A' level students who were able to place significantly more Good Learner statements in the Good/Good learner category than the True Positive GCSE students (228 for sixteen 'A' level students (mean=14.25), 120 for twelve GCSE students(mean=10) - Ideal Learner; 198 (mean=12.375) to 91(mean=7.583)-Actual Learner.)

The results of the Spearman Tests (p104) showed a significant positive correlation between 'A' level students' Q-sortings for all their subjects suggesting that there was a consistency in the Actual and Ideal Learner sortings across all subjects for these students. However, this was not the case with the GCSE students.

The results of the second set of Chi Square Tests (Table 7(5),p154) (calculated only for student/lecturer - correct/incorrect predictions for 'A' level and GCSE) showed no significant difference in accuracy of predicting examination outcomes. However, when the raw data was changed to percentage proportions(p155), it was seen that the lecturer was more accurate in her predictions than were the students with the exception of the female 'A' level students, who were more accurate than the males. This was also the case with the lecturer's predictions for the GCSE students. However, the GCSE students themselves displayed no such prediction accuracy (whether male or female).

The next section will present, in more detail, the type of intervention measures used in this thesis.

7.5 Intervention measures used with students

According to the Collins College Dictionary (1995 edition), intervention is defined as the act of intervening or involving oneself in a situation. It could be argued that teachers, by definition, are constantly involving themselves in learning situations with students, therefore, it was necessary to ask, what was it about the situation with my students that could be shown to be involvement with them which would not have occurred in the usual lecturer-student relationship, i.e. something over and above this situation, where the lecturer becomes more than usually involved in changing the learning situation. This was why I have defined intervention as the sharing with the students of information obtained from the results of the SPQ, LSQ, and Q-sorts together with the lecturer's prediction, and a recommendation for various courses of action such as attendance at Additional Learning Support sessions.

It has already been mentioned that students' self-perceptions may be influencing their learning capabilities in that those students who are confident in achieving success, when their lecturer predicts a possible fail, may be the target group most at risk of failing. If this is the case, then interventionist measures may not be effective with this group. Some suggested reasons for this are:

(1) these students appear to be denying certain aspects of reality (the definition of Freud's defence mechanism of denial given by Gross (1996, p768), i.e. they lack awareness of their inefficient study approaches; and

(2) they may be consciously thinking the opposite of what they unconsciously feel (the definition of Freud's defence mechanism of reaction-formation given by Gross (1996, p768)), i.e. they hide their unconscious fears of their inability to study efficiently beneath a pseudo-confident exterior.

When viewing all four groups:

Group 1, True Positives (+ +);

Group 2, False Positives (+ -);

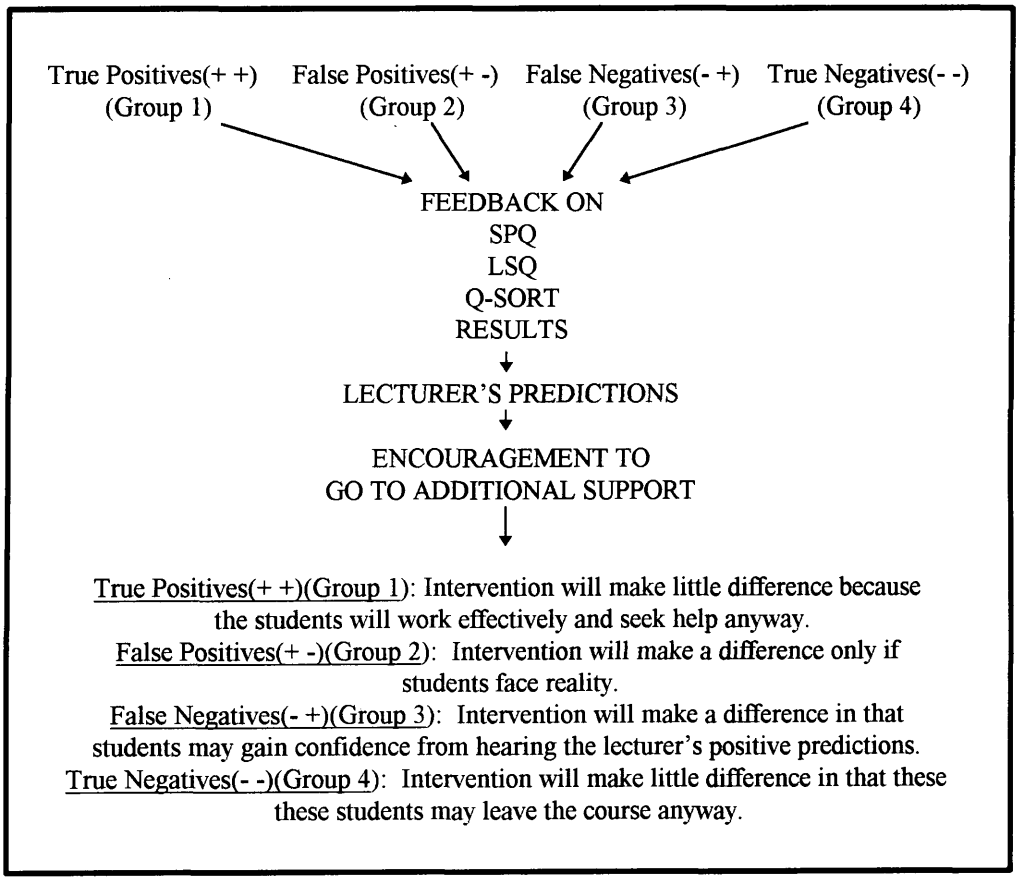
Group 3, False Negatives (- +);

Group 4, True Negatives (- -);

there appears to be different levels of outcome from the manipulation of the independent variable, that is, the researcher's intervention. For these levels, see Diagram 7(1), p165.

(However, the underlying assumption behind the formulation of the groups depends upon the correct prediciton of the lecturer.)

DIAGRAM 7(1): INTERVENTION GIVEN TO STUDENTS



Intervention is not to be taken as synonymous only with additional support. Additional Learning Support is the availability, at all times of the week, of lecturers in a large learning resource centre, who are there to give extra help with college subjects, i.e. psychology lecturers are available to teach any concepts or skills, including essay-writing, to psychology students. This additional support is strongly recommended to all students, and lecturers have attempted to make it compulsory but, while some students attend regularly, others don't. Intervention will also include the sharing with the student of information obtained from the results of their SPQ, LSQ and Q-sorts together with the lecturer's prediction, and a recommendation to go to Additional Learning Support, as shown in Table 7(6), p165.

However, it was later mentioned by some Group 1 students (True Positives + +) (i.e. the group predicted by the lecturer to succeed, and who also saw themselves as Good Learners) who have been praised for good work in the past, that this praise adds pressure upon them to do well and not let others down. As these students tend to drive themselves hard, this added pressure can be counterproductive. With Group 4 (True Negatives - -), it could also be counterproductive to inform these students of their lecturer's prediction of failure, because this is probably the group most susceptible to being affected by the self-fulfilling prophecy of failure. Perhaps encouragement to go to Additional Learning Support is all the intervention necessary for this group. Group 3 (False Negatives - +) will also be a group susceptible to the self-fulfilling prophecy, but with regard to them, since the lecturer will be giving them positive feedback in the form of prediction of success, it is thought that intervention will be more likely to work with this group than with Group 4 (True Negatives - -). The final group, Group 2 (False Positives + -), are thought to need most intervention in that this group may be more likely to fail if the lecturer does not inform them of her prediction of failure. In this way, it is hoped that they will gain a more realistic idea of their shortcomings and do something to improve them, i.e. go for Additional Learning Support. The students in this latter category are the most problematic of the four groups in that they do not see any problems but think they are working well, producing good assignments and coursework, and do not need any help.

The next section will consider the ethical implications of the interventions used.

7.6 Ethical implications of interventions used.

There are ethical implications to be considered when applying interventionary measures in that revealing to the students that they are expected to fail, may result in the lowering of their self-concepts. Although the British Psychological Society's Ethical Guidelines (1990) state that any foreseeable threats to a participant's psychological well-being, health, values or dignity should be eliminated, (BPS Guidelines, Section 8: Protection of Participants), they also state that if, during research, an investigator obtains evidence of psychological or physical problems of which a participant is apparently unaware, then it is the responsibility of the researcher to inform the participant of the finding, (BPS Guidelines, Section 10: Giving Advice). Perhaps this could be done more successfully on occasions when it is considered that it will have a possible positive effect, i.e. with Group 3 (False Negatives), it would be beneficial for the students to know that their lecturer thought they would succeed. These students do not feel that they are succeeding even when they are, thus it is hoped that through extra encouragement, and hearing that they could succeed, they would gain a more positive opinion of themselves. However, perhaps it is because these students think they may fail that they then work even harder and succeed; indeed, if they think they will succeed anyway, they may be less prepared to work, therefore intervention, once again, could be counterproductive.

It is suggested by this research that students in Group 2, False Positives, should also be given their lecturer's prediction, but for different reasons. It is thought that since Group 2 students have an unrealistic idea of their ability, thinking they are more competent than they really are and consequently failing their examinations, then if their lecturer informed them of her prediction of failure unless they re-evaluated their skills,

this could change these students' self-evaluations and spur them to work more effectively.

One interesting point can be raised here, however, with regard to one of the False Positive students who failed his GCSE examinations in both 1995 and 1996. During this student's third attempt in 1996 - 1997, he decided that psychology was not for him, although he intended to complete the course and sit the examination. He also decided not to take the subject at 'A' level even if he succeeded at GCSE. At this time, however, his assignment marks had begun to improve. Perhaps the insight (newly developed) which told him psychology was not for him, was the very insight which allowed him to see his shortcomings and motivated him to improve his assignments. When he lacked insight into his shortcomings, he thought his work was good when it was poor. On becoming more self-critical, he reached the point where he saw his deficiencies. However, this has been counterproductive in a way, i.e. he does not now wish to take 'A' level Psychology because he is aware of his shortcomings. He did, however, continue with GCSE Psychology because he did not wish to give up and, indeed, gained a pass at C grade in the final examination.

However, it is possible that by revealing the findings of this study to a student, the result may be a lowering of that student's self-concept. Thus, by informing a student that the lecturer has predicted a fail in the examination because the former lacks the insight to be aware of his/her poor performance, may become a self-fulfilling prophecy and create the result predicted. It did not appear to affect this particular student's ability to succeed and gain a Grade C, but it did support his decision not to take an 'A' level in psychology.

Cronbach (1970) suggests that the interpretation of the test result, rather than the score, should be communicated to the student. However, since interpretations tend to be subjective, caution should be exercised at the interpretation stage. As Shertzer and Stone (1976, p237 and 8) state: "Each test samples only a portion of the individual's behaviour at a given time.....Test scores are estimates not absolutes.....Test data are sometimes misinterpreted." They go on to say that in some instances, "the student or parent is "told" of test results rather than helped to examine the results and their implications in terms of plans, previous data and the like." This would imply that when I inform my students of their test results, it should be: (a) after careful consideration of the interpretation and implications of each test result and (b) together with the results of the complete test battery, i.e. the SPQ, LSQ and Q-sort findings, to present a complete picture to the student.

During the first year (1996-1997), the SPQ, the LSQ and the Q-sort were used with the 'A' level and GCSE students, the lecturer made predictions on the basis of the students' assignment work and time questions. Mock examination results and the students' modular and final examination results were then monitored.

It has also been decided that the remainder of the 1996-8 cohort of 'A' level students will continue to be monitored, i.e. their final examination results will be compared with the following:

1) their Q-sort results (the students were given the option of changing their original Year 1 Q-sortings at the beginning of Year 2, after their first modular examination results) and

2) their attendance at Additional Support sessions.

The 1997-9 cohorts of students will be used in the replication study to test the reliability of the findings of the 1996-8 cohorts. In addition, ideas taken from students' thoughts about filling in their Q-sorts during its earlier administration will be used to alter it and make it more user friendly, for example, by speeding up the filling-in process thus:

a) by using words (often adjectives) rather than statements describing Good and Poor Learner qualities for Stage 1 of the Q-sorting process;

b) by using 10 not 20 Q-sortings in Stage 2 (the sorting stage), i.e. students will be asked to rank order the ten statements most like themselves, rather than rank ordering all twenty since only the first ten orderings of the Q-sort are taken into consideration when calculating a student's Q-score;

c) completing the Q-sort for Psychology only, instead of for three subjects;

d) removing the Would Like To Be column.

(See Appendix 7 (pp328-331), for a revised copy of the Q-sort). Although students will only rank the first ten Q-sortings, twenty ranking places will remain on the revised copy since, if students are willing to rank all twenty statements, it will provide more complete information.

7.7 A reminder of the progress of this thesis.

This chapter has now progressed from a discussion of the predictive validity of the Q-sort combined with lecturer predictions, to a suggestion that sex differences have been found in Q-sort assessments. It has also included a proposal concerning interventionary measures and their ethical implications. However, before this chapter concludes, the progress of this thesis will be reviewed and Diagram 7(2), p171,

DIAGRAM 7(2): DEVELOPMENTAL STAGES OF THIS THESIS

MY NAIVE RESPONSES AS A YOUNG TEACHER IN THE 1960S - the unexamined pedagogical practice of the teacher - David McNamara (1991) - Chapters 1 and 2.

PIAGET - SKINNER - ROGERS
(Some theoretical perspectives on learning / learner behaviour which, as a young teacher was useful in describing and predicting learning behaviour in children.) Chapter 1.

MARTON AND SALJO (1976) - ROSSUM AND SCHENK (1984) - BIGGS (1987)
(Present a different type of model of student learning showing deep and surface approaches to learning - task-based model. This allowed me, as a teacher in further education in the 1990s, to go beyond Piaget, Skinner and Rogers, by giving me a method of quantifying student learning behaviour.) Chapter 3.

HONEY AND MUMFORD (1986)
(Present an alternative model of viewing a student's learning as part of that student's underlying predisposition - disposition-based. This allowed me to take a step forward from the task-based typologies of Biggs, to the disposition-based categorisation of student learning.) Chapter 3.

MY FOUR HYPOTHESES
(Using my revised Q-sort technique - Chapter 4)

QUANTIFICATION
(Chi-squared, Spearman's Rho -Chapter 5)

QUALITATIVE DATA
(Student group discussions -Chapter 6)

VALIDITY, SEX DIFFERENCES, INTERVENTION
(Chapter 7)

STUDENT SURVEY
(Questionnaires -Chapter 8)

SUPPORT FOR MY FOUR HYPOTHESES AND MODIFICATIONS FOR LATER COHORTS
(Chapter 9)

REPLICATION STUDY AND EXAMINATION RESULTS
(Chapters 10 and 11)

DISCUSSION
(Chapter 12)

(also produced in the Foreword) traces its development and shows how the dynamics lead to changes in my research hypotheses. It begins with my responses, as a young teacher in the 1960s, to the learning environment in schools at that time and to the influence of researchers like Piaget, Skinner and Rogers. This gave me some theoretical perspectives on learning and learner behaviour, a starting point from which I could seek alternative approaches for comparison. These approaches to learning consisted of the task-based surface and deep approaches of Marton and Saljo (1976), Biggs (1987) and Rossum and Schenk (1984), and the disposition-based approach of Honey and Mumford (1986). However, since both the task-based and disposition-based approaches looked at typologies, I changed the Q-sort technique, originally used to assess the effectiveness of client-centred therapy, to be an individual measure of each student's self-perception of their study approaches. The Q-sort generated a proportional score consisting of a student's Good to Poor Learner statements, which can be used both as a baseline for comparison of the same student's score over time, and also of one student in comparison to another.

This then led to the formulation of my research hypotheses regarding the four conditions: True Positives (Group 1), False Positives (Group 2), False Negatives (Group 3), and True Negatives (Group 4). These hypotheses were then quantified statistically using Chi Square tests and Spearman's Rho correlations, and supported non-statistically from student group interviews. Some support for these hypotheses was shown, interventionary measures were discussed and examination results will be used as a measure of success of the accuracy of student Q-scores and lecturer predictions.

Chapter 8 will examine one such aspect of the qualitative data collected, i.e. a survey, by questionnaire, of the Year 1 'A' level students (1996-8 cohort) after the results of their first modular examination. As well as filling in the questionnaire, the students were also given the opportunity to change their Q-sortings. These findings will also be discussed in Chapter 8.

SECTION FOUR

Description of the questionnaire given to the 1996-8 'A level students after their first modular examination, implications for my hypotheses, and changes made by students to their Q-sort statements. A further comparison of the final modular results with the Q-sort statements and implications for future research with the 1997-9 'A' level and 1997-8 GCSE students.

CHAPTER EIGHT

Description of the questionnaire given to 'A' level students (1996-8 cohort) after the results of their first modular examination, implications for my hypotheses, and changes made by students to their Q-sorts.

8.1 A reminder of data-collecting methods used in this thesis

This chapter will examine an aspect of the quantitative data, i.e. survey, by questionnaire, given to 1996-8 'A' level students after the results of their first modular examination. As discussed in Chapters 6 and 7, different data-collecting methods have been used in this thesis to assess student approaches to learning in tertiary and further education. The rationale for each method chosen was discussed in detail in Chapter 6, p.132ff. To summarise, initially students in both the 1996-8 'A' level and 1996-7 GCSE cohorts, were given psychometric tests. These consisted of Biggs's (1987) task-based Study Process Questionnaire (SPQ), which divided student approaches to learning into Surface, Deep and Achieving; also Honey and Mumford's (1986) disposition-based Learning Styles Questionnaire (LSQ), which divided students into

Activists, Reflectors, Theorists and Pragmatists. The SPQ and the LSQ were different types of test in that the SPQ identified approaches which students could use at different times, i.e. a student could use a surface approach in one subject but a deep approach in another. The LSQ, on the other hand, identified an underlying disposition within a student which was relatively permanent and consistent over time. It was hoped that these tests would serve as a base line against which to compare later findings in that they would supply some basic information about the cohorts of students in this study; since the originators of the SPQ and LSQ claim that these tests are reliable and valid, it was also hoped that any further tests given to the students could be validated concurrently with the tests already given.

However, the SPQ and the LSQ create typologies by labelling students, and thus tend to homogenise out any differences between individual students, so it was then necessary to devise a method of assessing student approaches to learning which would reveal, not conceal, individual differences.

The Q-sort, (Stephenson (1953)), which was a technique used in client-centred counselling for measuring changes in the self-concept before and after undergoing counselling, was adapted in a manner designed to elicit these individual differences in student approaches to learning.

As well as revealing individual differences, the Q-sort can be a technique (when used in conjunction with statistical quantification) for revealing common characteristics in students' study approaches. However, although the students' Q-sorts were statistically quantified, using Chi Square tests and Spearman's Rho correlations, a caveat must be highlighted here. It would be ironic if, by looking for common factors in Q-sort results, the writer of this thesis committed the errors of her predecessors and, by

labelling students as True Positives, False Positives, False Negatives and True Negatives, created the very labels she was attempting to avoid, and homogenised out the individual differences she had initially been seeking.

It is, therefore, with a certain amount of care and trepidation that statistical treatments were considered, and then, only in conjunction with findings from other methods such as student group discussions and student surveys by written questionnaire.

Student group discussions (a qualitative method) provided the content of Chapter 6, and it is the intention of this chapter to examine a quantitative method and the information it has generated. This method is the survey, by written questionnaire, given to the 1996-8 'A' level cohort after they were given the results of their first modular psychology examination.

Before discussing the questionnaire, it needs to be said that the ten students who remained in college were asked whether or not the interventionary information, i.e. feedback on the students' LSQ, SPQ and Q-sort scores, had been helpful in any way. The general opinion of the group was that, while the LSQ was interesting, knowing their learning styles did not help them achieve their goals, i.e. to gain good assignment marks and examination grades. Similarly, with the SPQ, the students felt that identifying their surface, deep and achieving approaches to learning, together with their underlying and accompanying motive and strategy, was of interest only in that it focused their attention upon the type of approach they were using rather than encouraging them to introspect upon their own personal learning characteristics. They felt that their approaches to learning were not easily labelled and changed by external means, but were more accessible through individual and personal introspection, as in the thought process required to complete the Q-sort.

It was therefore decided that intervention, in the form of feedback given to students on their LSQ and SPQ scores may not be as useful to them as the individual benefits gained by asking them to focus upon their own learner characteristics, as required by the Q-sort. The original hypotheses of this thesis were then tailored to take this into consideration and will be shown, in their amended version, later in this chapter, on p180-181.

Students were then asked about their study behaviours to ascertain whether certain good learner characteristics, identified in their Q-sorts, were still aspects of their study behaviour. It was hoped that the information gained from this would inform the changes to be made in the hypotheses. The questionnaire was devised as an additional method of asking students about their learning habits and a means of qualifying the statements they used in their Q-sorts. This was the rationale behind the survey by written questionnaire. This questionnaire will be discussed in the next section.

8.2 Description of the questionnaire given to the 1996-8 'A' level students.

When devising this questionnaire, certain problems were apparent at the outset, for instance, it was difficult to decide what questions should be included. If open questions were asked, they would elicit a great deal of data, but quantification would be difficult. If, on the other hand, closed questions were asked, they would be easier to quantify but would produce answers constrained by the bias imposed from the type of questions set; in other words, my bias.

In addition to this problem, some students had dropped out of the 'A' level course between years one and two and also, of those students given the questionnaire to complete, some failed to return their answers. Thus, of the original 'A' level cohort

(16 in all), one student left college before she sat the first module, five students left college after they sat the module and, of the remaining ten, three of the students who remained on the course failed to return their questionnaires. However, questionnaires were also sent to the six students who had left the course after taking the first module, and two returned them completed. Therefore, in all, seven questionnaires were returned from students remaining on the course, and two from students who had left the college - a total of nine.

When discussing the results of the completed questionnaire, however, certain points, need to be taken into consideration:

1) the 1996-1998 'A' level students were reduced to an opportunity sample of nine (composed of the questionnaires returned from the seven students who remained on the course plus two from those who had left college), and the information gleaned from this sample may be different from that of the students who did not complete the questionnaire for whatever reason (whether from lack of motivation, feelings of dissatisfaction with themselves or the course, or just sheer forgetfulness);

2) the information from these nine students may be biased and, due to the small size of the sample, will also lack generalisability to other students;

3) the questions on the questionnaire (all but the final one) were closed questions and designed more from my ideas of what were the important factors to be elicited from the students (based upon the task-based statements they had made in their Q-sorts), rather than what the students considered to be the most important aspects to disclose. The last question ('Any other comments') was an open question and it was hoped that students would share what they considered to be the most important details of their learning experiences with regard to 'A' level psychology; and

4) it was decided that this questionnaire should become the pilot for the data collection from the 1997-9 cohort of 'A' level students. The findings of the 1996-8 cohort, therefore, will be used to change the methods of testing and gathering information from the 1997-9 cohort, rather than for supporting and refuting my four hypotheses (see p180-181) with any acceptable level of confidence, especially since a discussion with students has shown that the interventionary measures may not have made any difference to their study approaches (mentioned earlier in this chapter, p176-177).

Having taken into consideration these four points, and bearing in mind the limitations of my sample size, the findings of the questionnaires will now be discussed. Two slightly different variations of questionnaire were given to the students: one questionnaire was given to those students who continued on the course, and the second (slightly modified one) was given to students who had left the course. (See Appendices 5 and 6, for the two types of questionnaire - Appendix 5 (pp324-325) contains questionnaire 1 and the accompanying letter which were given to those students who remained on the course, and Appendix 6 (pp326-327) contains questionnaire 2 and the accompanying letter sent to students who had left the college.)

8.3 Making alterations to my hypotheses.

In order to discuss the findings of the two questionnaires, it is necessary, at this point, to share in more detail with the reader the reasoning behind the choice of information sought in that the questions were based on disclosures from Q-sort statements. The answers would, in turn, inform changes in the replication study with the 1997-9 cohorts. My hypotheses had already been partially refuted since students did not think

the interventionary measures were helpful, and will be altered accordingly by removing references to these measures. These four changed hypotheses would now lead me to seek supporting data, thus:

Hypothesis 1: Those students whose Good Learner scores are high and whose lecturer predicts a pass in the Psychology examination (True Positives + +) will have gained the result they expected in their Module 1 Psychology examination. They would therefore have: (a) continued on their course; (b) been given questionnaire 1; and (c) indicated neither feelings of satisfaction nor dissatisfaction, in their answers to question 2 on their questionnaire, i.e. 'Did you expect this result?'

Hypothesis 2: Those students whose Good Learner scores are high and whose lecturer predicts a fail in the Psychology examination (False Positives + -), may indicate on their questionnaires that they got a shock at their examination result. Some of these students may continue and some may drop out, thus some will have completed questionnaire 1, question 2 (as shown in Hypothesis 1)and others will have completed questionnaire 2, question 3, i.e. 'Did you expect the result you got?'.

Hypothesis 3: Those students whose Good Learner scores are low and whose lecturer has predicted a pass in the Psychology examination (False Negatives - +), may indicate on their questionnaire (expected to be question 2 on questionnaire 1) that they got a pleasant surprise, or had not anticipated the result they gained. It is not expected that these students will drop out of the course after their examination result since none of these particular students had dropped out before sitting the examination (which would have been the expected time for them to do so, because it would have

been before the examination that their negative feelings were the strongest).

Hypothesis 4: Those students whose Good Learner scores are low and whose lecturer predicted a fail in the Psychology examination (True Negatives - -) will also have expected the result they received, and will express neither satisfaction nor dissatisfaction in their answers to question 2 on questionnaire 1 (if they remained on the course), or in their answers to question 3 in questionnaire 2 (if they dropped of the course).

In addition to an examination of these particular questions, i.e. question 2 on questionnaire 1 - 'Did you get the result you expected?' (given to the students who remained on the course), and question 3 on questionnaire 2 - 'Did you expect the result you got?' (given to the students who left the course), an examination will also be made of question 2 on questionnaire 2, namely, 'What did you do to prepare?' This question should also have been included in questionnaire 1, but when the oversight was noticed, the questionnaire had already been administered. Since questionnaire 2 had not been given out, the question was placed in that questionnaire. However, the question should have been asked of students who continued on the course, but since these students were given so many questions and tests, and since similar information was elicited from their answers to questions 5 and 6, (i.e. (5) 'Do you plan to change your study techniques because of your examination result?' and (6) 'In what ways do you intend to change your study techniques?'), it was thought this information could be used in the same way. In addition, the transcriptions of the taped group discussions were, once again, consulted because the question of what the students did to prepare for their examinations had been considered and discussed then.

In addition, students will be asked if they wish to change their Q-sortings and what items they wish to change.

To return to the issue of how students prepared for the examination, it was predicted that students who had been classified True positives (+ +) and False Negatives (- +) would have prepared more thoroughly than those students who had been classified as False Positives (+ -) and True Negatives (- -). The rationale behind this prediction was that True Positives (+ +) would wish to work towards their predicted success and False Negatives (- +), knowing that their lecturer predicted their success while they felt they might fail, would also work hard to ensure success. On the other hand, False Positives (+ -) who thought they were doing well despite their poor marks, would not have enough insight to realise that they needed to work, and True Negatives (- -) would be more likely to give up and drop out of the course, having either left before sitting Module 1, or directly after failing it.

However, these are tentative predictions and other predictions and rationales could be offered in their place; for instance, some True Positives (+ +) might do less preparatory work for the examination, either because they felt they did not need to work since they were good enough already, or they might give more time and attention to any other subjects at which they were performing less well. Conversely, it may be the case with True Negatives (- -) that they decide to continue at college and work harder to improve their examination performance.

The following discussion of the replies to questionnaires 1 and 2 will be offered as supporting evidence for the predictions generated from my four hypotheses. Diagram 8(1), p183, summarises the findings from the two questionnaires.

DIAGRAM 8(1): Replies to questionnaires 1 and 2 given by the 1996-8 'A' level students after the results of Module 1 of their psychology examination.

COURSE

10 continued	6 dropped out
+ + (6)	- - (2)
+ - (3)	+ - (2)
- + (1)	+ + (2)

QUESTIONNAIRE REPLIES

Questionnaire 1	Questionnaire 2
7 replied	2 replied
+ - (2)	+ - (2)
- + (1)	
+ + (4)	

AMOUNT OF PREPARATION DONE

Thorough preparation (0)	Thorough preparation (0)
Not enough preparation (7)	Not enough preparation (2)
+ - (2)	+ - (2)
- + (1)	
+ + (4)	

RESULT OF EXAMINATION

Higher than expected (and pleased) (3)	Higher than expected (0)
+ - (1)	
- + (1)	
+ + (1)	
Expected (but disappointed) (1)	Expected (2)
+ + (1)	+ - (2)
Lower than expected (and disappointed)(3)	Lower than expected (0)
+ + (2)	
+ - (1)	

N.B. One student, who remained in college after the first module and completed his questionnaire (student number 7 - False Positive), left college in the middle of his second year, leaving nine students to continue the course.

8.4 Findings of my two questionnaires.

As can be seen in Diagram 8(1), p183, of the ten students who continued their course, none were true negatives (- -); the two true negative students dropped out. The majority of the students who continued were the true positives (+ +); six true positives continued as opposed to the two true positives who dropped out. The false negative student (- +) also continued, having found that his examination result was better than he expected (he later told me) and this gave a boost to his self-confidence. Almost equal numbers of false positives (+ -) stayed as dropped out (3:2). At the time when the 3:2 proportion was calculated, student number 7 had not left the course. He left at the beginning of Year two. However, since he completed Questionnaire 1, his answers were included with those of students who remained on the course. Nevertheless, he was a False Positive student and he left the course, thus two False Positive students remained and three left.

With regard to the students who completed and returned their questionnaires, seven (two false positives, one false negative and four true positives) completed questionnaire 1 - the questionnaire given to students remaining on the course; and two (both false positives) completed questionnaire 2 - given to those who left the course. When analysing the two questionnaires, it can be seen that, with regard to the amount of preparation done, none of the students claimed to have prepared thoroughly. However, since the answer to this question required a subjective reply, it is difficult to assess what students actually meant by lack of preparation. None of the students did no preparation and one student said she had prepared but, in retrospect, felt that this preparation had not been comprehensive enough to give her the mark she wanted. However, it did produce the mark the lecturer would have predicted for her.

When considering the students' expectations concerning their examination results, those who had failed to gain a good mark, and who dropped out, said they gained the mark they expected and were not disappointed because they had done no work therefore did not deserve to gain a good mark. They were both false positive students (+ -).

This seems to indicate that, at some point, either during the revision period or the examination itself, these students gained a more realistic insight into their capabilities otherwise they would have expressed disappointment at their result which they would have perceived as lower than expected.

Among the students who continued the course, three gained higher marks than expected, one gained the expected result but was disappointed and three gained lower marks than they expected and were disappointed. Of the three whose marks were higher than they expected, one was a false positive (no.2), one was a false negative (no.3) and one was a true positive (no.10). With regard to the false negative student who gained a better examination mark than he expected, he was pleased with his result and, as stated, said it gave him more confidence to work for his second module.

In the case of the false positive student (no 2), it would seem that the lecturer prediction was not upheld. The student concerned did, indeed, gain a higher score than expected, fulfilled his own opinion of himself and was, therefore, pleased with his result. The true positive student (no.10) who felt she had gained a higher mark than expected, received a grade A (111/120). This delighted her, but did not surprise the lecturer.

A false positive student (no.7) fulfilled the lecturer's prediction by gaining a poor result, and can be said not to have fulfilled the student's self-expectation who thus

reported feeling disappointed. (This is the student who left the course in year two.) In addition, two true positive students (nos. 6 and 12) also gained lower grades than they had expected and were consequently disappointed. Those students gained the mark expected by the lecturer but were disappointed, since they had high expectations of themselves and, whereas the lecturer predicted they would gain pass grades though not good passes, they had hoped they would gain higher marks. Since both lecturer and student expected success, the students were classified as true positives. However, there are grades within each category whereby students can, for example, be true positives but can still be disappointed because they would have wished to gain higher marks than they actually achieved.

To summarise the information in Diagram 8(1), and bearing in mind that this information was elicited from a small sample of students (who willingly volunteered it), it would seem that:

1) Two true negative students (nos. 9 and 13) dropped out of the course, leaving none.

2) Two true positive students (nos. 4 and 14) dropped out of the course compared to the six who continued (Nos. 5,6,10,12,15 and 16).

3) More false positives dropped out (3 - nos.1,7 and 8) than continued on the course (2 - Nos.2 and 11)). (N.B. In this instance, the student who left in year two (student number 7) was included in the number of students who dropped out.)

4) The false negative student (no.3)continued with the course and was pleased with his examination mark.

5) More true positives were disappointed (3 - nos.4,6 and 12) than were pleased (no.10)with their examination mark. (This could be because true positives appear to

have high expectations, push themselves hard and appear to be constantly seeking to improve their grades.)

6) The same number of false positives were pleased (1 - no.2) than were disappointed (1 - no.7) with their examination mark. (The student who was pleased had fulfilled his self-expectations whereas the student who was not pleased had fulfilled the lecturer's prediction. The latter was the student who left the course in the middle of his second year.) N.B. Two further false positive students left the course.

7) None of the students felt they had done enough examination preparation.

8) The students who dropped out of the course, and replied to the questionnaire (numbers 1 and 8), both false positives, said they did little preparation, expected the result they got, and were not really disappointed at the outcome of the examination. (They have since moved on to other courses - one to a different course at the same college, and the other to a foundation course at a university.)

Having made the above points in summary, however, it would not be possible to generalise or extrapolate further from the data due to the small size of the sample. It has, therefore, been decided to replicate Q-sort research with the 1997-9 'A' level and 1997-8 GCSE students but with the following modifications:

1) shorten the Q-sort testing procedure (see Appendix 7 (pp328-331));

2) ensure that if any follow-up questionnaires are administered, they will be collected in one session to enable a higher number to be returned; and

3) if questionnaires 1 and 2 are administered, they will be modified to make a more comprehensive questionnaire. (See Questionnaire 1R, Appendix 8 (p332).)

A question to be posed at this point is, how do these current findings support my hypotheses?

Considering hypothesis 1, more true positive (+ +) students remained on the course (six remained, as opposed to two who left) so this part of the hypothesis was upheld. On the other hand, not all the true positive students gained their expected result, nor were they pleased with it (two out of four gained the expected result; three out of four were disappointed).

With regard to hypothesis 4, the two true negative students dropped out of the course (one before she sat her first module and the other after sitting his first module), so this hypothesis was also supported.

The false negative student, mentioned in hypothesis 3, gained a higher mark than expected and was pleased with his result, thus supporting this hypotheses.

Regarding hypothesis 2, two false positives remained on the course and three (including number 7) left; of the two who remained, one gained a higher mark than expected and the other did not return his questionnaire. This supports the hypothesis in that only one of the five students was pleased with the results; of the other four, one was disappointed and left. Two had already left but were not disappointed because they knew they were not working. The fifth student remained on the course but did not return the questionnaire.

Table 8(1) shows the four hypotheses and whether they were supported.

TABLE 8(1): Support for the four hypotheses relating to the 1996-8 'A' level students.

HYPOTHESIS ONE	**SOME SUPPORT**
HYPOTHESIS TWO	**SOME SUPPORT**
HYPOTHESIS THREE	**SOME SUPPORT**
HYPOTHESIS FOUR	**SOME SUPPORT**

The next section will be concerned with the changes students made to their Q-sort statements after the results of their first modular examination. These Q-sort scores will

then be compared to the final results of all the modular examinations to be completed by June 1998.

8.5 Changes 1996-8 'A' level students made to their Q-sort statements after the results of their first modular examination.

At this point, before concluding this chapter, it is necessary to also examine any changes the 1996-8 'A' level students made to their Q-sort statements and sortings between 1996 and 1997.

Of the seven Year Two students who remained on the course and returned their questionnaires, the findings of which have been discussed earlier in this chapter, five students changed their Q-sort statements and sortings. Table 8(2), p190, summarises these changes and gives examples of statements students did not change and of those they did. The changes occurred when students either added or dropped any statements from their original (1996) Q-sort. Once these changes were made, the students' Q-sort ratios also changed, see Table 8(3), p190. The following discussion of Tables 8(2) and 8(3) will offer some tentative explanations for these changes. This table gives a summary of the Q-sort changes and, as such, does not faithfully show an equation between 'no changes' and 'changes' (dropped/added). It merely gives a flavour of some of the more interesting statements dropped and/or added from Q-sorts and not a complete listing of statements dropped to allow others to be added, e.g. student 12 - her original statements were added to, and expanded upon, rather than dropped; student 16 - this student had too many 'no changes' to go in the relevant box.

TABLE 8 (2): Summary of some of the Q-sort changes and sortings made in Year Two by those 1996-8 'A' level students who returned their questionnaires and Q-sorts in the second year of their course.

STUDENT NO	NO CHANGES	CHANGES	
		DROPPED	ADDED
3 (- +)	Poor Learners: are lazy; do not read; forget to catch up; do not prepare; do not do research.	Poor Learners: are uncooperative; do not listen; do not take notes.	Good Learners: are co-operative; listen; take notes. Poor Learners: don't revise.
6 (+ +)	Poor Learners: do not understand the work; do not enjoy the subject.	Good Learners: answer questions well; complete all work; have confidence in their work; have good attendance.	Good Learners: plan work; respond to questions; organise their time. Poor Learners: do little revision; are not well organised.
7 (+ -)	Poor Learners: are lazy.	Good Learners: work hard; are committed; are interested; work until understanding comes. Poor Learners: only work when forced; only succeed when work is not too hard.	Good Learners: are open-minded; ask questions.
12 (+ +)		No statements were dropped but additions were made to some statements (see 'ADDED' section).	Good Learner: go to subject support; do extra work; pay attention; study in depth; take more notes; have a general interest in the subject.
16 (+ +)	18 statements unchanged.	Good Learners: remember; pay attention. Poor Learners: do not hand in assignments.	Good Learners: are well organised. Poor Learners: frequently arrive late and leave early.

TABLE 8 (3): Proportion of changed Q-sortings for students who returned their questionnaires and Q-sorts in the second year of their course.

STUDENT NO	YEAR ONE	YEAR TWO	CHANGES
2	6:4	6:4	NONE
3	3:7	7:3	YES
6	9:1	7:3	YES
7	6:4	9:1	YES
10	7.3	7.3	NONE
12	10.0	10.0	YES
16	9:1	10:0	YES

Table 8(3) shows that most of the Q-sort ratios have changed and, apart from one student, all show a greater incorporation of Good Learner statements into their Q-sorts. The only students (no.6) whose Q-sort incorporated more Poor Learner statements in 1997 than in 1996, was someone who had shown too much confidence and rigidity in 1996. This student had believed he was working in the most effective manner and would not accept advice until it was too late to improve his examination performance. He has, since, told me that he should have learnt how to mind map and realised that he needed to be more flexible. He is an intelligent student whose other subjects are science and mathematics.

Regarding the above student (a science student) a tentative suggestion, and one for future research, is that I have found in the past that science and mathematics students seem to be more rigid in their study methods, expect black-and-white answers to questions, feel uncomfortable in subjects where there are no right and wrong answers and many grey areas which require argument and discussion, and look down upon such subjects as not being quite worthy of being called a science. Liam Hudson (1966) suggests that science students are centred upon the control of their physical environment and are more likely to think about it in a conventional and unimaginative way. Although Hudson's study used information acquired from male students, I have also found this is the case with female students. However, my findings, based on anecdotal evidence, are only tentative. The reader is also reminded at this point that Biggs (1987), found a sex difference in approaches to learning with regard to arts and science students, see Chapter 3, p.54 of this thesis.)

To return to the student previously mentioned above, he also told me that he found Psychology, as a subject, contained much more information than he had anticipated

and also required much more 'disciplined' flexibility than he had at first anticipated. By 'disciplined', he meant that psychology required a great deal of time and study spent in a systematic way, and the development of evaluative skills for discussing the relative contributions of conflicting data, presenting cogent arguments, synthesising viewpoints and reflecting upon findings. He found these skills to be less dominant in science and mathematics but to be valuable skills to learn.

With regard to psychology containing much information which requires 'disciplined' flexibility, this idea is echoed by Buzan (1993), (and mentioned on p37-8 of this thesis). As a reminder to the reader, he created his system of mind-mapping as a coping mechanism for dealing with this: 'The more I took notes and studied, the worse, paradoxically, I seemed to do,' (Buzan (1993)). The paradox went thus: if he cut down his studying, he would not possess the appropriate information and would not progress well. If he studied harder and made more notes, he would also begin to fail because he could not remember all the information. Thus Buzan began to study the nature of thinking and how to learn, hence the developing of his system of mind-mapping, (see Chapter 2, p37-8 of this thesis for further discussion on Buzan's ideas.)

With regard to the other students whose Q-sorts showed an increase in Good Learner statements, this occurred because they had either received a good examination mark and were determined to continue this success by improving their study habits; or had received lower marks than they had predicted and had therefore determined to improve their study skills in order to succeed in their re-sit examination.

When examining the changes of statements that these students have made in their Q-sorts (Table 8(2), p190), it can be seen that those students whose Q-sorts were changed as a result of their success (namely students 3 and 12), mentioned such points

as good learners should go to additional support for psychology, do lots of extra work, pay attention, take notes, listen, and study in depth. These are task-based qualities so perhaps students feel more able to change the extrinsic (task-centred) aspects of their study approaches, than to change the person-centred aspects such as being confident, committed, interested and co-operative. However, one of the students (no.3) mentioned becoming more co-operative after gaining a good examination result, and also becoming less lazy. It is worth adding that the lecturer found this student to be neither uncooperative nor lazy, quite the reverse. This difference between the way the student saw himself and the way the lecturer saw the student is interesting in that, even though the student felt he was lazy and uncooperative, he was actually giving the opposite impression. That this student was classified as a false negative would suggest that the negative feelings of the student were not being felt or reciprocated by the lecturer who predicted success. More research needs to be done into such discrepancies of viewpoint between student and lecturer because they indicate that some students are unaware of their own worth and are prepared to sell themselves short because their self-concept is low. On the other hand, Burns (1979), when discussing the early use of the original Q-sort in counselling, says that 'most people evaluate themselves more highly unconsciously than consciously.' It may therefore be possible that this student has consciously expressed seeing himself as unco-operative, but unconsciously his feelings may be more in line with those I have expressed about him, namely that he was co-operative in class. This is one reason why Burns (1979), says of the Q-sort: 'Validity is difficult to ascertain and face validity is often the only form advanced.' However, in this instance, perhaps face validity remains uncertain.

With regard to the students who changed their Q-sort as a result of their poor examination mark (nos.6, 7 and 16), these students mentioned that planning work and being organised, responding to questions in class, being open-minded, and arriving to lectures in good time, were behaviours which good learners should do. They also added that being committed, interested, and working hard should be priorities, in conjunction with being able to give their full attention to their studies, remember information and hand in assignments on time. This was, indeed, information which the lecturer was constantly telling the students, but which is something each student needed to learn for him/herself. This is also echoed in Biggs's SPQ when he takes account of Motive and Strategy attached to each of the three approaches (Surface, Deep and Achieving) in his scoring of students' answers (see Chapter 3, Table 3(1) p53.)

It would seem that, whether or not students had gained a good examination mark, they mention (in Year Two) that they think students with good study approaches should be good listeners and committed to their studies, giving them their full attention, handing in assignments and trying to remember information. It may be that these suggestions are more the result of the students having matured through one year of 'A' level studies, than from having sat their first examination module. Students, in the past, also reported being more committed in Year Two even when the 'A' level psychology was not modular and they took one examination at the end of two years. It would thus be erroneous to make the assumption that, in the modular examination, the first module of the examination caused the students to feel more committed to their work. It could be that over the year spent studying 'A' level psychology, they developed their skills as much through a process of time, assignment writing and tuition, as through their

examination experiences. The modular examination at the end of the first year does, however, tend to act as a baseline, or benchmark, for the students, and allows them to assess the results of their efforts and to decide to retain good study habits and/or develop new ones.

This theme will be explored later in the thesis when the 1997-9 'A' level students' questionnaires, Q-sortings and alterations will be discussed (see Chapter Ten).

Chapter Ten will also begin the examination of the first battery of test data from the 1997-9 'A' level and 1997-8 GCSE students.

Chapter Nine will discuss the implications of the Q-sort findings when compared with the final results of the 1996-8 'A' level students after they had taken all four modules of their examination. It will also discuss the consequences of these findings for future research with the 1997-9 'A' level students.

CHAPTER NINE

Findings from the 1996-8 'A' level students after completion of all four modules of their examination and a comparison with their Q-sort results together with the implications of these findings for future research with the 1997-9 'A' level and 1997-8 GCSE students.

9.1 Presenting the findings of the 1996-8 'A' level students.

This chapter will be concerned firstly with a comparison of the results of the 1996-8 'A' level students (after they have taken all four modules of their examination) with their Q-sort assessments, and the implications of these findings for future research with the 1997-9 'A' level students.

The set of results, discussed in Chapter Seven (p148ff), were those taken from the first modular 'A' level examination for the 1996-8 cohort of students and the final examination for the 1996-7 GCSE students. Since the 'A' level course is of two years' duration, and the GCSE only one, by the end of the 1996-8 'A' level course, the second cohort of GCSE students (1997-8) had also sat their examination. (See Table 9(1), p197, for a list of cohorts used in this study and the time scheme involved. This table is a copy of the table presented in the Foreword.). The results for the 1996-7 cohort of GCSE students were discussed in Chapter Seven, p148ff and the 1997-8 GCSE students' results will be discussed in Chapter Ten.

Chapter Nine will be concerned with the 1996-8 'A' level students after the completion of their four modules in 1998, and will compare their final results with their Q-sorts and thus inform changes in the method of using the Q-sort with the

1997-9 'A' level students. The Q-sort/lecturer assessment will be compared with the students' final examination results to establish its predictive validity, and it will also be compared with SPQ and LSQ scores to establish concurrent validity. Reliability will also be considered.

Table 9(1) shows the various cohorts from whom data has been collected, and the time scheme involved, to clarify the timing of the data-collection process.

TABLE 9(1): Cohorts from whom data has been collected and the time scheme involved.

DATE	COHORTS			
	1996-8 'A' level	**1996-7 GCSE**	**1997-9 'A' level**	**1997-8 GCSE**
Sept 1996	LSQ, Q-sort	LSQ, Q-sort		
May 1997	SPQ,second LSQ.	SPQ,second LSQ,changes to Q-sort.		
June 1997	Group interviews. First 'A' level module.	GCSE examination.		
Sept 1997	Changes to Q-sort Questionnaires 1 and 2.		SPQ, LSQ, Q-sort	SPQ, LSQ, Q-sort
Jan 1998	Second 'A' level module.			
May 1998			Changes to Q-sort	
June 1998	Third and fourth 'A' level modules		First 'A' level module.	GCSE examination
Sept 1998			LSQ,SPQ,Q-sort.	
Jan 1999			Second 'A' level module.	
June 1999			Third and fourth 'A' level modules	

SPQ = Study Process Questionnaire (Biggs (1987)).
LSQ = Learning Styles Questionnaire (Honey and Mumford (1986)).
Q-sort = My adaptation of the Q-sort.

The next section will discuss the completed data collected from the 1996-8 'A' level students.

9(2) Discussion of Table 9(2) which shows the SPQ, LSQ and Q-sort scores, the 'A' level individual modular marks and the final examination grades for the 1996-8 cohort.

This section will discuss the completed data collected from the 1996-8 'A' level students, presented in Table 9(2). This table consists of each student's SPQ, LSQ, and Q-sort scores together with their 'A' level modular marks, final total and examination grade.

TABLE 9(2): SPQ, LSQ and Q-sort scores, 'A' level individual modular marks and final examination grades for the 1996-8 cohort.

STUDENT NO	SPQ	LSQ	Q-SORT	EXAM RESULTS	TOTAL AND GRADE
	S D A MS MS MS	YR1 YR2	YR1 YR2	Each module out of 120	Total (/600) Pass Grade (A-E)
1	-0 0- 00	A A	+-	23	LEFT
2	-- 0- 0-	A	+-	75 24 92 36 60	(287) E
3	+- 0- +-	A A	-+ ++	72 90 96 80 65	(403) C
4	00 ++ 00	A A	++	34	LEFT
5	-- ++ 0-	A	++	64 52 75 54 48	(293) E
6	+- ++ ++	R	++	69 81 32 76 73	(331) D
7	++ -+ 00	A	+-	23 54	LEFT
8		R/T	+-	20	LEFT
9	+- 0- --	A	- -	7	LEFT
10	++ 00 ++	A/R	++	111 120 99 84 80	(494) A
11	0- 00 -0	A A	+-	76 40 75 66 47	(304) D
12	++ +0 ++	R	++	68 31 88 66 78	(331) D
13	+0 -- 0-	A A	--		LEFT
14	++ +0 +0	R R	++	36	LEFT
15	00 +- ++	R	++	93 56 96 96 65	(406) C
16	0+ 00 0+	R R/T	++	48 64 69 54 61	(296) E

KEY TO TABLE 9(2)			
S - SURFACE	S - STRATEGY	A - ACTIVIST	++ TRUE POSITIVE
D - DEEP	- BELOW AVERAGE	R - REFLECTION	- - TRUE NEGATIVE
A - ACHIEVING	0 AVERAGE	P - PRAGMATIST	+- FALSE POSITIVE
M -MOTIVE	+ ABOVE AVERAGE	T - THEORIST	-+ FALSE NEGATIVE

PASSES: 7 true positives; 2 false positives.

Before discussing Table 9(2), certain points need to be made:

(1) since students are permitted to re-sit modules as often as they wish, and since the highest mark for that module is the one which is counted towards the student's final score, this means that some of the marks presented in earlier tables will have been altered in Table 9(2) due to later re-sits of an earlier module, and

(2) when student number 3 altered his Q-sort, it resulted in a change in his score from 3 (Good Learner qualities): 7 (Poor Learner qualities), to 7 (Good Learner qualities): 3 (Poor Learner qualities), thus a change from false positive to true positive.

With regard to Table 9(2), the following information can be elicited:

(1) the seven students who left the course comprised:

3 false positives (this now includes student number 7, who left college in his second year);

2 true positives; and

2 true negatives.

(2) the nine students who remained on the course comprised:

7 true positives (this includes student 3, who changed from false negative to true positive); and

2 false positives.

(N.B. All nine students continued the course and passed their 'A' level Psychology gaining final grades between A and E. See Table 9(3),p200.)

TABLE 9(3): 1996-8 'A' level student self-perception types (True Positives, True Negatives, False Positives, False Negatives) who passed, stayed on the course or left.

SELF-PERCEPTION TYPE	STAYED	LEFT	PASSED
True positive (++)	7	2	7
True Negative (- -)	0	2	0
False Positive (+ -)	2	3	2
False Negative (- +)	0	0	0

(N.B. Student no. 3 began as a false negative and changed to a true positive after sitting his first module.)

As can be seen from this table, more false positives left the course than remained (a ratio of 3:2). The two true negative students also left the course and almost four times as many true positives stayed compared to those who left (a ratio of 7(including student no 3):2). (N.B. 7 true positives and 2 false positives passed.)

These findings would suggest that those students who see themselves as having more Good than Poor Learner qualities, and whose lecturer agrees with their assessment, are more likely to succeed at their 'A' level modules than are the following types of students:

(a) those whose assessment differs from the lecturer when their assessment is positive and the lecturer's is negative; and

(b) those whose assessment is the same as the lecturer and both assessments are negative.

Where there was disagreement between the student's and lecturer's assessment and the student's was negative while the lecturer's was positive, this resulted in success for the student concerned. Perhaps it is an advantage of the modular examination system that students can gain their 'A' level in a gradual step-by-step manner, and if students who have negative self-assessments see, early in a module, that they are as successful as their lecturer predicts, then this may give them confidence to re-assess themselves

more positively. Indeed, this is what happened with the false negative student - student number 3. He admitted to lacking confidence in his ability to study and assessed himself with a lower number of Good Learner qualities (3 Good Learner qualities:7 Poor Learner qualities) than did his lecturer, but after his first module, he saw what he was capable of achieving, gained confidence and reassessed himself more positively, as can be seen when he changed his Q-sort from 3:7 to 7:3 - see Chapter Eight, Table 8(3) p190).

The next section will compare the students' Q-sort, SPQ and LSQ scores with their final examination results to establish the predictive and concurrent validity of the Q-sort/lecturer assessment.

9.3 A comparison between students' Q-sort, SPQ and LSQ scores and their final examination results to establish the predictive and concurrent validity of the Q-sort.

With regard to a comparison between the 'A' level students' SPQ scores and their final examination grades (see Table 9(2), p198), in a few instances there appears to be some relationship between their SPQ matches (i.e. where Motive(M) and Strategy(S) are similarly strong in a preferred study approach and Achieving Motive(AM) and Strategy(AS) show that the student has the determination to succeed in their preferred approach) and their final examination grade. For instance, student number 10, who gained an A grade for her 'A' level, and whose Q-sort/lecturer prediction showed her to be a true positive, also had matches between her motive and strategy for all three approaches, i.e. surface, deep and achieving. Thus, both Biggs's SPQ and the Q-sort/lecturer assessment would predict success for this student. However, this can only

be a tentative finding in that other students with good matches on an approach plus a high achieving dimension, only gained D grades in their 'A' level. (e.g. students numbers 6 and 12).

Another point worth mentioning is that the SPQ showed few students (only four out of sixteen) had ++ for their combined Achieving Motive(AM) and Achieving Strategy(AS), i.e.student numbers 6, 10, 12 and 15. (The first + denotes that the student has a higher than average need to succeed (AM) and the second + denotes that s/he thinks s/he has the organisational skills to succeed (AS).) Another student (number 16) showed evidence of having only an average AM score but a higher than average AS score (0+) while a further student (number 14) showed higher than average AM but average AS scores (+0) - see Table 9(2), p198. All six students showed themselves to be true positives on the Q-sort/lecturer assessment thus supporting the SPQ scores.

Conversely, the SPQ was more able to detect which students would not achieve, i.e. students number 4 registered True Positive on the Q-sort/lecturer assessment yet left the course. He showed as 00 on the SPQ, i.e. only average on the AM and AS dimensions, for achieving and organisational skills. Indeed, all the students who left the course registered as normal or below normal on this dimension and, in this respect, the SPQ showed itself to be a better indicator of students who would leave the course than the Q-sort/lecturer assessment did. However, since four students with a normal to below normal achieving profile remained on the course, perhaps the most that can be said of this dimension is that whereas all the students who left showed it in their profiles, this did not mean to say that everyone with that profile would leave the course.

On the whole, a comparison of SPQ scores with final examination grades was both inconsistent and inconclusive, i.e. some students who remained on the course and passed their examinations (albeit with a wide range of grades) were matched on motive and strategy and had high achieving scores, while others with the same profile left the course. It can also be said that findings showed a more consistent match between Q-sort/lecturer assessments and students' final examination passes than between their SPQ profiles and their final examination passes.

The findings were also inconsistent when comparing the LSQ with the students' 'A' level grades. Most of the students tended to have a strong preference to be Activists and, although their preferred learning styles remained consistent over time, there appeared to be little similarity between preferred learning style and examination grade. Once again, the Q-sort/lecturer assessments showed themselves to be a more successful predictor of examination performance.

This research was later replicated with different students, the 1997-9 'A' level cohort, and it was found that there appeared to be little similarity between students' SPQ scores (the SPQ score being collected on two separate occasions one year apart) and their 'A' level results (see Table 9(4), p204) in that because some SPQ scores varied for the same student on the two occasions, they could not then be consistently compared with their 'A' level outcomes. Table 9(4), p204, shows these variations with the next cohort (the 1997-9 replication study cohort).

TABLE 9(4): Similarities and differences in the profiles of the six remaining students in the 1997-9 'A' level cohort between the 1997 and 1998 administrations of the SPQ, LSQ and Q-sort

Student No	SPQ						LSQ								Q-SORT		'A'
	1997			1998			1997				1998				1997	1998	1998
	S MS	D MS	A MS	S MS	D MS	A MS	A	R	T	P	A	R	T	P			
1	+0	0-	+0	++	++	+0	9	12	11	2	11	12	13	14	++	++	D
6	+0	+0	+-	0-	0-	+-	10	17	10	5	11	15	11	3	-+	++	B
9	++	--	--	++	--	0-	8	15	13	9	9	14	15	10	+-	+-	U
13	+0	0-	00	++	-0	00	8	11	5	12	12	11	8	10	++	+-	N
15	00	--	00	00	0+	-0	7	19	13	7	9	19	13	10	++	++	A
16	00	-0	++	+0	--	0-	7	15	8	10	13	15	3	8	++	++	E

KEY TO TABLE 9(3)			
SPQ	LSQ	Q-SORT	'A' LEVEL
S: SURFACE	A: ACTIVIST	++ : TRUE POSITIVE	GRADE A - E : PASS
D: DEEP	R: REFLECTOR	-- : TRUE NEGATIVE	GRADE N - U : FAIL
A: ACHIEVING	T:THEORIST	+- : FALSE POSITIVE	
M: MOTIVE	P: PRAGMATIST	-+ : FALSE NEGATIVE	
S: STRATEGY			

Since Biggs (1987) claims that the SPQ is reliable, then perhaps students' study approaches are not consistent over time. On the other hand, Biggs (1987) makes the distinction between test/re-test reliability (which may not be high for the SPQ considering that students' motives and strategies change over time, and indeed are expected to change) and the internal consistency (which is high for the SPQ and shows the extent to which the various items on the questionnaire consistently measure the same thing). Since test/re-test was used as a measure of reliability in this thesis, the findings for this study could then be considered support for Biggs's (1987) claim that consistency over time will not be high.

The LSQ, also showed changes in learning styles for students over the year (see Table 9(4), p204). Honey and Mumford (1995) suggest that changes in job organisations can affect learning styles and this would be supported by the findings of this research in a college of further education. The 1997-9 'A' level students had been in college for one year when the second test battery was given and the change from school to college may have begun to show in their approaches to learning and been reflected in their LSQ profiles.

The Q-sort was also replicated with this cohort. These replications were done in two ways:

(1) it was administered to different cohorts, i.e. the 1996-8 and 1997-9 'A' level students and the 1996-7 and 1997-8 GCSE students, then compared with lecturer assessment and examination outcome; and

(2) it was administered to the same cohorts on different occasions, to test its reliability as a measure of students' self-perceptions of their study approaches. (However, this consistency is only as reliable as a student's self-perceptions will allow it to be.)

However, before the replication study was carried out with the 1997-9 'A' level and 1997-8 GCSE students, changes were made to the Q-sort as a result of difficulties encountered with the 1996-8 'A' level and 1996-7 GCSE students. Students' comments were also taken into consideration.

The next section will mention some of these modifications in the light of the findings from its two administrations to the 1996-8 cohort of 'A' level and the 1996-7 cohort of GCSE students.

9.4 Modifications applied in the replication study using the Q-sort technique with the 1997-9 'A' level and 1997-8 GCSE cohorts

The previous section discussed the reliability of the SPQ with regard to both its internal consistency and its test/re-test reliability. It also mentioned the test/re-test reliability of the LSQ and the Q-sort and suggested that the Q-sort/lecturer assessment showed some evidence of being a more reliable predictor of examination outcome than either the SPQ or the LSQ. However, the Q-sort which was used to help predict the examination outcome for the 1997-9 'A' level and 1997-8 GCSE cohorts, was a modified version of the original Q-sort used with the 1996-8 'A' level and 1996-7 GCSE cohorts. The modified Q-sort, in conjunction with lecturer assessment, was administered to the 1997-9 'A' level and the 1997-8 GCSE cohorts in a replication study to enable the writer to continue to monitor its predictive validity.

For this replication study, the Q-sort was modified in the following ways:

(1) It was shortened in order to be completed more speedily. The changes will be explained in more detail in Chapter 10, section 10(2), p217ff and the modified Q-sort is shown in Appendix 7 (pp328-331).

(2) The Q-sort was administered by asking the students to give Good and Poor Learner qualities for 'A' level and GCSE psychology only.

(3) The quantification of the Q-sort statements was made using ordinal not nominal measurement. With the first Q-sort, the ratio had been calculated by simply adding up the Good and Poor Learner statements that came within the first ten statements, then presenting them as a ratio, i.e. Good:Poor. With the second cohort, the rank order of the Good and Poor Learner statements was also taken into consideration. In other words, it was not sufficient for a Good Learner or Poor Learner statement (or quality) to be placed in the top ten statements, the rank order in which it was placed was also taken into consideration. Thus Good Learner statements should appear among the first rankings because the lower the ranking, the higher the student views the quality (or the more often the student believes s/he exhibits that quality) placed in that position.

(4) For the second administration to the same students, the Q-sort was done in the presence of the lecturer and not just handed to the students with a request to return as soon as possible.

(5) The lecturer's assessment of the students which enabled her to predict a grade was done in a more objective manner than with the first cohort. The latter assessment (with the first cohort) had been done by taking into consideration the students' assignments and time questions during the year. However, it was thought that these measures were not as consistent and objective as scores given to the students in their mock examinations where an attempt was made to standardise the marking process. With the second 'A' level cohort, the first modular examination predictions were made from the students' assignment marks, time questions and mock examination results. In

order to predict the students' final grades, their first modular examination results were also taken into consideration. The GCSE predictions were based upon assignments and mock examination results.

(6) Since the students felt that additional support had been helpful to them, more so than the intervention which was comprised of feedback on their SPQ, LSQ and Q-sort scores, it has been decided to monitor the amount of additional support sessions attended by the students to see whether there is a relationship between this and examination performance. (See Chapter 7, p163ff for descriptions of additional support and intervention.) This monitoring will therefore continue beyond the completion of this study.

These points will be discussed, with additional points, in more detail in Chapter 10, p212ff. However, before the next chapter begins, some final points will be considered (and re-considered) concerning the ramifications of the findings with the 1996-8 'A' level and 1996-7 GCSE cohorts presented earlier in this chapter and shown in Table 9(2),p198.

9.5 Ramifications of findings from the 1996-8 'A' level and 1996-7 GCSE students presented earlier in this chapter.

Upon examination of the findings presented in Table 9(2), p198, it can be seen that all nine remaining students from the 1996-8 'A' level cohort passed their final examinations with an A-E grade. Considering that sixteen students began the course, the final 100% pass rate achieved was partly due to a self-selection process whereby students dropped out during the course for various reasons: some gained employment, some changed course, others felt they would fail and so left college. In addition, the

successful outcome of the course for the remaining nine students can be partly attributed to the fact that those students who wished, were allowed to re-sit modules. Some students availed themselves of this opportunity and their highest marks for each module were counted towards their total examination score.

It is difficult to say whether success at various stages of this process enabled some students to perceive their learner qualities more favourably (as was the case with student number 3, a false negative whose Q-sort Good Learner ratio changed from 3 Good Learner statements:7 Poor Learner statements to 7 Good Learner statements:3 Poor Learner statements); or whether filling out the Q-sort enabled students to focus upon their Good Learner qualities and thereby use them to enhance their examination performance.

With regard to lecturer prediction, of the nine students who passed their 'A' level Psychology, the lecturer correctly predicted the outcome for seven. In addition, she also predicted failure correctly in five out of the seven students who left the course. However, these findings need to be replicated with the next cohort of students in order to be given serious consideration as a reliable predictor of student examination performance.

Finally, to return to the type of intervention to be used with the next cohorts (the 1997-9 'A' level and 1997-8 GCSE students), as mentioned earlier (point 6 of the replication modifications section, p208, suggested for the next cohorts), if the examination results were as predicted, and intervention did not make any noticeable difference according to the students, then the amount of additional support sessions attended by the students should be taken into consideration. (See Chapter 7, p163ff for a discussion on intervention and additional support.) However, the disclosure to

the students of their SPQ, LSQ and Q-sort findings may have acted as a self-fulfilling prophecy and locked the students' self-perceptions into a specific stereotype rather than freeing them to reach their full potential.

Nevertheless, if the Q-sort shows itself to be proficient at predicting student examination outcome, and if lecturer predictions are as accurate with the 1997-9 cohorts, then the question arises as to what type of intervention would be useful to help the students to reach their full potential. As mentioned earlier, (point 6, p208), additional support appears to be a serious contender as a replacement for the intervention used with the 1996-8 cohorts. The questions to be asked would then be:

(a) how can Q-sort results become instrumental in encouraging students to regularly attend additional support sessions and how can the benefits of these sessions be monitored? and

(b) how can lecturer predictions be given to the 1997-9 cohort of students to encourage them to discriminate between the accuracy of certain Q-sort statements and the self-misconceptions inherent in others?

Perhaps one intervention is giving students the Q-sort in the first place. This focuses their minds on approaches to study and raises awareness of the need to develop effective study skills.

Another intervention, for future cohorts, will consist of findings ways to change students' self-conceptions (or self-misconceptions), especially in the false positive (+ -) and false negative (- +) groups. It was hoped that the replication with the 1997-9 cohorts would provide answers to these questions. Chapter 10 will discuss this replication by examining the first battery of test data from the 1997-9 'A' level and 1997-8 GCSE students, further refinements made to the Q-sort, the effect of these

changes and ensuing implications for reliability and validity, especially with regard tc accuracy in predicting examination outcome.

SECTION FIVE

A replication of the Q-sort with the 1997-9 'A' level and 1997-8 GCSE students, implications for its reliability and validity, and changes made (after the mock examinations) to some grade predictions for the final examination.

CHAPTER TEN

A replication of the Q-sort with the 1997-9 'A' level and the 1997-8 GCSE students and implications for its reliability and validity regarding its accuracy in predicting examination outcome.

10.1 Reliability and validity of the Q-sort.

It was decided to replicate, with the 1997-9 'A' level and 1997-8 GCSE students, the research already conducted with the first cohorts, the 1996 - 8 'A' level and 1996-7 GCSE students. There were five reasons for this replication:

(1) The Q-sort is a subjective assessment and therefore, since each student will perceive their own study approaches in different ways, not only from other students, but from their own perceptions at different stages of their learning process, then by definition, the Q-sort will display little consistency over time. Thus when the same students were re-administered the Q-sort later in their course, comparisons were not expected to be close because, even if the Q-sort was a reliable measure of a student's ideas about their own study approaches, that learning process, in itself, may not be a reliable concept to measure, because as students change and develop, their Q-sorts will change accordingly. Thus, replication is necessary to track these changes.

(2) The lecturer's assessment of the student, though somewhat more objective, since it is taken from marks given to students' assignments, time questions, is still subjective in that marks given to students could vary if assessed by other lecturers. (Mock examination scores will be used with the 1997-9 cohorts.)

(3) The Q-sort was further refined to make it more user-friendly with regard to speed and ease of completion. A replication would show if the raw data gained could be quantified more quickly. Indeed, these refinements did affect speed of administration and gave a higher level of scoring but the study approaches of the students were elicited in the same way as with the older version of the Q-sort. (See Appendix 7, pp326-327, for the altered Q-sort.

(4) The replication was also done to provide longitudinal comparisons. When comparing the 1996 - 8 'A' level students' Q-scores in 1996 and 1997, students' initial Q-scores were used as a baseline against which their later scores were compared. Thus the Q-sort can be used in a repeated measures design as part of a longitudinal study. It was thought that it would also be possible to compare different cohorts, in a cross-sectional way, on variables which may have altered as a result of changes in student environments, syllabus and teaching styles, or any other differences that may have occurred as a result of the times when the research was carried out. However, given the subjective nature of the Q-sort, a cross-sectional study would be fraught with problems created by individual differences between students, and because of this, it would be difficult to detect extraneous environmental variables, let alone discriminate between them. However, longitudinal studies ran concurrently with some cross-sectional ones in this study and some variables, such as those resulting in differences between learning styles, were partially controlled, i.e. the same teacher

taught all the GCSE and year one of the 'A' level students in this study. On the other hand, it must also be remembered that the Q-sort is intended to be a unique measure of individual student growth and change, and using it to seek comparisons between students was not its original intention since it would inevitably lead to a search for commonalties and typologies, as was done by Biggs (1987), and Honey and Mumford (1986). The intention of the author of this thesis is to avoid this.

(5) The fifth reason for replicating this research was to validate the Q-sort as a measure of students' self-perceptions of their approaches to learning. Any measures of reliability and consistency would not necessarily assume validity because, whereas the reliability of a measure (defined by Coolican (1990), as whether or not a research finding can be repeated), would mean only that the measure produces similar results each time it is used, in order for a test to be valid (defined by Coolican (1990), as demonstrating or measuring what the researcher thinks, or claims, it does), it would thus need to measure what it is supposed to measure. As well as establishing face validity for this test (i.e. on inspection the contents of the Q-sort appear to measure student responses to learning), it was hoped that, by comparing students' Q-sort statements with lecturer predictions, SPQ and LSQ scores, concurrent validity would be established (i.e. validation by comparison with a currently existing criterion - Coolican (1990)). Predictive validity (i.e. validation on the basis of being able to successfully predict future performance - Coolican (1990)) would be established for the Q-sort by comparing Q-scores with examination results. However, the lecturer's predictions for the 1996-8 'A' level and 1996-7 GCSE students were more accurate

than the students' Q-sort statements about themselves when compared to their examination performance.

Reason and Rowan (1990), state that: 'validity is always relative, sufficient for some purpose.' They go on to add: 'Possible errors in measurement are twofold: first, there is always a limit to the discriminations that an instrument may make; and second, the measuring instrument may be 'inaccurate' in that repeated measures do not yield identical results.' However, in the case of the Q-sort, it may not yield the same result each time it is completed with the same student, but this difference in result may be due to the growth and change of the student rather than to the unreliability of the Q-sort per se.

Reason and Rowan (1990) also make a distinction between internal validity ('Did in fact the experimental treatments make a difference in this specific experimental instance?') and external validity ('To what populations, settings, treatment variables, and measurement variables can this effect be generalised?').

Thus it is important to replicate this research in an attempt to answer the following two questions: (1) will the Q-sort make a difference in understanding students' self-perceptions of their study approaches (internal validity); and (2) could the findings be generalised and to which populations, settings, treatment and measurement variables (external validity).

Bearing these two questions in mind, the replication of the Q-sort to gain information about student study approaches addressed itself to examining variations in student learning perspectives by eliciting individual differences in each student's understanding of their own learning process. Although, by definition, individual differences cannot be generalised from one student to another, in another sense,

however, any findings concerning the Q-sort's accuracy as a general technique for measuring individual progress, could be generalised to other student groups.

Thus, when attempting to take Point 1 of Reason and Rowan's (1990) types of distinctions in validities (namely internal validity, i.e. whether or not the use of the Q-sort made a difference in understanding student learning), two considerations need to be adhered to:

(a) the individual nature of the Q-sort as a technique and therefore its subjectivity, and

(b) the possible generalisability factor of the Q-sort itself as a technique that can be used on different samples of students within the student population as a whole.

With regard to Point 2, namely Reason and Rowan's (1990) external validity, i.e. to what populations, settings, treatment variables and measurement variables this effect can be generalised, further replications will be necessary, each in different settings with different samples, in order to ascertain the types of populations in which the Q-sort is most accurate as a technique, and also the boundaries beyond which this fails to offer any insight to the student about his/her learning progress. This may be more a case of ascertaining which students are or are not able to garner this insight as much as being a result of the Q-sort's inability to detect this, since the Q-sort is only as efficient as the ability of the student to use it. However, in order to facilitate its use, further changes were made in the Q-sort and were implemented with the 1997 - 9 cohorts. The next sub-section will remind the reader which changes were implemented and why.

10.2 Changes (and rationale for these changes) implemented in the Q-sort given to the 1997 - 9 'A' level and 1997-8 GCSE students

The following modifications to the Q-sort (some of which were mentioned in Chapter Nine (p206-8)), were initiated with the 1997-9 'A' level and 1997-8 GCSE students:

(1) The Q-sort itself was refined in order to be completed more speedily, for instance, students were asked only to rank order 10 out of the 20 self-generated statements for the How I Am Now Column and were not asked to complete the How I Would Like To Be column because it was found that most students placed the ten Good Learner statements in the first ten rankings in that column, and therefore it became a waste of their time to ask each cohort to do this. However, this column was kept on the Q-sort because it was thought that the rank ordering of these How I Would Like To Be statements may be used in some future research to indicate the Good Learner qualities students valued most, i.e.which ones they place in the highest of the top ten positions.

(2) With regard to the How I Am Now column, Poor Learner statements, placed in the top ten statements, were still taken into consideration. However, using a nominal level of measurement by counting how many Poor Learner statements were included amongst the Good Learner ones and presenting one as a proportion of the other was not accurate enough for my purposes, i.e. I was looking for a more discriminatory level of measurement to quantify the students' statements. It was decided to use an ordinal level of measurement and calculate the sum of the ranks the students gave to the Good Learner and Poor Learner statements included in their top ten. The mean and range of these rankings was also found. (See Section 10(3), p223ff.)

(3) The idea of asking students' to make Q-sort statements about their other subjects was also dropped, not because this data was unhelpful, but because it generated more information than could reasonably be dealt with in one thesis. It was therefore decided to keep the boundaries of information focused upon a sample of 'A' level and GCSE Psychology students in the 16 - 19 year age group.

(4) The second administration of the Q-sort to the 1997-9 'A' level students in their second year, after they had received the results of their first modular examination, was done in the presence of the teacher, and not just given to the students with the request to return them as soon as possible. Some students in the previous 1996-8 'A' level cohort were very conscientious about returning the questionnaires and Q-sortings punctually, but others forgot to return them and were withdrawn from the research. One reason for this may be because the 'A' level groups were amalgamated from three groups to two in Year Two and those two groups (of which the 1996-8 cohort became a part) were taken by two other members of staff thus I no longer taught them. Although I did see some of the students for Additional Support, and kept asking them to return the information, I quickly realised my error in allowing them to take the material home.

The 1997 - 9 cohort of students was also part of a larger group of students taking 'A' level and these students were reduced from three groups to one group in their second year but I was given the opportunity to see, in class, the students in the cohort who still remained on the course, to request them to complete the questionnaires and Q-sorts at college. They were also given Biggs's Study Process Questionnaire and Honey and Mumford's Learning Styles Questionnaire to complete again. The results of these questionnaires are shown in Tables 10(1) p220, 10(2) p221 and 10(3) p222.

Table 10(3) was originally shown as Table 9(4), p204 and shows Q-sort results only for those 1997-9 'A' level students who took their first modular examination at the end of year one of their course. Also, Table 10(2), which shows the scores for the GCSE students, contains only one set of SPQ scores. These students were not tested a second time because their course lasted only from September to May.

(5) It was decided to use a more stringent method of student assessment by the lecturer for making her prediction on student progress. With the first cohorts (1996-8), a combination of students' work and the lecturer's general feelings about the students were used (both quantitative and qualitative measures). These showed themselves to be more accurate predictors of students' 'A' level results than Q-sort statements. However, with regard to the second (1997-9) cohorts, a more quantitative measure was used in that students' assignments and time questions (given in class) were used to predict their mock examination results; and these, in conjunction with the mock examination results were used to predict the results of the first modular examination (with the 'A' level students) and the final examination (with the GCSE students). With the 'A' level students, the results of their first module will, in turn, be added to the lecturer's information on each student in order to predict his/her final results (given at the end of all four modules.)

Tables 10(1) and 10(2) show the comparative findings for the Year One battery of tests: 1997-9 'A' level students (Table 10(1),p220) and 1997-8 GCSE students (Table 10(2),p221). Table 10(3),p222, shows the second SPQ and LSQ results for those 'A' level students who took their first modular examination at the end of their first year. As previously mentioned, GCSE students were not given the SPQ and LSQ a second time because their course only lasted nine months.

TABLE 10(1): Comparative data drawn from the LSQ,SPQ, Q-sort and examination results for 'A' level students (1997-9) cohort.

Student No.	SEPTEMBER/OCTOBER 1997 (1997-9 COHORT)														June 1998 results
	LSQ				SPQ										
	A	R	T	P	SM	SS	DM	DS	AM	AS	GL	PL	1997	1998	
M1	9c	12c	11d	12d	+	0	0	-	+	0	9	1	++	++	D
M2	14b	15c	13c	10d	0	+	0	-	0	0	8	2			LEFT
F3	17a	12c	12c	14c	+	+	0	-	+	+	7	3			LEFT
F4	15a	10d	10d	16b	+	0	-	0	+	0	8	2			LEFT
F5	9c	13c	8e	6e	+	0	-	-	0	-	10	0			LEFT
M6	10c	17b	10d	5e	+	0	+	0	+	-	7	3	-+	++	B
F7	14b	9d	4e	7e	+	+	0	-	0	0	7	3			LEFT
F8	14b	10d	14c	13c	0	0	+	-	+	0	9	1			LEFT
F9	8c	15c	13c	9e	+	+	-	-	-	-	9	1	+-	+-	U
F10	8c	11d	5e	12c	+	0	0	-	0	0	6	4			LEFT
F11	6d	16b	5e	4e	0	0	0	0	+	0	5	5			LEFT
F12	18a	9d	9d	10e	0	0	+	+	0	-	7	3			LEFT
F13	9c	15c	4e	7e	+	0	0	-	0	+	8	2	++	+-	N
F14	12b	10d	7e	13c	+	0	0	0	+	0	10	0			LEFT
F15	7d	19a	13c	7e	0	0	-	-	0	0	8	2	++	++	A
F16	7d	15c	8e	10e	0	0	-	0	+	+	10	0	++	++	E
F17	17a	11d	5e	11d	0	0	-	-	0	-	8	2			LEFT
F18	11c	10d	9d	14c	+	+	-	-	0	0	1	9			LEFT

KEY TO ABBREVIATIONS IN TABLE 10(1).

LSQ			
A	Activist	Q-SORT	
E	Reflector	G:P	Good:Poor Learner statements
T	Theorist	AL	Actual Learner
P	Pragmatist	IL	Ideal Learner
a-very strong; b-strong; c-moderate; d-low; e-very low		++ True Positive; + - False Positive; -- True Negative; - + False Negative.	
SPQ			
SM	Surface Motive	DS	Deep Strategy
SS	Surface Strategy	AM	Achieving Motive
DM	Deep Motive	AS	Achieving Strategy
+ Above Average; 0 Average; - Below Average.			

TABLE 10(2): Comparative data drawn from the LSQ, SPQ, Q-sort and examination results for GCSE students (1997-8 cohort)

Student No	SEPTEMBER/OCTOBER 1997 (1997-1998 COHORT)													June 1998 Exam Results
	LSQ				SPQ						Q-SORT			
	A	R	T	P	SM	SS	DM	DS	AM	AS	G L	PL		
F1	13b	8d	5e	7e	0	0	0	-	+	0	8	2		LEFT
M2	12b	6e	5e	11d	+	+	-	-	-	0	7	3	-+ (++)	C
F3	9c	18b	15b	11d	+	+	+	+	+	+	4	6	++ (-+)	B
M4	16a	15c	17a	16c	+	+	+	+	+	+	9	1	+-	C
F5	8c	17b	8e	9e	0	+	0	+	-	+	8	2	++	B
M6	15a	16c	9d	8e	-	0	+	+	+	+	10	0	++	A
F7	9c	15c	12c	13c	+	0	0	0	+	+	7	3	-+ (++)	C
M8	15a	18b	8e	11d	0	0	0	0	0	0	8	2	+-	LEFT
F9	8c	17b	7e	9e	+	0	-	-	0	0	8	2		LEFT
F10	5e	19a	10d	10e	+	0	-	-	0	0	9	1		LEFT
F11	7d	16b	11d	12c	+	+	0	0	0	0				LEFT
F12	12b	14c	8e	3e	+	0	0	0	0	0	8	2	++	D
F13	6d	20a	15b	13c	+	+	+	0	0	0	10	0	+-	LEFT
F14	5e	19a	14c	8e							8	2	++	A*
F15	10c	17b	14c	14c							10	0	++	C

(N.B. The Q-sort predictions in brackets for students 2, 3 and 7 are those that would have been given to them under the old scoring system. The new scoring system is explained on p. .)

KEY TO ABBREVIATIONS IN TABLE 10(2).

LSQ		SPQ	
A	Activist	SM	Surface Motive
R	Reflector	SS	Surface Strategy
T	Theorist	DM	Deep Motive
P	Pragmatist	DS	Deep Strategy
a-Very Strong; b-Strong; c-Moderate; d-Low; e-Very Low.		AM	Achieving Motive
Q-SORT		AS	Achieving Strategy
G:P	Good:Poor Learner statements	+ Above Average; 0 Average; - Below Average.	
AL	Actual Learner		
IL	Ideal Learner	H	Higher level GCSE examination.
+ +True Positive; + -False Positive; - -True Negative; - +False Negative.		F	Foundation level GCSE examination.

TABLE 10(3): Similarities and differences in the profiles of the six remaining students in the 1997-9 'A' level cohort between the 1997 and 1998 administrations of the SPQ, LSQ and Q-sort

Student No	SPQ						LSQ								Q-SORT		'A'
	1997			1998			1997				1998				1997	1998	1998
	S MS	D MS	A MS	S MS	D MS	A MS	A	R	T	P	A	R	T	P			
M1	+0	0-	+0	++	++	+0	9c	12c	11d	12d	11c	12c	13c	14c	++	++	D
M6	+0	+0	+-	0-	0-	+-	10c	17b	10d	5e	11c	15c	11d	3e	-+	++	B
F9	++	--	--	++	--	0-	8c	15c	13c	9e	9c	14c	15b	10e	+-	+-	U
F13	+0	0-	00	++	-0	00	9c	15c	4e	7e	12b	11d	8e	10e	++	+-	N
F15	00	--	00	00	0+	-0	7d	19a	13c	7e	9c	19a	13c	10e	++	++	A
F16	00	-0	++	+0	--	0-	7d	15c	8e	10e	13b	15c	3e	8e	++	++	E

KEY TO TABLE 10(3)

SPQ	LSQ	Q-SORT	'A' LEVEL
S: SURFACE	A: ACTIVIST	++: TRUE POSITIVE	GRADE A - E : PASS
D: DEEP	R: REFLECTOR		GRADE N - U : FAIL
A: ACHIEVING	T:THEORIST	+- : FALSE POSITIVE	
M: MOTIVE	P: PRAGMATIST	-+ : FALSE NEGATIVE	
S: STRATEGY			

The next section will discuss the statistical findings for the 1997-9 'A' level and the 1997-8 GCSE students taken from the raw data collected in year one after the completion of their first Q-sort. Tables 10(1),p220 and 10(2),p221 contain the raw data for the SPQ, LSQ and Q-sort. The data in Section 10.3 will also take into consideration the ordinal rankings of the refined Q-sort statements (see Tables 10(4),p224, 10(5),p224, 10(6),p225 and 10(7),p225). It is also worthy of mention that in any future comparisons between the SPQ, LSQ and Q-sort, the data collected from the SPQ and the LSQ in year one will be used rather than that collected in year two, since this was the students' first completion of those tests. If the re-test data from the second year completions of the same questionnaires was used, it might have affected the results since the students had already seen the questions the year before. The re-test data was used only to monitor changes and consistency over time while taking into consideration the possibility of this order effect.

10.3 Statistical findings for the 1997-9 'A' level and 1997-8 GCSE students taken from raw data collected after their first completion of the Q-sort and a consideration of the ordinal data of Q-sort statements.

This section will present statistical findings for the 1997 - 1999 'A' level and the 1997-1998 GCSE students taken from the raw data collected after their first completion of the Q-sort together with a consideration of the ordinal data of Q-sort statements. The following tables show the findings:

Tables 10(4) and 10(5),p224: 'A' level cohort
Tables 10(6) and 10(7),p225: GCSE cohort.

TABLE 10(4): 'A' level student rankings for Good and Poor Learner statements in the first ten (1997-9 cohort).

Student no	SRGL - Student Rankings of Good Learner Statements	SRPL - Student Rankings of Poor Learner Statements
1	1+2+4+5+6+7+8	3+9+10
2	1+2+3+4+5+6+7	8+9+10
3	1+2+3+5+6+7+8	4+9+10
4	1+2+3+4+6+8+9+10	5+7
5	1+2+3+4+5+6+7+8+9+10	0
6	1+4+5+6+8+9+10	2+3+7
7	2+3+4+5+6+7+8	1+9+10
8	1+2+3+4+5+6+7+8+9	10
9	1+2+4+5+6+7+8+9+10	3
10	1+3+4+5+8+9	2+6+7+10
11	1+2+3+4+7+8	5+6+9+10
12	1+2+3+4+6+7+8	5+9+10
13	1+2+3+4+5+6+9+10	7+8
14	1+2+3+4+5+6+7+8+9+10	0
15	1+2+3+4+5+6+7+10	8+9
16	1+2+3+4+5+6+7+8+9+10	0
17	1+2+3+5+6+7+9+10	4+8
18	0	1+2+3+4+5+6+7+8+9

TABLE 10(5): Sums, means and ranges of 'A' level student rankings of Good and Poor Learner statements in the first ten, and lecturer predictions (1997-9 cohort).

Student no	SRGL	MEAN	RANGE	SRPL	MEAN	RANGE	WORK	+/-	MOCK
1	33	4.7	8	22	7.3	8	46%	++	
2	28	4	7	27	9	3	53%	++	LEFT
3	22	3.1	8	23	7.7	7	48%	++	LEFT
4	43	5.4	10	12	6	3	40%	+-	LEFT
5	55	5.5	9	0	0	0	58%	++	LEFT
6	43	6.1	10	12	4	6	57%	-+ (++)	
7	35	5	7	20	6.7	10	40%	+-	LEFT
8	45	5	9	10	10	0	-	-	LEFT
9	52	5.8	10	3	3	0	37%	+-	
10	30	5	9	25	6.3	9	58%	++	
11	25	4.2	8	30	7.5	6	-	-	LEFT
12	31	4.4	8	24	8	6	34%	+-	LEFT
13	40	5	10	15	7.5	2	53%	++	
14	55	5.5	10	0	0	0	37%	+-	LEFT
15	38	4.8	10	17	8.5	2	62%	++	
16	55	5.5	10	0	0	0	60%	++	
17	43	5.4	10	12	6	5	50%	++	LEFT
18	10	10	0	45	5	9	32%	--	

(The prediction in brackets for Student 6 is the one that would have been given to him under the old scoring system. Also Student 13 left after the mock examination. The Mock results, final column, will be shown in Table 11(2), p239.)

TABLE 10(6): GCSE student rankings of Good and Poor Learner statements in the first ten (1997-8 cohort).

Student No	SRGL - Student rankings for Good Learner Statements	SRPL - Student rankings for Poor Learner Statements
1	3+4+5+6+7+8+9	1+2+10
2	2+4+6+7+8+9+10	1+3+5
3	3+4+7+8	1+2+5+6+9+10
4	1+2+3+4+5+6+8+9+10	7
5	1+2+3+4+5+6+7	8+9+10
6	1+2+3+4+5+6+7+8+9+10	0
7	4+5+6+7+8+9+10	1+2+3
8	1+2+3+4+5+6+9+10	7+8
9	1+2+3+4+6+7+8+9	5+10
10	1+2+3+4+5+6+7+8+9+10	0
11	1+2+3+4+5+6+7+10	8+9
12	1+2+3+4+5+6+7+8+9+10	0
13	1+2+3+4+6+7+8+9	5+10
14	1+2+3+4+5+6+8+10	7+9
15	1+2+3+4+5+6+7+8+9=10	0

TABLE 10(7): Sums, means and ranges of GCSE student rankings for Good and Poor Learner statements in the first ten, and lecturer predictions (1997-8 cohort).

Student No	SRGL	MEAN	RANGE	SRPL	MEAN	RANGE	WORK	+/-	MOCK
1	42	6	7	13	4.3	10	-	-	LEFT
2	47	6.7	9	8	2.7	5	43%	-+ (++)	
3	22	5.5	6	33	5.5	10	57%	++ (-+)	
4	48	5.3	10	7	7	0	39%	+ -	
5	28	4	7	27	9	3	68%	++	
6	55	5.5	10	0	0	0	78%	++	
7	49	7	7	6	2	3	60%	-+ (++)	
8	40	5	10	15	7.5	2	32%	+-	LEFT
9	40	5	9	15	7.5	6	-	-	LEFT
10	55	5.5	10	0	0	0	-	-	LEFT
11	38	4.8	10	17	8.5	2	-	-	LEFT
12	55	5.5	10	0	0	0	43%	++	
13	40	5	9	15	7.5	6	33%	+-	LEFT
14	39	4.9	10	16	8	3	89%	++	
15	55	5.5	10	0	0	0	50%	++	

(The predictions in brackets for students 2, 3 and 7 are those that would have been given to them under the old scoring system. The Mock results, final column, will be shown in Table 11(3), p240.)

Tables 10(4) and 10(6) show student rankings for Good Learner (SRGL) and student rankings for Poor Learner (SRPL) scores for 'A' level and GCSE students, i.e. Student 1 on the 'A' level table (Table 10(4)) has an SRGL score of 1+2+4+5+6+7+8 = 33 (the sum of rankings given to his Good Learner statements in the top ten) and an SRPL score of 3+9+10 = 22 (the sum of rankings given to his Poor Learner statements in the top ten).

Tables 10(5) and 10(7) show the sums of these rankings, together with their mean scores and simple ranges for each group of rankings for each individual 'A' level and GCSE student, i.e. Student 1 on the 'A' level table (Table 10(5)) has a rank sum of 33 for his SRGL score and a rank sum of 22 for his SRPL score. The range of his SRGL rankings is 8 and the range of his SRPL rankings is also 8 (as can be cross-checked by looking at the original rankings shown in Table 10(4).) Below, is a list of the information to be found in Tables 10(4), 10(5), 10(6) and 10(7):

Tables 10(4), 'A' level cohort, and 10(6), GCSE cohort:
Student rankings of Good Learner statements.
Student rankings of Poor Learner statements.

Tables 10(5), 'A' level cohort, and 10(7), GCSE cohort:
Rank sum of Good Learner statements.
Rank sum of Poor Learner statements.
Mean of Good Learner statement rankings.
Mean of Poor Learner statement rankings.
Range of Good Learner statement rankings.
Range of Poor Learner statement rankings.
Continuous assessment of students by the lecturer, consisting of students assignment scores and time questions.
+ + (True Positive), + - (False Positive), - - (True Negative) - + (False Negative) examination outcome predictions - a combination of the proportion of student Good Learner:Poor Learner statement rankings (GL:PL) (the first sign) and lecturer assessment (the second sign).
Mock examination result (to be entered on Tables 10(8) and 10(10), p235 and 6 and compared with + + (True Positive), + - (False Positive), - - (True Negative) - + (False Negative) predictions to be taken into consideration when making the final predictions for the modular 'A' level and GCSE examinations in June.)

The rationale behind ranking the Good and Poor Learner statements in the first ten student Q-sortings, and calculating the mean and range of the rankings will be given in the subsequent paragraphs.

The 1996 - 1998 'A' level and 1996 - 7 GCSE students' Q-sortings were given simply as a proportion of Good Learner to Poor Learner statements appearing in the first ten sortings for each student, e.g. 6 : 4 or 9 : 1, and so on. It was thought that, with the 1997 - 1999 cohort, an ordinal level of measurement should be used instead of the nominal level previously used. Thus, not only the proportion of Poor Learner statements appearing in the first ten places where the Good Learner statements should be, but also the rank in which they appeared, will now be taken into consideration.

The rankings were consequently separated into Good Learner and Poor Learner rankings, and were summed accordingly. The means were found for each student's Good Learner and Poor Learner rankings and presented as a single score describing a set of rankings, and taking into consideration the value of each ranking. However, one resulting problem was that different sets of rank orderings produced the same mean, e.g. rankings of 7th and 8th produced the same mean (7.5) as 10th and 5th (7.5). Therefore, to solve this problem, the range was also found for each student's Good Learner and Poor Learner rankings. In this way, it could be shown whether or not the mean was composed of a small or large number of small or large rankings, e.g. if the mean was high and the range was low, this indicated that the rankings which formed this mean were both high and close together; if the mean was high and the range high, it showed the ranks to be predominantly high, but extreme scores had skewed the mean, i.e. pulled it in the direction of the highest or lowest score. If the

means were low and the range low, this indicated that the ranks were low and close together; if the means were low and the ranges high, this indicated predominantly low ranks but with a few extreme scores which had, once again, skewed the mean.

In this way, more meaningful comparisons were made between the same student at different times, and also (with care to avoid creating typologies) between one student and another. Only non-zero numbers were considered; the presence of a zero merely meant that no Poor Learner statements were included in a student's top ten statements and not a low ranking; a zero number was not, therefore, a rank.

The next section will present predictions for student performance in the mock examinations on the basis of their SRGL and SRPL scores and the lecturer's assessment.

10.4 Predictions of performance in mock examinations made from Table 10(5) for 'A' level students and Table 10(7) for GCSE students based on their Student Rankings of Good Learner (SRGL) and Student Rankings of Poor Learner (SRPL) scores and the lecturer's assessment.

While using Table 10(5), p224, for the 'A' level students and Table 10(7), p225, for the GCSE students, careful consideration needs to be taken of the means and ranges as well as the SRGL (Summed Ranks of Good Learner) and SRPL (Summed Ranks of Poor Learner) scores when using them as a predicted measure of examination performance.

Predictions for the 1996 - 1998 cohorts took the form of counting the number of Good Learner and Poor Learner statements appearing in the first ten of each student's rankings of their twenty statements (i.e. their 10 Good Learner and 10 Poor Learner

statements). However, with the 1997 - 1999 cohorts, the variation was introduced of calculating the summed rankings of Good Learner and Poor Learner statements appearing in the top ten, as well as the mean Good Learner ranking, the mean Poor Learner ranking and the ranges of these rankings around each mean.

This presented the problem of which score to use when formulating predictions in the form of True Positive (+ +), False Positive (+ -), False Negative (- +) and True Negative (- -). With the original scoring procedure for the 1996-8 cohorts (i.e. number of statements found in or out of the top ten) there was a failure to consider rankings. However, if the sums of the rankings were to be used on their own, they would fail to take into consideration the number of rankings which made up the sum, or the level of those rankings. Therefore, it was decided to use the mean ranking for both the SRGL and SRPL statements because this would take into consideration both the number of Good Learner and Poor Learner statements and their ranking levels. The range, however, also needed to be considered because smaller ranges (which suggests that all the scores are clustering closely round the mean which describes them) would give more confidence in the predictions than larger ranges.

For instance, on Table 10(5), when comparing the first two students, student 1 has an SRGL mean of 4.7 which is less than the mean for the SRPL scores (7.3) even though the SRGL score of 33 is higher than the SRPL score of 22. This indicates that he has given most of the small rankings to his Good Learner statements and therefore feels that he uses Good Learner habits more than Poor Learner ones. The range for both SRGL and SRPL scores is 8. However, although seven scores were included in the SRGL range, only three scores were included in the SRPL range, (see Table 10(4), p224) Thus there appears to be a rogue score in the SRPL range to have produced

such a large range from only three scores. Indeed, whereas two of the SRPL scores are ranked high (9th and 10th) only one is ranked low (3rd), (see Table 10(4), p224) This would suggest that, in the main, this student's poor learning habits are given high rankings because he does not use them often. Only one Poor Learner habit is used often (the one given third ranking). This student, therefore, is considered to be showing more Good Learner than Poor Learner habits, although the level of confidence in this conclusion is not as high as it would have been had his range been lower since it indicates that he has a Poor Learner quality in a high position (i.e. with a low ranking) among his Good Learner rankings.

With regard to student 2, however, who also has seven Good Learner and three Poor Learner statements in his first ten statement rankings, greater confidence can be given to his SRGL/SRPL scores because his Good Learner statements all come in the first seven of the ten statements and his Poor Learner statements cluster together in the last three rankings of his first ten statements. His SRGL score of 28 is therefore less than that of student 1 (33), his Good Learner mean is also less (4, compared to 4.7), his Poor Learner mean is more (9, compared to 7.3) (score = 29) and his ranges are less (Good Learner range = 7, compared to 8; Poor Learner range = 3, compared to 8). This would indicate that, while this student also has seven Good Learner statements in his first ten, since they occupy the first seven rankings, the ranked sum is therefore less than that of the first student. Conversely, the mean of the Poor Learner statements in the first ten is greater because these three statements are given high rankings in this student's first ten (i.e. 8th, 9th and 10th) showing that he uses less Poor Learner than Good Learner study approaches. Consequently, the ranges are smaller for this student than for student 1 (7 for Good Learner and 3 for Poor

Learner), since Good Learner and Poor Learner statements occupy consecutive rankings (e.g. Good Learner - 1st, 2nd, 3rd, 4th, 5th, 6th and 7th; Poor Learner - 8th, 9th and 10th).

However, although this indicates that the student believes he is using more Good Learner than Poor Learner qualities, when considering his study approaches, there are three Good Learner statements not included (in the first ten rankings) from his original twenty statements. (N.B. students formulated ten Good Learner and ten Poor Learner statements initially.) This means he considers there is still room for improvement in his study approaches.

To return to the problem of formulating predictions (True Positive + + , False Positive + - , False Negative - + , True Negative - -) from students' rankings of their Good Learner and Poor Learner statements, if the means for the students' SRGL statements are lower than their means for their SRPL statements, then they are considered to view themselves as positives (the first symbol shown) - that is, they think they are more likely to pass than fail their examinations. As mentioned on p228, the means are taken into consideration if they are greater than zero. If they are zero, it shows that no statements are included in that category, i.e. a SRPL mean of zero would mean that no Poor Learner statements had been included in the first ten statements rankings.

Thus it has been shown that, not only were the numbers of Good and Poor Learner statements taken into consideration but, in addition, their means were also considered. One final example is that of student 6 who had the same number of Good and Poor Learner statements in the first ten as did students 1, 2 and 3, but since he had given a lower ranking than they had to two of his Poor Learner statements (2nd, 3rd and 7th),

his SRPL mean was therefore lower than his SRGL mean showing that, in order to succeed, he needs to seriously consider his Poor Learner statements and work on improving his study approaches. (Intervention, with this student, did include asking him to focus on his Poor Learner statements and finding ways in which they could be improved.) Had this student been in the 1996 - 1998 cohort, he would have been assessed as a True Positive (+ +), because his number of Good Learner statements were greater than the number of Poor Learner statements in his first ten. However, when the mean rankings of these statements was taken into consideration, he came into the False Negative (- +) category. The negative score came from the fact that the student's SRGL mean was greater than his SRPL mean. However, his lecturer predicted a positive outcome for him in his mock examination on the basis of his assignments and indeed, he seriously considered his study approaches and gained a good mark (84 out of 120 - a Grade B) in the first module. A further Q-sorting was taken from the 1997-9 'A' level students after their mock examination (in September, 1998), to see whether students wished to change any of their self-generated statements, or the rankings they have given them, i.e. to see whether any of these students' self-perceptions about their study approaches had changed. The student mentioned above (student 6) was the only one to change his Q-sort, it became more positive and the statements for both Q-sorts are reproduced later in this thesis Chapter 11, pp249-250), since the changes he made are both interesting and revealing.

The final sign on the students' predictions (either + or -) was given to them by the lecturer on the basis of four essay assignments done in their first year. This mark was in the form of a percentage and 'A' level and GCSE students gaining 40%, or more, were given a pass prediction in their mock. This will be discussed in the next section.

10.5 Lecturer predictions on the outcome of mock examinations for the 1997-9 'A' level and 1997-8 GCSE students, and how the addition of mock examination scores contribute to predictions made for the final examinations.

The purpose of this section is to discuss the lecturer's predictions concerning the outcome of the mock examinations for the 1997-9 'A' level and 1997-8 GCSE students and how the addition of the mock examination scores (once known) will contribute to the predictions made for the final examinations.

Table 10(8),p235, shows the predictions for the 'A' level students' mocks and Table 10(10),p236 shows those for the GCSE students. Under the column headed 'MARK', has been placed the average mark of the four best pieces of each students' coursework. Students gaining 40% or over were predicted a PASS in the mock examinations. The column headed 'MOCK' shows the marks the students gained in their mock examinations (taken in May, 1998) and this can be compared with the predictions (made in April, 1998), based upon the students' work (as shown in the 'MARK' column) and their Q-sort statements.

These predictions are in the form of true positive (+ +), false positive (+ -), false negative (- +) and true negative (- -) predictions. The first sign is the prediction made from the students' Q-sort rankings (+ for Pass and - for Fail) and the second sign is the lecturer's prediction (+ for Pass and - for Fail) given on the basis of the students' assignment marks. Where lecturer and student agree and the predicted outcome is pass, a true positive classification is given (+ +); where lecturer and student agree and the predicted outcome is fail, a true negative classification is given (- -); where lecturer and student disagree and the lecturer predicts a pass but the

students predicts a fail, a false negative classification is given (- +); where lecturer and student disagree and the lecturer predicts a fail while the student predicts a pass, a false positive classification is given (+ -).

As can be seen in Table 10(8),p235, ten students left the 'A' level course before the mock examinations: five gained employment, two left because of problems at home, two had health problems, and the remaining student left without giving a reason. This left eight students who sat their mock examinations and five of these students passed. Four of those who passed were true positives and one was a false negative. The three students who failed consisted of one true negative, one false positive and one true positive. These results are presented Table 10(9),p235. (N.B. Student no.10 was on holiday during the first module of her 'A' level examination. However, she passed her mock examination and sat her module at a later date.)

TABLE 10(8): Sums, means and ranges of 'A' level student rankings of Good and Poor Learner statements in the first ten, lecturer predictions and mock examination results (1997-9 cohort).

Student No.	SRGL	MEAN	RANGE	SRPL	MEAN	RANGE	MARK	+/-	MOCK
1	33	4.7	8	22	7.3	8	46%	++	62%
2	28	4	7	27	9	3	53%	++	LEFT
3	22	3.1	8	23	7.7	7	48%	++	LEFT
4	43	5.4	10	12	6	3	40%	++	LEFT
5	55	5.5	9	0	0	0	58%	++	LEFT
6	43	6.1	10	12	4	6	57%	-+ (++)	72%
7	35	5	7	20	6.7	10	40%	++	LEFT
8	45	5	9	10	10	0	-	-	LEFT
9	52	5.8	10	3	3	0	37%	+-	32%
10	30	5	9	25	6.3	9	58%	++	56%
11	25	4.2	8	30	7.5	6	-	-	LEFT
12	31	4.4	8	24	8	6	34%	+-	LEFT
13	40	5	10	15	7.5	2	53%	++ (+-)	24%
14	55	5.5	10	0	0	0	37%	+-	LEFT
15	38	4.8	10	17	8.5	2	62%	++	56%
16	55	5.5	10	0	0	0	60%	++	56%
17	43	5.4	10	12	6	5	50%	++	LEFT
18	10	10	0	45	5	9	32%	--	34%

TABLE 10(9): Mock examination results for the 1997-9 'A' level students.

	PASS	FAIL
TRUE POSITIVES	4	1
FALSE NEGATIVES	1	0
FALSE POSITIVES	0	1
TRUE NEGATIVES	0	1

(N.B. With regard to the final examination results, apart from one student who was on holiday during examination time and will sit her module later, the final results were exactly as predicted in Table 10(8).)

TABLE 10(10): Sums, means and ranges of GCSE student rankings for Good and Poor Learner statements in the first ten, lecturer predictions and mock examination results (1997-8 cohort).

Student No.	SRGL	MEAN	RANGE	SRPL	MEAN	RANGE	WORK	+/-	MOCK
1	42	6	7	13	4.3	10	-	-	LEFT
2	47	6.7	9	8	2.7	5	43%	-+ (++)	22%-F
3	22	5.5	6	33	5.5	10	57%	++ (-+)	48%-H
4	48	5.3	10	7	7	0	39%	+-	23%-F
5	28	4	7	27	9	3	68%	++	48%-H
6	55	5.5	10	0	0	0	78%	++	77%-H
7	49	7	7	6	2	3	60%	-+ (++)	32%-H
8	40	5	10	15	7.5	2	32%	+-	LEFT
9	40	5	9	15	7.5	6	-	-	LEFT
10	55	5.5	10	0	0	0	-	-	LEFT
11	38	4.8	10	17	8.5	2	-	-	LEFT
12	55	5.5	10	0	0	0	43%	++	24%-H
13	40	5	9	15	7.5	6	33%	+-	LEFT
14	39	4.9	10	16	8	3	89%	++	74%-H
15	55	5.5	10	0	0	0	50%	++	23%-H

H = HIGHER EXAMINATION
F = FOUNDATION EXAMINATION

TABLE 10(11): Mock examination results for the 1997-8 GCSE students.

	PASS	FAIL
TRUE POSITIVES	4	2
FALSE NEGATIVES	0	2
FALSE POSITIVES	0	1
TRUE NEGATIVES	0	0

It can be seen from Table 10(9), p235, that more true positives passed than failed (a ratio of 4:1) and the false negative student also passed. (This student changed his Q-sort as a result of his pass and became a true positive. His Q-sort is reproduced in full in Chapter Eleven, pp249 and 250.) Those students who failed comprised:

one true positive (here both lecturer and student incorrectly predicted the outcome);

one false positive (where the lecturer, but not the student, correctly predicted the outcome); and one true negative (where both lecturer and student correctly predicted the outcome). With regard to the accuracy of lecturer and student predictions, the lecturer correctly predicted the outcome in seven out of the eight results and students correctly predicted their examination outcomes in five out of the eight results.

When considering the GCSE students (see Table 10(10),p236), six students left before the mock examinations. The results of the remaining students are presented in Table 10(11,p236). All four students who passed were true positives so both lecturer and students had correctly predicted the outcome. Concerning those who failed, the lecturer correctly predicted the outcome only once, while two students correctly predicted the outcome.

(N.B. It is interesting to note that in the final examination, all students except one got a Grade C or higher, the remaining student gaining a Grade D. This will be discussed in Chapter Eleven.)

Chapter 11 will also discuss the implications of the mock examination results when used to inform the predictions of the final examination results for both the 'A' level (1997-9) and GCSE (1997-8) students. It will also consider any changes made by students to their Q-sort statements in the light of their mock examination results, and will discuss the results of their final examinations.

CHAPTER ELEVEN

How mock examination results change some grade predictions for final examinations with the 1997-9 'A' level and 1997-8 GCSE students, student changes in Q-sort statements and final examination results.

11.1 How mock examination results change some grade predictions for final examinations with the 1997-9 'A' level and 1997-8 GCSE students.

The final phase of my data elicitation process will include the following:

(1) How the mock results (April, 1998) changed some of the grade predictions for the final examinations with the 1997-9 'A' level and 1997-8 GCSE students.

(2) Changes made by the 1997-9 'A' level students to their Q-sorts (April, 1998), after the results of their mock examinations. Information elicited from the previous 1996-8 'A' level and 1996-7 GCSE students would suggest some changes in students' task-centred Q-sort statements rather than their person-centred ones, as though these students felt more able to change the extrinsic aspects of their study approaches (i.e. the way they perform tasks) than to change more intrinsic aspects of themselves, such as personality, motivation and ability, see p192-3

(3) The results of the final examinations.

Table 11(1), p239, presents a reminder to the reader of the different combination of students' and lecturer's predicted outcomes. Tables 11(2), p239, and 11(3), p240 are reproductions of Tables 10(8), p235, and 10(10), p236, copied here for reference when discussing how the mock examination results change some grade predictions for the final 'A' level and GCSE examinations.

TABLE 11(1): Different combinations of students' and lecturer's predicted outcomes.

S +	L +	Both student and lecturer predict a successful outcome
S +	L -	Only the student predicts a successful outcome
S -	L +	Only the lecturer predicts a successful outcome
S -	L -	Both student and lecturer predict an unsuccessful outcome

TABLE 11(2): Sums, means and ranges of 'A' level student rankings for Good and Poor learner statements in the first ten, lecturer predictions and mock examination results (1997-9 cohort).

tudent No.	SRGL	MEAN	RANGE	SRPL	MEAN	RANGE	MARK	+/-	MOCK
1	33	4.7	8	22	7.3	8	46%	+ +	62% - PASS
2	28	4	7	27	9	3	53%	+ +	LEFT
3	22	3.1	8	23	7.7	7	48%	+ +	LEFT
4	43	5.4	10	12	6	3	40%	+ +	LEFT
5	55	5.5	9	0	0	0	58%	+ +	LEFT
6	43	6.1	10	12	4	6	57%	- + (+ +)	72% - PASS
7	35	5	7	20	6.7	10	40%	+ +	LEFT
8	45	5	9	10	10	0	-	-	LEFT
9	52	5.8	10	3	3	0	37%	+ -	32% - FAIL
10	30	5	9	25	6.3	9	58%	+ +	56% - PASS
11	25	4.2	8	30	7.5	6	-	-	LEFT
12	31	4.4	8	24	8	6	34%	+ -	LEFT
13	40	5	10	15	7.5	2	53%	+ +	24% - FAIL
14	55	5.5	10	0	0	0	37%	+ -	LEFT
15	38	4.8	10	17	8.5	2	62%	+ +	56% - PASS
16	55	5.5	10	0	0	0	60%	+ +	56% - PASS
17	43	5.4	10	12	6	5	50%	++	LEFT
18	10	10	0	45	5	9	32%	- -	34% - FAIL (LEFT)

TABLE 11(3): Sums, means and ranges of GCSE student rankings for Good and Poor Learner statements in the first ten, lecturer predictions and mock examination results (1997-8 cohort).

Student No.	SRGL	MEAN	RANGE	SRPL	MEAN	RANGE	WORK	+/-	MOCK
1	42	6	7	13	4.3	10	-	-	LEFT
2	47	6.7	9	8	2.7	5	43%	-+	22% - FAIL (Foundation)
3	22	5.5	6	33	5.5	10	57%	++	48% - PASS (Higher)
4	48	5.3	10	7	7	0	39%	+ -	23% - FAIL (Foundation)
5	28	4	7	27	9	3	68%	++	48% - PASS (Higher)
6	55	5.5	10	0	0	0	78%	++	77% - PASS (Higher)
7	49	7	7	6	2	3	60%	-+	32% - FAIL (Higher)
8	40	5	10	15	7.5	2	32%	+-	LEFT
9	40	5	9	15	7.5	6	-	-	LEFT
10	55	5.5	10	0	0	0	-	-	LEFT
11	38	4.8	10	17	8.5	2	-	-	LEFT
12	55	5.5	10	0	0	0	43%	++	24% - FAIL (Higher)
13	40	5	9	15	7.5	6	33%	+-	LEFT
14	39	4.9	10	16	8	3	89%	++	74% - PASS (Higher)
15	55	5.5	10	0	0	0	50%	++	23% - FAIL (Higher)

Higher = GCSE examination (Higher level paper)
Foundation = GCSE examination (Foundation level paper).
40% or above = PASS

Tables 10(8),p235, and 10(10),p236, were compiled from student/lecturer predictions for the 1997-1999 'A' level and 1997-1998 GCSE students. The mock examination results were compared with predictions shown in Chapter Ten (Tables 10(5),p224 and 10(7), p225) and the predictions for the 'A' level (first modular examination) and GCSE final examinations were then modified to take account of the mock examination result.

It was found in Chapter Ten (p237) that with the 'A' level mock examination, the lecturer predicted seven out of eight results correctly and the students predicted correctly five out of eight. In addition, one of these students (number 6), who had incorrectly predicted he

would fail, changed his Q-sort as a result of his good mock examination mark and predicted a pass in the modular examination. (Indeed, he did go on to gain a pass in that examination.) Regarding the remaining two students, student number 9, who incorrectly predicted a pass when her lecturer correctly predicted a fail, did not change her Q-sort and failed her modular examination. The remaining student (number 13), about whom both lecturer and student incorrectly predicted a pass, also did not change her Q-sort, the lecturer changed her prediction to fail, and the student failed her modular examination. Table 11(4), below, shows the final results for the 'A' level students' modular examination and compares them with the mock prediction, the mock result, the changes in prediction resulting from the mock mark and the final examination result. Table 11(5), p242, gives similar information for the GCSE students.

TABLE 11(4): Assignment marks, mock predictions and results, final examination predictions and results for 'A' level students still left in the 1997-9 cohort.

Student No.	ASSIGNMENT MARKS	MOCK PREDICTIONS	MOCK MARK	EXAM PREDICTIONS	EXAM MARK/120	PASS GRADE (A - E)
1	46%	+ +	62%	+ +	64	D
6	57%	- +	72%	+ +	84	B
9	37%	+ -	32%	+ -	27	U
13	53%	+ +	24%	+ -	36	N
15	62%	+ +	56%	+ +	104	A
16	60%	+ +	56%	+ +	48	E
18	32%	- -	34%	- -	27	U

(N.B. Student 10, who was correctly predicted a pass in her mock examination, was on holiday during the examination period, but will sit this module in January 1999. She will, therefore, not be included hereafter in predictions for the modular examination and the cohort will be reduced to seven. Also, student/lecturer predictions were altered for the 'A' level group as a result of the mock examination marks, i.e.student 6 (by the student) and student 13 (by the lecturer)).

TABLE 11(5): Assignment marks, mock predictions and results, final examination predictions and results for GCSE students still left in the 1997-8 cohort.

Student No.	ASSIGNMENT MARKS	MOCK PREDICTIONS	MOCK MARK	EXAM PREDICTIONS	EXAM GRADE
2	43%	- +	22%	- +	C
3	57%	+ +	48%	+ +	B
4	39%	+ -	23%	+ -	C
5	68%	+ +	48%	+ +	B
6	78%	+ +	77%	+ +	A
7	60%	- +	32%	- +	C
12	43%	+ +	24%	+ +	D
14	89%	+ +	74%	+ +	A*
15	50%	+ +	23%	+ +	C

Before studying Tables 11(4) and 11(5), the following caveats need to be mentioned, however, in order to interpret the mock results with fairness and use them with caution:

(1) The lecturer who predicted the students' mock results is also the lecturer who marked the mock (and the writer of this thesis). Therefore, there is the possibility of bias creeping into these results. On the other hand, however, an advantage would be that, since the same lecturer predicted and marked the papers, this eliminates the need to establish inter-assessor reliability. However, it is the final examination (marked by an independent examiner) which is used to compare the reliability of predictions of students and lecturer. Due to this the bias is, to some extent, corrected.

(2) The mock examination results, themselves, may not be representative of students' performances in their modular or final examinations. With the GCSE students, one reason for this may be that the mock examination was given to the students on the same day that their Psychology coursework was due to be handed in for moderating (the first day back after the Easter holidays) and they had spent much of their holidays working on their

coursework instead of revising for their mocks. Once again, the final examination result will be the one used for any meaningful comparison.

(3) Students' mock marks (whether good or poor) may act as self-fulfilling prophecies giving students encouragement to work harder (or even not to work harder, but to rest on their laurels) if they gained good marks; discouraging then (or making them work harder) if they gained poor marks. In addition, levels of motivation and also levels of confidence tend to be unknown quantities which may affect students' final results but cannot be taken into account when predicting their final result because of fluctuation.

This raises the question of the level of confidence in the changes made by the lecturer to her predictions of final examination results based upon students' mock examinations, especially where there are current discrepancies between the lecturer's prediction and a student's mock examination result. Those students with a positive prediction and a good mock result will be predicted a pass in the final examination. However, those students who were predicted a pass by their lecturer and failed to pass their mock examination prove more problematic when predicting final results in that the lecturer had to decide whether or not to change her prediction on the basis of the mock examination results. She did so with regard to the 'A' level but not the GCSE students. The reason for this was that the GCSE students felt unprepared to sit their mock examination since it followed too closely upon the submission date for their coursework and they had not revised as thoroughly as they would have wished therefore their results were poorer than expected. This proved to be the case in that the final examination results were much better than the mock results and more closely reflected the original predictions (without taking into

consideration the mock), than they would have done had the mock been taken into consideration.

Table 11(6), below, shows the level of successful and unsuccessful predictions by the lecturer for the GCSE students' final examination and the 'A' level students' first modular examination. Table 11(7), below, shows which students made the various predictions.

TABLE 11(6): Successful and unsuccessful predictions by the lecturer for 'A' level (1997-9) and GCSE (1997-8) students.

	'A' LEVEL		GCSE	
	Mock	Modular	Mock	Final
Number of students left in the cohort	8	7	9	9
Successful predictions	7	7	5	7
Unsuccessful predictions	1	0	4	2

TABLE 11 (7) - Correct and incorrect predictions for lecturer and students (for Mock and Actual examinations - 1997-9 'A' level and 1997-8 GCSE cohorts).

	'A'LEVEL		GCSE	
	LECTURER	STUDENTS	LECTURER	STUDENTS
Number of students left in cohort	8	8	9	9
Successful predictions	7 (Student numbers 1,6,9,10,15,16,18 - Mock) 7 (Students numbers 1,6,9,13,15,16,18 - Actual)	5 (Student numbers 1,10,15,16,18 - Mock) 5 (Student numbers 1,6,15,16,18 - Actual)	5 (Student numbers 3,4,5,6,14 - Mock) 7 (Student numbers 2,3,5,6,7,14,15 - Actual)	6 (Student numbers 2,3,5,6,7,14 - Mock) 6 (Students numbers 3,4,5,6,14,15 - Actual)
Unsuccessful predictions	1 (Student number 13 - Mock)) 0 (Actual)	3 (Student numbers 6,9,13 - Mock) 2 (Student numbers 9,13 - Actual)	4 (Student numbers 2,7,12,15 - Mock) 2 (Student numbers 4,12 - Actual)	3 (Student numbers 4,12,15 - Mock) 3 (Student numbers 2,7,12 - Actual)

(N.B. The eighth 'A' level student left in the cohort (number 10) took her module at a later date and therefore was not included in the modular results in Tables 11(6) and 11(7), only in the mock results.)

As can be seen, all but one of the lecturer predictions for the 'A' level students were supported by their mock examination results and when mock examinations were taken into consideration, all predictions for the actual examination were correct. It also meant that 'A' level predictions for males changed from 50% to 100% correct since there were only two males and one changed his prediction, after wrongly predicting a fail in the mock examination, to correctly predicting a pass in the actual modular examination. For the GCSE students four lecturer predictions were incorrect for the mock examination. Of these four incorrect predictions, all failed after a pass had been predicted. While it was hoped that these students would pass their final examination because they would have completed their revision on time, they were also equally likely to fail. However, due to the reasons given earlier (pp242 and 243) these students felt they had not had enough time to revise. In order to predict outcomes in the light of this information, the lecturer used the information gained from these students' assignments and time questions, and excluded their mock examination marks. This resulted in her making two inaccurate predictions (nos.4 and 12) instead of four for the final examination (see Tables 11(6) and 11(7), p244). Lecturer predictions for the 1996-8 cohort (see Table 7(4), p151) show that the lecturer was correct in her predictions of 'A' level and GCSE examination outcomes more often than she was incorrect - a ratio of 13:3 for the 'A' level students and 10:3 for the GCSE students. Since correct predictions for GCSE were based upon the students' assignments throughout the year without the addition of the mock examination marks, it was therefore decided that, where the mock examination results were contrary to the predicted outcome, as in the case of the 1997-8 GCSE students, to rely more upon the students' assignment marks than upon their mock examination marks. It was, therefore, decided to make a

retrospective comparison of students' assignments, and mock and final examination results, to shed further light upon the accuracy of the various components of lecturer/student predictions.

However, since the main purpose of this thesis is to examine student perceptions of their learning process rather than the accuracy of lecturer predictions (albeit it is one way of testing the concurrent validity of the Q-sort), the remainder of this chapter will:

(a) discuss changes in students' Q-sort statements and Q-sortings; and

(b) outline students' 'A' level grade predictions and confidence levels for attaining this grade, comparing these with their Q-sort results (highlighting any sex differences that may have occurred).

11.2 Changes in students' Q-sortings

The Q-sort has been designed to examine students' perceptions about their learning characteristics rather than to seek commonalties or labels. Most students have shown themselves able to identify good and poor learner characteristics although the range of these characteristics has not been large, i.e. most students identified similar characteristics. Since the Q-sort has focused upon eliciting the rank orders students gave to these characteristics, i.e. which Good Learner ones were placed in the first ten and what rank they were given, it has not measured the actual learning characteristics of the student but merely the extent to which students believed they possessed them. If students ranked more Good than Poor Learner characteristics in high positions in their Q-sortings, it was assumed that these students felt they had enough Good Learner qualities to gain an examination pass. Students' self-perception were then compared with the lecturer's

predictions, and both were compared with the final examination result (thought to be a more objective measure of student success).

In addition to using the students' Good Learner/Poor Learner scores as their prediction of success, I asked the 1997 -1999 cohort of 'A' level students to predict the grade they thought they could gain and also their confidence level (on a scale of 1 to 10) for achieving that grade. The following table (Table 11(8)) shows these confidence levels.

TABLE 11(8): Examination predictions and confidence levels for 1997-9 'A' level students.

STUDENT	Q-SORT SCORE	PREDICTED EXAMINATION GRADE	CONFIDENCE LEVEL (1 = high; 10 = low)	ACTUAL RESULT
1	+ +	C	5/6	D
6	- +	C	8	B
9	+ -	E	2	U
10	+ +	Not taking examination until January		
13	+ +	D/E	4	N
15	+ +	B	8	A
16	+ +			E
18	- -	E	4	U

(N.B. The grades the students have predicted are those they feel able to gain. The confidence level, however, for some of the students, shows that they feel they will not achieve their predicted grade. Six out of the eight remaining students made examination predictions with confidence levels. Four out of the six overestimated their grade and two underestimated it. The latter gave a higher confidence level for achieving this lower grade. Conversely, students who predicted a higher grade, gave a lower confidence level. This would suggest there may be an inverse relationship between predicted examination grades and confidence levels, i.e. lower predicted grades vary inversely with higher confidence levels and vice versa.)

This also raises the issue of the difference between expectation and actual performance. The final examination can only measure performance on the day of that particular examination. Indeed, when using the mock examination results to fine-tune predicted performance in the final examination, the same caveat would apply.

With regard to changes in the Q-sort after the mock examination results, it is interesting to note that student number 6, (who was originally a false negative because the mean rank sum of his Good Learner statements was more than the mean rank sum of his Poor Learner statements (6.1 and 4.0)) was the only one to change his Q-sort at the end of his first year. This was possibly as a result of the good assignment marks he received, plus the 72% he gained for his mock examination. He now has a different mean rank sum for his Good Learner and Poor Learner statements thus:

Good Learner: 1st+2nd+4th+5th+6th+7th+8th+10th = 43 (rank sum) and 5.375 (mean).

Poor Learner: 3rd+9th = 12 (rank sum) and 6 (mean).

This means that now this student has become a true positive (+ +) instead of a false negative (- +). In addition, his Q-sort statements for both Good Learner and Poor Learner have become much more detailed and carefully considered. These statements have been reproduced as Tables 11(9), and 11(10). Table 11(9), p249, shows the original statements the student made in September 1997 and Table 11(10), p250, shows the changes made in May 1998, one week after the mock examination result and one month before the modular examination.

TABLE 11(9)

SELF-GENERATED LEARNER'S INVENTORY - A

Name of student:.....NUMBER.6....(SEPTEMBER..1997).....

Subject and Course:.....A LEVEL PSYCHOLOGY.....

STATEMENT NUMBER	STATEMENT
1	A good learner *wants to learn*
2	A good learner *listens*
3	A good learner *is committed to learning*
4	A good learner *works hard*
5	A good learner *attends lessons regularly*
6	A good learner *is punctual*
7	A good learner *does not have any other worries than about their subject*
8	A good learner *does not have learning disabilities*
9	A good learner *has clear goals*
10	A good learner *is confident in their ability*
11	A poor learner *does not care about learning or find it important*
12	A poor learner *is not committed*
13	A poor learner *does not work hard*
14	A poor learner *does not attend regularly*
15	A poor learner *is not punctual*
16	A poor learner *has other worries in their lives*
17	A poor learner *may have learning disabilities*
18	A poor learner *does not have clear goals*
19	A poor learner *does not listen*
20	A poor learner *is not confident in their ability*

TABLE 11(10)

SELF-GENERATED LEARNER'S INVENTORY - A

Name of student:.....NUMBER 6.....(MAY..1998).....

Subject and Course:.....A LEVEL PSYCHOLOGY.....

STATEMENT NUMBER	STATEMENT
1	A good learner *has to care about the subject they are being taught*
2	A good learner *generally pays attention*
3	A good learner *has to be committed to the course they are learning on*
4	A good learner *works hard*
5	A good learner *attends lessons regularly*
6	A good learner *does not necessarily need to be punctual but needs to be equipped*
7	A good learner *can put their worries out of their mind and concentrate on the subject*
8	A good learner *may have learning disabilities but has a way of coping (extra tutoring, special learning techniques, etc.)*
9	A good learner *has goals about the subject even if their overall gameplan is still undecided*
10	A good learner *is confident in their ability*
11	A poor learner *may not care about the subject they are being taught*
12	A poor learner *does not pay attention or finds it hard to do so*
13	A poor learner *may not be committed to the course*
14	A poor learner *does not work hard*
15	A poor learner *does not attend regularly*
16	A poor learner *may be neither punctual nor well equipped*
17	A poor learner *may have a learning disability but no way to cope*
18	A poor learner *has worries that infringe on their lessons*
19	A poor learner *has no goals about the subject/doesn't care what grades they get*
20	A poor learner *is not confident in their ability*

The alterations this student made to his Q-sort statements are interesting in that his changing self-perception of his learning characteristics show a qualitatively subtle change in his understanding. For instance, his first statement in 1997 was 'a good learner wants to learn.' In 1998 this was changed to 'a good learner has to care about the subject they are being taught.' This shows a subtle change from a general statement to a specific one and can also be seen to have occurred in other statements, for instance his sixth statement in 1997 read, 'a good learner is punctual' but in 1998 was changed to 'a good learner doesn't necessarily need to be punctual but needs to be equipped.' These changes also signify a desire to change the way a task is done rather than to change a more enduring personality characteristic. An examination of Tables 11(9) and 11(10) show all the 1998 qualified alterations added to the 1997 statements revealing growth and change over the year.

This student mentioned that he lacked confidence at the beginning of the academic year (1997) but now is more confident about the subject. However, the confidence level he gave for gaining a C grade was 8, still low. It was stated in Chapter 7 (pp156-160) that the normative level for male self-confidence is higher than the female level, (Burns, 1988). It was also mentioned in Chapter 7 (pp156-160) that some of the male students in the earlier 1996-8 'A' level and 1996-7 GCSE cohorts had an over-confident concept of themselves and thus failed to commit themselves to the required amount of pre-examination preparation. Also it was noted that the male who achieved one of the best scores, tended to be under-confident about his abilities when compared to other males in the group (Chapter 7, p159-160). It would appear that these findings have been replicated with the males in the 1997-9 'A' level and 1997-8 GCSE cohorts. The two males left in

the 'A' level cohort perceive themselves as needing to work hard in order to achieve, and the most capable male student in the GCSE cohort can also be described in this way.

The next section will discuss the results of the modular 'A' level and final GCSE examinations taken in June 1998 and will compare them with the students' mock marks and student/lecturer predictions (1997-9 'A' level and 1997-8 GCSE cohorts)..

11.3 The modular 'A' level and final GCSE examination results, and a comparison with students' mock marks and student/lecturer predictions (1997-9 'A' level and 1997-8 GCSE cohorts).

This section discusses the modular 'A' level and final GCSE examination marks and makes a comparison with the mock examination marks and student/lecturer predictions.

Tables 11(4), p241 and 11(5), p242 show the assignment marks, mock predictions and marks, and examination predictions and final marks for the 'A' level students (Table 11(4)) and the GCSE students (Table 11(5)) still remaining in the 1997-9 and 1997-8 cohorts.

N.B. When reviewing these tables, remember that student/lecturer predictions were altered only for 'A' level students as a result of mock examination marks, e.g. student 6 (by the student) and student 13 (by the lecturer).

Student/lecturer predictions were not altered for the GCSE students as a result of the mock examination mark, e.g. students 2, 7, 12 and 15 remained the same. The decision not to alter the predictions after the mock examination proved to be correct with three out of these four students. The mock results were shown to be an inaccurate predictor of student performance in the final examination since many had been unprepared for the mock

examination but had revised thoroughly for the final examination, hence the successful results.

As can be seen in Table 11(4), p241, the lecturer predicted correctly for seven out of the eight 'A' level students taking the mock examinations and these latter marks helped make accurate predictions for all seven students taking the modular examinations. Changing the outcome for student 13 on the strength of the mock mark, rather than the assignment marks, showed that the assignment marks were less accurate predictors than the mock examination mark.

With the GCSE students, however, as can be seen in Table 11(5), p242, the results were less clear cut. Had the lecturer altered her prediction as a result of the mock examination marks, she would have predicted less accurately for three out of the four students who failed the mock. However, in the case of one of these students (number 12), assignment marks proved to be no better predictors of examination outcome. Assignment work would have predicted success, yet she failed. With another student, number 4, assignment marks were borderline (39%) and were within one mark of predicting a successful outcome. (This student failed her mock examination but passed the final examination.)

With regard to student predictions, students were more likely to predict a positive than a negative outcome and were, as a result, accurate about outcome less often than was the lecturer. With the 'A' level students, however, accuracy was good - five out of eight students predicted their mock examination results accurately and five out of seven predicted their modular examination results accurately (see Tables 11(2), p239, and 11(4), p241). This included one student, number 18, who accurately predicted failure, i.e. realised she had more Poor than Good Learner qualities. Only two students predicted

wrongly (numbers 9 and 13) when their Q-sorts showed more Good Learner qualities in the top ten than the students exhibited in the execution of their work. In addition, one student (number 10) whose positive prediction was shown to be accurate when she passed her mock examination, was on holiday when the examination module was taken and therefore her prediction could not be put to the test like the other students. Table 11(11), below, shows the student self-perception types (True Positive, False Positive, True Negative, False Negative) and whether they stayed or left the course, and passed their 'A' level module.

TABLE 11(11): The number of self-perception types (True Positive, False Positive, True Negative, False Negative) of students who left the course, stayed, passed or failed their 'A' level module (1997-9 cohort).

TYPE	TOTAL (n)	LEFT	STAYED	PASSED	FAILED
True Positive	11 (11) (12)	6	5	4 (1 to sit later)	0
False Positive	4 (3)	2	2	0	2
True Negative	1	1	0	0	1
False Negative	0 (1)	0	0 (1)	0 (1)	0

(N.B. Student number 6 changed from False Negative (former score shown in brackets) to True Positive (former score in first brackets); student number 13 was changed from True Positive (former score shown in second brackets) to False Positive (former score shown in brackets); and student number 10 was on holiday when the module was taken and will it in January 1998. Also, two students (numbers 8 and 11) left before they completed their assignments and were withdrawn from the original sample, thus n = 16. The True Negative student (number 18) left after failing her first module.)

With the GCSE students, there was also accuracy of prediction in that six out of the nine accurately predicted the outcome of the mock examination and six out of nine correctly predicted the outcome of the actual examination (see Tables 11(3),p240, and 11(5),p242). However, only four of these students correctly predicted the outcome of both mock and actual examinations.

Also, sex differences found with 1996-8 'A' level and 1996-7 GCSE cohorts were not found with the 1997-9 'A' level and 1997-8 GCSE students. However, because these differences were not supported does not necessarily negate them.

In general, more research needs to be done on student self-perceptions of their study approaches in relation to the accuracy of these self-perceptions in alerting students to imminent success or failure. However, certain factors appear to be emerging:

(1) students' self-perceptions cannot be studied in isolation from other factors such as assignment marks, mock examination marks, lecturer predictions and advice;

(2) students' self-perceptions need to be flexible enough to allow growth and change among these perceptions, as a result of assignment and mock examination marks, lecturer predictions and advice; and

(3) students' self-perceptions (as measured by the Q-sort) are only one way of focusing students upon their study approaches and can be used in conjunction with other approaches, e.g. Biggs's SPQ, in a complementary way.

These points will be taken up in Chapter 12.

SECTION SIX

Conclusions of the research findings.

CHAPTER TWELVE

A summary of the findings of this thesis and a comparison with background research leading to an evaluation, possible ramifications and implications for future research.

12.1 A summary of my findings

The findings of this thesis will be summarised in two sections, as follows:

(1) The types of student self-perceptions (i.e. True Positives, True Negatives, False Positives, False Negatives) successful in identifying whether students holding them will pass, fail, stay on the course or leave it; sex differences in reality of self-perception; the accuracy of the Q-sort, in conjunction with lecturer assessment, as a means of predicting examination outcome, focusing students on their study skills, and providing them with the impetus to go to additional learning support sessions; and

(2) The reliability and concurrent validity of the Q-sort when compared to the SPQ and LSQ, i.e. will the Q-sort make a difference in understanding students' self-perceptions of their learning (internal validity), and could the findings be generalised and to which populations, settings, treatment and measurement variables (external validity), as defined by Reason and Rowan (pp215-216 of this thesis).

(1) The types of student self-perceptions (i.e. True Positives, True Negatives, False Positives, False Negatives) successful in identifying whether students holding them are likely to pass, fail, stay on the course or leave it; sex differences in reality of perception; the accuracy of the Q-sort in conjunction with lecturer assessment, as a means of predicting examination outcome, focusing students on their study skills, and providing them with the impetus to go to additional learning support sessions.

Concerning the types of student self-perception/lecturer assessment combinations (namely True Positive, True Negative, False Positive and False Negative variations), in both the 1996-8 and 1997-9 cohorts of 'A' level students, the true negative students left the course at, or before, the end of their first year. With the 1996-8 cohort, more false positives left the course than stayed (3:2). With the 1997-9 cohort, two stayed and two left. However, of the two who remained to sit their first module, one left after she received her results, thus one remained (and failed the examination) and three left. These numbers have been placed in brackets in Table 12(1), below.

TABLE 12(1): 'A' level students in the 1996-8 and 1997-9 cohorts who stayed or left the course.

	1996-8 (n = 16)		1997-9 (n = 16)	
	STAYED	**LEFT**	**STAYED**	**LEFT**
(+ +)	6	2	5	6
(+ -)	2	3	2(1)	2(3)
(- +)	1	0	0	0
(- -)	0	2	0	1

(The False Negative student who remained, changed to a True Positive and appears in Table 12(1) as one of the True Positive students.)

In addition, of the two False Positive 1996-8 'A' level students who remained on the course, only one passed the module. As mentioned above, the one False Positive 1997-9 'A' level student who remained also failed the module. None of these students

availed themselves of the additional learning support sessions, nor did they change their Q-sorts, in their second year, to show they perceived themselves to be less competent learners than they had originally thought. These students did not appear to have a realistic insight into their study approaches; in addition, they apparently failed to take any measures to correct the few shortcomings they had identified in their Q-sorts. With the 1996-8 'A' level cohort, three times as many true positives stayed as left, but with the 1997-9 cohort, more true positives left than stayed. However, since the students who left had not had an opportunity to take their mock examinations and change their predictions accordingly, and since the lecturer did not have the opportunity to give them a full assessment because their assignment work was not completed, it is possible that she would have changed her predictions from pass to fail. On hindsight, this would probably have occurred with at least half the true positives who left. Once students decided to leave, (out of the six who left, three gained employment and three had personal problems), they failed to hand in further assignments and lost their motivation. However, on the whole, True Positive students were more likely to succeed at their 'A' level modular examination than the following types of students:

(a) those whose assessment differed from the lecturer's when their assessment was positive and the lecturer's was negative, and

(b) those whose assessment was the same as the lecturer's when both assessments were negative.

Where there was disagreement between the student's and lecturer's assessments and the student's was negative while the lecturer's was positive, this resulted in success for the students concerned. These findings were first noted with the 1996-8 'A' level and

1996-7 GCSE cohorts and were replicated with the 1997-9 'A' level and 1997-8 GCSE cohorts.

To return to the students who were likely to leave or stay on their courses, Table 12(1),p257 showed these results for 'A'' level students. Table 12(2) below, shows the findings for GCSE students.

TABLE 12(2): GCSE students in the 1996-7 and 1997-8 cohorts who stayed or left the course.

	1996-7 (n = 13) (15 began the course)		1997-8 (n = 11) (15 began the course)	
	STAYED	LEFT	STAYED	LEFT
(+ +)	6	0	6	0
(+ -)	5	0	1	2
(- +)	2	0	2	0
(- -)	0	0	0	0

(Three students from the 1996-7 cohort did not complete their Q-sorts, one of them left the course and one partially completed hers at a later date and has been included in this table; of the 1997-8 cohort, six students left, four without completing their Q-sorts and two after showing themselves to be False Positives thus although n = 15, only 11 students completed their Q-sorts. Also, student number 14 joined the group from another group four months into the course and, although she was given a Q-sort and has been added to this table, she was not included in the Chi Square calculations.)

Since some students in both GCSE cohorts left college without having completed their Q-sorts, the findings were less conclusive. They did, however, show that the True Positive and False Negative students remained on the course, as predicted.

The results from the remaining students showed:

(1) With the 1996-7 cohort - four out of six True Positive students gained a C grade and higher. The remaining two gained a D and E grade respectively. With the 1997-8 cohort, five out of the six True Positive students gained C grade and higher. The remaining student gained a D grade.

(2) With the 1996-7 cohort, four out of five False Positive students failed to gain C grade or higher. Only one gained a C grade. With the 1997-8 cohort, the one False Positive student who remained gained a C grade.

(3) All the False Negative students gained a C grade or higher.

(4) There were no True Negative students on either of the GCSE cohorts. If there had been, it would have been predicted that these students would have left the course.

All these findings support the hypotheses which would predict that True Positive and False Negative students would be more likely to succeed and False Positive students would be more likely to fail. Though the prediction that True Negative students would leave the course could not be upheld because there were no True Negative students in either cohort (who had completed a Q-sort), it was upheld with the 'A' level cohorts. (N.B. Had Q-sorts been completed by students who left, they might have shown them to be True Negative students.) Table 12(3), p261, presents examination results and Q-sort scores for 'A' level and GCSE students.

TABLE 12(3): Comparing examination grades with Q-sort scores for 1996-8 and 1997-9 'A' level, and 1996-7 and 1997-8 GCSE students.

'A' LEVEL							GCSE					
1996-8				1997-9			1996-7			1997-8		
Student No.	Q-sort	Module 1 /120	Final Exam Result /600	Student No.	Q-sort	Module 1 /120	Student No.	Q-sort	Exam Grade	Student No.	Q-sort	Exam Grade
1	(+ -)	23 (U)	LEFT	1	(+ +)	D	1	(+ +)	D	1	LEFT	LEFT
2	(+ -)	75 (C)	287 (E)	2	(+ +)	LEFT	2	(+ -)	P	2	(- +)	C
3	(- +)	72 (C)	403 (C)	3	(+ +)	LEFT	3	(+ +)	E	3	(+ +)	B
4	(+ +)	34 (U)	LEFT	4	(+ +)	LEFT	4	LEFT	LEFT	4	(+ -)	C
5	(+ +)	48 (E)	293 (E)	5	(+ +)	LEFT	5	(+ +)	C	5	(+ +)	B
6	(+ +)	69 (D)	331(D)	6	(- +)(+ +)	B	6		G	6	(+ +)	A
7	(+ -)	23 (U)	LEFT	7	(+ +)	LEFT	7	(- +)	B	7	(- +)	C
8	(+ -)	20 (U)	LEFT	8	LEFT	LEFT	8	(+ -)	C	8	(+ -)	LEFT
9	(- -)	7 (U)	LEFT	9	(+ -)	U	9	(- +)	A	9	LEFT	LEFT
10	(+ +)	111 (A)	494 (A)	10	(+ +)	To be sat	10	(+ +)	C	10	LEFT	LEFT
11	(+ -)	40 (N)	304 (D)	11	LEFT	LEFT	11	(+ +)	B	11	LEFT	LEFT
12	(+ +)	68 (D)	331 (D)	12	(+ -)	LEFT	12	(+ -)	D	12	(+ +)	D
13	(- -)	LEFT	LEFT	13	(+ +)(+ -)	N	13	(+ -)	G	13	(+ -)	LEFT
14	(+ +)	36 (N)	LEFT	14	(+ -)	LEFT	14	(+ -)	U	14	(+ +)	A*
15	(+ +)	93 (B)	406 (C)	15	(+ +)	A	15	(+ +)	B	15	(+ +)	C
16	(+ +)	48 (E)	296 (E)	16	(+ +)	E						
				17	(+ +)	LEFT						
				18	(- -)	U (LEFT)						

(N.B. The second Q-sort scores, in brackets, in the 1997-9 'A' level Q-sort column, are the changes made to Q-sorts after the mock examinations: number 6 altered his from negative to positive, and the lecturer altered her prediction, for number 13, from positive to negative.)

As can be seen in this table, the lecturer (second sign in the Q-sort) is more accurate at predicting examination outcome than the students (first sign in the Q-sort). An inference made from this finding is that, wherever possible, the lecturer should share her predictions with students, and encourage them to re-examine their Q-sort statements, pointing out:

(a) Good Learner statements students have placed in their top ten which the lecturer thinks they do not possess; and

(b) Poor Learner statements students have placed in the top ten which show they know some of their shortcomings.

Once students become aware of these inappropriate statements, advice can be given, for example:

(a) Good Learner statements the lecturer sees as inappropriate can be changed to more realistic ones (in the next revised Q-sorts there will be a separate column for lecturer's comments); and

(b) targets can be set and remedial measures suggested to help students change their Poor Learner habits for Good Learner ones (again, there will be a place on the new revised Q-sort for targets agreed between students and lecturer).

However, if lecturers are to help students in this way, the student self-perception/lecturer prediction combination needs to be shown to be an accurate assessment procedure. It was found, with the students remaining in the 1997-9 'A' level cohort long enough to take their examinations, students' predictions, (i.e. assessments concerning their Good Learner qualities and the identification of the types of Good Learner/Poor Learner qualities that would lead to successful/unsuccessful examination outcome) were correct 80% of the time (females 60% and males 100%,

whether for a positive (pass) outcome or a negative (fail) outcome), and that lecturer predictions were accurate with 100% of students remaining in that cohort, after correcting predictions as a result of mock examination scores. With the 1996-8 'A' level cohort, lecturer predictions were accurate 81.3% of the time and student self-perceptions were accurate 56.3% of the time (females 71.4% and males 44.4%). See Table 12(4), below.

TABLE 12(4): Accuracy of student/lecturer predictions for all students remaining on their courses and after correction as a result of mock examination scores.

'A' LEVEL (%)						GCSE (%)					
1996-8			1997-9			1996-7			1997-8		
Lecturer	Students		Lecturer	Students		Lecturer	Students		Lecturer	Students	
	m	f		m	f		m	f		m	f
81.3	44.4 n=4	71.4 n=5	100	100 n=2	60 n=6	76.9	33.3 n=7	42.9 n=7	77.8	66.7 n=3	66.7 n=6
	m and f = 56.3			m and f = 80			m and f = 38.5			m and f = 66.7	

TABLE 12(5): Accuracy of student/lecturer predictions for all students remaining on their courses and before correction as a result of mock examination scores.

'A' LEVEL (%)						GCSE (%)					
1996-8			1997-9			1996-7			1997-8		
Lecturer	Students		Lecturer	Students		Lecturer	Students		Lecturer	Students	
	m	f		m	f		m	f		m	f
81.3	44.4 n=4	71.4 n=5	85.7	50 n=2	60 n=6	76.9	33.3 n=7	42.9 n=7	55.6	66.7 n=3	66.7 n=6
	m and f = 56.3			m and f = 57.1			m and f = 38.5			m and f = 66.7	

(N.B. Since it was only decided in 1998 to change predictions as a result of mock examination scores, changes were made only to the 1997-9 'A' level cohort. The differences in accuracy seen in the 1997-8 GCSE cohort were a result of students not revising for their mock examinations and therefore not fulfilling lecturer predictions. The lecturer did not change her predictions, students worked for the actual examinations and fulfilled lecturer predictions in the long term, accounting for the differences between Tables 12(4) and 12(5).)

With the GCSE students, lecturer predictions were successful with 76.9% of the students in the 1996-7 cohort and with 77.8% of the students in the 1997-8 cohort (see Table 12(4)). The GCSE students in the 1997-8 cohort were more accurate than the students in the 1996-7 cohort (66.7% as opposed to 38.5%). However, females were

only slightly more accurate than males in the 1996-7 cohort (42.9% as opposed to 33.3%) and there were no sex differences found with the 1997-8 cohort. As shown in Table 12(4) and 12(5) on p263, the sample of students remaining on the cohorts was small so the study would benefit from a further replication using larger numbers of students. The current 'A' level group (1998-2000) have stayed at a steady twenty-four throughout this year and may provide more substantial evidence.

Once predictions have been made, intervention can be implemented so students can achieve a successful examination outcome. Intervention was defined in Chapter Seven, p163ff, as the sharing with the students of information obtained from the results of their Q-sorts, SPQ and LSQ assessments together with the lecturer's predictions and a recommendation to attend additional support sessions.

Additional support may be an effective means of helping students to succeed, however, according to the registers, True Positive and False Negative students attended regularly while False Positive and True Negative students did not. One explanation is that False Positive students felt they did not need to go (two students gave this reason to me), whereas True Negative students left college. Perhaps intervention, in the form of discussing students' Q-sorts, can be used to give students the motivation to go to additional learning support sessions where effective help can be given, i.e. once students have been told the predicted outcome of their Q-sort/lecturer assessments, it is hoped that this will encourage them, or even convince them, to go to additional support. However, intervention by means of giving students information about their assessment results (i.e. their SPQ, LSQ and Q-sort results), could prove counter-productive in that when students think they will succeed, they sometimes feel they do

not need extra help, and when they think they may fail, they give up without going to any additional support sessions. This has been borne out by some students' comments. In addition, the Q-sort (although its accuracy as a predictor of students' examination results is variable when compared to the relatively greater accuracy of lecturer predictions) offers a way to elicit students' views about their study approaches: for example, student and lecturer can discuss Q-sort statements about which they disagree; students will be given the opportunity to explain their statements and hear the lecturer's ideas, whether or not they act upon them. In this way, inaccuracies of self-perception can be pinpointed. They may have occurred either because students think they are more (or less) competent than they are or because the lecturer has misdiagnosed the student's competency level. The Q-sort could be used to open up discussion points with students and become a diagnostic tool to be used during the learning process.

A summary of my findings also needs to include any sex differences affecting students' self-perceptions of their study process. Since students, on the whole, tended to predict positive rather than negative outcomes, they were, as a result, less accurate than the lecturer (see Table 12(4), p263 for the percentage of correct predictions). This was seen to be the case with all four cohorts sometimes for mock and sometimes for actual examination predictions, and especially with some of the male students. In two out of four cohorts, females showed themselves to possess more accurate self-perceptions than males and this was most pronounced with the 1996-8 cohort of 'A' level students where only 44.4% of males were correct as opposed to 71.4% of females (see Tables 12(4) and 12(5), p263).

This was also found to be the case with the GCSE students, but the results were less pronounced (42.9% females as opposed to 33.3% of males). However, with the 1997-8 GCSE students there was no difference found, and with the 1997-9 'A' level students, males were better than females, though this result is less reliable since the number of male students was two and there were six females (later reduced to five since number 10 sat the mock but not the modular examination). It is possible that the females have a more realistic idea of their abilities than the males. However, since these findings were not replicated with the 1997-9 'A' level and 1997-8 GCSE cohorts, more research needs to be done on sex differences.

In connection with positive and negative predictions and accuracy of self-perception, an interesting finding with the 1997-9 'A' level cohort was that when students were asked about their confidence levels in their examination predictions, those who predicted a lower examination grade gave a higher confidence level for gaining that grade, whereas students who predicted they would achieve a higher examination grade, gave a lower level of confidence. There appeared to be a trade-off between predicted examination results and confidence levels where an inverse relationship was detected.

The Q-sort, as used by Rogers, measures the improvement in a client's self-concept as a result of counselling. Clients either reduced their concepts of their ideal selves or increased their opinions of their actual selves, and became more congruent (Rogers (1954, 1959)). It may be the case that students' examination predictions, if too high, may become incongruent with their knowledge of their actual capability of achieving that grade. More research needs to be conducted into predicted outcomes, confidence levels and congruency. It would be expected that True Positive and True Negative

students would show the highest levels of congruency but causal links have yet to be determined.

Section One of the Summary of findings has discussed student self-perceptions, lecturer predictions, sex differences, and the usefulness of the Q-sort in highlighting these self-perceptions. Section Two will examine the validity and reliability of the Q-sort by comparing it with Biggs's Study Process Questionnaire and Honey and Mumford's Learning Styles Questionnaire.

(2) The reliability and concurrent validity of the Q-sort when compared with the SPQ and LSQ.

The concurrent validity of the Q-sort was tested by comparing it with the SPQ and LSQ. In Chapter Five, p113, it was mentioned that the SPQ, LSQ and Q-sort could be used as a three-test battery since there is a certain complementarity between the tests in that the SPQ tests approaches to learning by dividing students into Surface, Deep and Achieving processors, the LSQ measures underlying dispositions in learning styles, and the Q-sort, as a self-generated learning inventory, utilises the students' own perceptions of their study approaches. Thus, by using the three tests, the following can be obtained:

(a) a standardised view of the students' approaches to learning (SPQ) - a diagnostic measure of mismatches between motive and strategy in study approaches based on students answering pre-selected questions about their performance on learning tasks;

(b) a standardised view of students' dispositions and general attitudes to learning (LSQ) - a measure of learning styles based on students answering pre-selected questions about underlying dispositions; and

(c) a subjective and individual student-generated inventory of their self-perceptions about their study approaches, the Q-sort provides a medium for students to formulate self-descriptive study statements which, when used in conjunction with lecturer predictions, could provide a diagnostic measure of part of their learning process and accurately predict examination outcomes.

It was hoped that the SPQ and LSQ would serve as a baseline against which to compare Q-sort findings in that they would supply some basic information about the cohorts of students in this study, and since the originators of both questionnaires claim that these tests are reliable and valid, it was also hoped that the Q-sort could be validated concurrently with the SPQ and LSQ.

It was found that students in this study who left their college courses registered as normal or below normal on the Achieving dimension of the SPQ (p202). (This did not infer, however, that everyone with that profile left the course.) Otherwise the SPQ results were inconclusive due to their inconsistency, for example, some students with good Motive and Strategy matches and high Achievement profiles were successful (as Biggs (1987) would suggest), but on the other hand, some were not. LSQ findings were also inconsistent in that there appeared to be little similarity between students' preferred learning styles and their examination grades.

On the other hand, the Q-sort/lecturer assessment has shown itself, in this study, to be not only a reliable selector of those students most likely to leave the course, but also a more successful predictor of examination outcome than either the SPQ or LSQ. Lecturer predictions, on their own, were more reliable in this respect than students' Q-sort statements, but these latter did highlight certain aspects:

(1) where students and lecturer agreed on outcome (i.e. True Positive and True Negative) the statements revealed what students were doing to help or hinder their progress; and

(2) where students and lecturer disagreed on outcome (False Positive and False Negative) the statements revealed where discrepancies could be found (i.e. poor learners who mistakenly thought they possessed Good Learner qualities or good learners who overcritically reported having many Poor Learner ones), thus enabling the lecturer to raise these points with the students and discuss them.

It may, therefore, be possible to tentatively suggest that, since lecturer predictions were accurate as were some student predictions, given the Q-sort needs further replications, it may eventually show predictive validity. However, regarding concurrent validity of the Q-sort, it would need to be compared with measures other than the SPQ and LSQ since these latter comparisons were inconsistent.

Regarding reliability, the point made by Biggs (1987) about his SPQ would also apply to the Q-sort. He makes the distinction between test/re-test reliability (which, he says, may not be high for his SPQ considering that students' motives and strategies change over time, and indeed are expected to change) and the internal consistency (which, he claims is high for the SPQ and shows the extent to which the various items on the questionnaire consistently measure the same thing). With the Q-sort, the same argument applies in that, should the students' self-perceptions about their learning change over time, then so will their Q-sorts, thus test/re-test reliability may not be high. However, since many students (all except one of the last cohort of 'A' level students) did not wish to change their Q-sorts in their second year, their self-perceptions of their study approaches may have remained constant over time. Regarding the internal

consistency of the Q-sort, this would depend upon the consistency of student perceptions about these study approaches and cannot be measured by looking at split-half combinations of Q-sort statements since all are individual and contain Poor Learner as well as Good Learner descriptors.

Reason and Rowan (1990), made a distinction (see p215-6 of this thesis) between internal and external validity It was suggested that any replication of this research should attempt to answer two questions, namely:

(1) Will the Q-sort make a difference in understanding students self-perceptions of their study approaches (internal validity)? and

(2) Could the findings be generalised and to which populations, settings, treatment and measurement variables (external validity)?

Until further replications lend greater confidence to the results, it can only be tentatively concluded that:

(1) With regard to internal validity, the Q-sort elicited student self-perceptions about their study approaches which, when combined with lecturer assessments, has shown itself to be a reliable predictor of examination outcome (thus showing reliability and validity) especially with the True Positive and True Negative students. It has also revealed consistently accurately (with False Positive and False Negative students when lecturer and student disagree) where the discrepancies lie.

(2) With regard to external validity, since the Q-sort is a technique for eliciting information from students in an individual way, the statements of one student cannot be generalised to other students. However, the technique, itself, can be used by other populations, in other settings and to measure a variety of attitudes. For instance, it can be used with young children (in spoken and in written form). It can also be used to

elicit information in areas other than education, e.g. the revised version of the Q-sort, adapted for this thesis, could be used in the counselling situation and perhaps be more speedy and effective at showing differences between clients' real and ideal selves.

Having summarised my findings, the next section will relate the summary of these findings to the background research literature as a prelude to discussing the contribution they make to the general body of knowledge in this area of learning, and also their implications for future research.

12.2 Relating these findings to the background research literature

Table 12(6) below, first shown as Table 3(5) in Chapter Three, p73, is reproduced here to remind the reader of the background literature discussed in this thesis.

TABLE 12(6): Summary table of background research

CATEGORY 1 - BACKGROUND RESEARCH INTO THE LEARNING PROCESS
PIAGET (1958,1972)
SKINNER (1968,1971,1974,1981)
ROGERS (1951,1959.1974,1983)
CATEGORY 2 - TASK-BASED MEASURES FOR QUANTIFYING STUDY APPROACHES TO THE LEARNING PROCESS
MARTON AND SALJO (1976,1984)
BIGGS (1976,1978,1987,1993)
ROSSUM AND SCHENK (1984)
CATEGORY 3 - DISPOSITION-BASED MEASURES FOR QUANTIFYING THE LEARNING PROCESS
HONEY AND MUMFORD (1986,1992,1995)
HUDSON (1991)

The background research shown in Table 12(6), above, is divided into three categories, i.e. three theoretical approaches to describing the learning process; research into task-based measures for quantifying study approaches; and disposition-based measures of learning.

Piaget, Skinner and Rogers provided the theoretical approaches underpinning this thesis and Table 12(7), p272, which was first shown as Table 1(1) in Chapter One, p22, is also reproduced here to remind the reader of some of the points of comparison between the theories while some aspects of them are being compared with the findings of this thesis.

TABLE 12(7): Points of comparison between Piaget, Skinner and Rogers.

PIAGET (1958,1972)	SKINNER (1968, 71, 74, 81)	ROGERS (1951, 59, 69, 74, 83)
Mastery model.	Reinforcement model.	Self-theory model.
Homeostasis/drive towards making sense of environment.	Positive and negative reinforcement and punishment.	Building and enhancement of self-esteem.
Teacher/learner-centred.	Teacher-centred.	Learner-centred.
Discovery learning (individually paced).	Programmed learning and teaching machines.	Safe and trusting environment.
Internal schemas and concepts.	External reinforcement.	Congruence between internal and external.
External/internal locus of control (discovery learning shared by learner and teacher).	External locus of control (teacher-led).	Internal locus of control (democratic teaching style).
Child active and curious.	Child accurate but passive.	Child learning from choice (for self-enhancement).
Goal-directed play - developmental and maturational.	Goal-directed programmed learning.	Non-directive - to aid self-enhancement.
Matching stimuli to developmental phase (stage-determined).	Learning in small steps which can be positively reinforced.	Unconditional positive regard.

The Q-sort (Stephenson (1953)), albeit in a different format, was used by Rogers to detect changes in his clients' self-concepts as a result of client-centred therapy, i.e. to measure the congruence between how clients feel they are and how they'd like to be. These feelings were expected to become more congruent as a result of therapy (Rogers (1951)). The Q-sort has been changed, for the purpose of this thesis, to individually measure students' self-perceptions of their study approaches, though not with the intention of measuring congruence levels but of enabling students to focus upon aspects of their learning habits which they can either maintain or change.

Rogers (1969, 1983) differentiates between teachers and facilitators of learning. He states that the questions asked by teachers are different from those posed by facilitators, i.e. teachers might ask, 'How can I instruct in such a way that he or she will gain the knowledge that should be gained? How can I best set an examination to see whether this knowledge has actually been taken in?' (Rogers (1983, p135-6)). On the other hand, facilitators will ask, 'What things puzzle you?.....how can I help him or her find the resources.....which will help them learn in ways that will provide answers to the things which concern them, the things they are eager to learn?.....How can I help them evaluate their own progress and set future learning goals based on this self-evaluation?' (Rogers (1983, p136)).

The Q-sort devised for this thesis (modified from the Stephenson (1953) Q-sort which measures congruency between the various aspects of the self) enables students to concentrate upon evaluating their own progress through focusing upon their study approaches. Thus it bridges the gap between a student's inner self and that aspect of the student which attempts to adapt to the educational system, i.e. it helps students evaluate their own progress and set future goals based on this self-evaluation (Rogers (1983, p136)) thus endorsing Rogers's views of student-centred learning.

It could also be suggested that when introducing the idea of adaptation to a system, the Q-sort echoes Piaget's definition of intelligence as adaptation to one's environment: 'An organism is a machine engaged in transformations.' (Piaget and Inhelder (1973)). In this respect, Piaget is at variance with Rogers, who saw the difference between how a person was, and how they would like to be, as incongruence, whereas Piaget saw the same difference as a spur to encourage students to close the gap by adapting their learning experiences to bridge it. The modified Q-sort can be used both to measure

students' congruence and incongruence with regard to their views on their study approaches (congruence being shown by how many Good Learner statements appear in the first ten Q-sortings for each student) and also to show how each student is attempting to structure their study approaches to help cope with the learning situation for each academic subject (in other words, how an attempt at adaptation to the learning environment is revealed in Q-sort comments). In this respect, the modified Q-sort has bridged the work of Rogers and Piaget.

Skinner, on the other hand, would suggest that the questions posed by teachers, as opposed to those asked by facilitators (as mentioned on p272-3), would appear to be closest to the tenets of behaviourist psychology. For instance, since Skinner believed that behaviour could be controlled by the manipulation of environmental events (Skinner (1971)), it would follow that he would expect teachers to ask such questions as, 'How can I instruct in such a way that he or she (the student) will gain the knowledge that should be gained?' and 'How can I best set an examination to see whether this knowledge has actually been taken in?' (Rogers (1983)). (Rogers (1983) makes a distinction between those questions asked by teachers and those by facilitators of learning, p272-3 of this thesis.) Since the Q-sort is created by each student as a set of individual statements, it is under their control, not the teacher's; however, it can also be used by facilitators of learning to enable them to monitor student progress. Thus teachers will also have some control since the Q-sort can be used as a means of measuring students' attitudes to their learning and comparing them to the lecturer's measure of the progress of the student, i.e. assignment marks and examination results. Intervention measures can be suggested and, in this respect, the teacher does have some control over student progress though it is not the teacher-led control suggested

by Skinner (1971); rather it is the teacher's attempt to help students either improve on weaknesses already identified or to highlight discrepancies where students think they are more competent than they are. The lecturer prediction of examination outcome, added to the Q-sort and meant to be used in conjunction with the latter, allows the lecturer to reply to students' Q-sort statements and, as such, gives students feedback on their self-perceptions of their progress. Perhaps this dual control situation, whereby the student and teacher have shared ownership of the learning situation, suggests a possible way forward, enabling the student to express views on their study approaches while also hearing the lecturer's opinions together with a predicted outcome for examination performance.

In summary, my use of the Q-sort has combined various tenets of the three approaches, thus:

Rogers use of the Q-sort enabled clients to evaluate themselves on the congruence between their real and ideal selves. My modified Q-sort enabled students to focus upon, and evaluate, their study approaches. This has led to students making adaptations to their learning capabilities by adding to their Good Learner qualities (or conversely, improving their Poor Learner qualities). This uses the Piagetian idea of increasing knowledge by enabling students to interact with, and adapt to, the environment. In addition, a Skinnerian approach has been incorporated in that lecturer predictions have also been taken into consideration, calculated from essay and mock examination marks. Whereas Rogers, and to a certain extent Piaget, attempt to view learning from the learner's perspective, Skinner views it from the teacher's.

Moving from the seminal theories of learning explored in Chapters One and Two, research into measuring the learning process was then examined.

Rossum and Schenk (1984), made the distinction between the first-order and second-order perspectives with regard to human learning research. They defined the first-order perspective in terms of how learners functioned, together with details about their study environment. This perspective gave an outsider's view of learners and how they fitted into given headings (similar to Skinner's idea of a prescriptive learning process, as in programmed instruction). Rossum and Schenk (1984) defined the second-order perspective as researching learning from the learner's perspective, i.e. Rogers's student-centred learning would be an example of this perspective.

Some recent research, already discussed in this thesis, uses the first-order perspective; for example, Biggs (1987) researched students' study approaches, in a task-based way, by asking pre-selected questions, while Honey and Mumford (1986) did so in a disposition-based manner. Biggs (1987) and Honey and Mumford (1986) both used a questionnaire-based approach. With Biggs's SPQ (1987), students' answers are given on a five-point scale, whereas Honey and Mumford's LSQ (1986) merely require yes/no answers. The Q-sort monitors learning from a second-order perspective, and because it is constructed differently by each student, it offers more scope for varied responses.

The next section will evaluate Q-sort findings, discuss ramifications and suggest implications for future research. However, before beginning that section, a summary follows of the researchers mentioned in this section.

PIAGET - maturational; biological; describes the learning process; developmental; interaction with, and adaptation to, the environment; maturation is the arena through which development occurs.

SKINNER - environmental; teacher-led and controlled; programmed learning; deterministic.

ROGERS - environmental; student-led; teacher acts as facilitator; emphasis on free will and student-centred learning.

BIGGS - a pre-labelled, task-based, standardised measurement of student approaches to learning; a diagnostic tool; students choose from prescribed and pre-labelled measures of task performance; can be used to tutor and change students' study processes; from learner's perspective only within certain prescribed parameters.

HONEY AND MUMFORD - a pre-labelled, disposition-based, standardised measurement of students' predispositions for learning; a diagnostic tool; students choose from pre-set questions; students' perceptions measured only within certain prescribed and pre-labelled parameters.

Q - SORT - assesses the learner's perspective through the learner's own descriptors; shows each individual student's unique perception of his/her study approaches; not pre-labelled or prescribed; students formulate their own statements.

(N.B. These approaches can be used to complement one another.)

12.3 An evaluation of the Q-sort and a discussion of the ramifications and implications for future research.

Q-sorts used in the 1950s were composed of cards which were descriptors of personality, e.g. 'Is friendly', 'Is cheerful,' and thus, while comparisons could be made between people (since the descriptors were the same for each person) it was designed to measure various characteristics within the same individual. The set of cards was

designed to be placed in nine piles numbered from one (least like the person) to nine (most like the person).

However, the Q-sort modified for use in this thesis, was carried out differently. Since each student constructed their own descriptors, only intra student comparison was made based on the number of Good and Poor Learner statements in the first ten and their rank order. The contents of statements were, therefore, not compared between students. The sets of descriptors created were more like Kelly's constructs in his Repertory Test (Kelly (1955)). Kelly (1955) believed that the personal constructs elicited from people showed how they interpreted and construed their interpersonal world. Kelly's Repertory Test was therefore designed to assess an individual's constructs and, in this respect, is like the modified Q-sort used in this thesis. In the same way that certain themes can be explored which characterise an individual's construct system (Kelly (1955)), certain recurring themes can be detected when exploring a student's Q-sort statements.

On the other hand, Kelly's Repertory Grid can be analysed using mathematical techniques, whereas the Q-sort scoring would need to be further developed to enable the resulting data to be statistically quantified. One way the Q-sort, in its current form, could be statistically quantified, would be to compare the Good and Poor Learner rankings in the first ten using a Wilcoxon Signed Ranks Test (Radford and Govier (1987, 1991)) which would detect differences in rankings between the first ten statements (which should be Good Learner ones) and the second ten (which should be Poor Learner ones). In this way, significance could be detected within an individual student's rankings rather than between student rankings. To make a comparison between students would involve creating a uniformity in the data by standardising the

Q-sort statements in a way which would facilitate such statistical quantification, but the very act of standardisation would therefore limit the Q-sort's individuality. Indeed, it would also make the Q-sort a culture-specific test in that the closer the standardisation to a population, the more culture bound the test would become. Thus the Q-sort, as it is, may be said to be a culture-free method of assessing a student's ideas about learning since it is as individual as each student completing it, whatever their culture, sex or age.

However, since each Q-sort is only as reliable as the student constructing it, then it could reflect inconsistencies in students' statements about their learning for various reasons such as:

(a) difficulty in communicating ideas about what makes a Good Learner;

(b) response bias where students make statements which will give the researcher a favourable opinion of them;

(c) to cover feelings of insecurity or inadequacy; and

(d) distorted self-perceptions.

Even when students have decided upon the qualities they believe make a Good Learner, they may inaccurately assess themselves as having these good qualities when they do not, or of not having them when they do.

The timing for the construction of the Q-sorts may also be important in that students' ideas about their learning qualities may change with time between the beginning and end of the course, after taking a modular examination, or once they know their results.

It was finally decided that it was not the Good Learner qualities the students constructed (most students gave similar characteristics) that were as important in predicting examination outcome as whether or not students thought they possessed

these qualities, especially when compared with the lecturer's predictions for these students. This had most important implications for students who thought they did possess Good Learner qualities when they did not (the false positives). The various permutations of learner are shown in Table 12(8), p280, to remind the reader.

TABLE 12(8): Permutations of learner types as shown by Q-sort/lecturer predictions

	Do possess Good Learner qualities as shown by lecturer predictions	Don't possess Good Learner qualities as shown by lecturer predictions
Students think they possess Good Learner qualities	**GOOD LEARNER (True Positive)**	**POOR LEARNER (False Positive)**
Students don't think they possess Good Learner qualities	**GOOD LEARNER (False Negative)**	**POOR LEARNER (True Negative)**

Any changes in a student's Q-sortings would mean a change in that student's self-perception. In addition, when students' confidence levels were tested with regard to their predictions for various examination grades, it was found that those students who predicted higher grades gave lower confidence levels than students who predicted lower grades (see p247 and 248 for a discussion of this finding together with Table 11(8)). It was stated in Section 6.3 (p125 and 126) that some students mentioned they delayed revising for their examination until a week before it was due to be taken. One tentative conclusion reached was that students may be trying to prevent reducing their self-concept by paving the way for viewing any subsequent failure in their examination as lack of preparation rather than lack of ability. Perhaps a future study could investigate this latter issue together with a study of the different confidence levels students give for gaining various grades. It may be the case that if students would rather be perceived as being unprepared than lacking in ability, then perhaps their low

levels of confidence in gaining high grades and their higher levels of confidence in gaining lower grades might be seen as both a self-serving and self-handicapping strategy designed to maintain a homeostatic balance in their value system and keep their self-concept at an acceptable level.

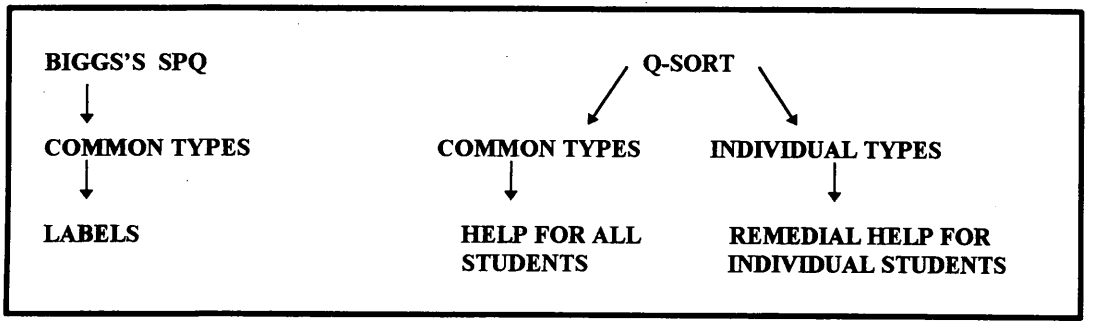
Harter (1982) devised a measure of self-esteem in children consisting of four subscales measuring three aspects of a child's feelings of self-worth: cognitive, social and physical. Later, Harter (1987) asked children to rate themselves in five areas: scholastic competence, athletic competence, social acceptance, physical appearance and behavioural conduct. It was found that when children perceived themselves less competent in an area they thought to be important, their self-esteem suffered more than in an area thay thought to be less important. Marsh et al. (1991) found that children from about eight years were able to integrate information from several different domains of their lives into a general assessment of their self-worth. Malim and Birch (1998, p528) state that: 'The research findings in relation to domain specificity of self-esteem are important and should be understood by teachers and other people who work with children.'

It may be the case that students who fail in a subject they consider to be important attempt to protect their self-esteem by trying to convince themselves that they have failed because they did no work. If they thought they had failed through lack of ability, this would have reduced their self-esteem to an unacceptable level.

A future study could also investigate the various types and degrees of intervention sufficient to help students maximise their chances of having successful outcomes to their studies. Biggs's SPQ (1987) was designed as a diagnostic tool to determine the type of remedial help given to students, primarily to improve the efficiency of their

preferred study approach. However, the SPQ created labels and then compared each student to the created typologies. This homogenised out individual student types. The Q-sort, on the other hand, enabled students to formulate their own perceptions of their learning process, thus creating a baseline against which they could compare later Q-sort changes. In addition, similarities and commonalties could also be identified if a method of categorising students' Q-sort statements was devised. However, this would be done, not to homogenise out individual factors, but to identify group factors which could be remedied by group teaching. Individual factors could be identified and improved through one-to-one help. Diagram 12(1), below, shows the basic difference between Biggs's SPQ and the Q-sort.

DIAGRAM 12(1): Basic differences between Biggs's SPQ and the Q-sort



Research is still continuing into Biggs's SPQ for purposes of replicability and falsification. However, the main thrust of this research is aimed at examining the SPQ as a measure of learning typologies (Christensen (1991)), or at creating a different scale of measurement (e.g. the interval scale) for the inventory (Waugh and Addison (1998)). More research needs to be done on alternative, and complementary,

measures for gathering qualitative data on the learning process, the type of data the Q-sort would elicit from the students.

The information gained in the past three years from using the Q-sort with a range of tertiary students in two colleges has proved useful but certain limitations need to be considered. Since the main study was a longitudinal one, the numbers in the samples - 31 in the 1996-8 cohorts (16 'A' level and 15 GCSE students), and 33 in the 1997-9 cohorts (18 'A' level and 15 GCSE students), diminished because students dropped out of college and/or dropped out of the research project. The final sample numbers were 22 for the 1996-8 cohorts (9 'A' level and 13 GCSE students), and 16 for the 1997-9 cohorts (7 'A' level and 9 GCSE students - the eighth 'A' level student completed later). Table 12(9) below, shows these figures:

TABLE 12(9): Number of students beginning and completing the study.

	Number began	Number completed
1996-8 cohorts	**31**	**22**
'A' level	**16**	**9**
GCSE	**15**	**13**
1997-9 cohorts	**33**	**16**
'A' level	**18**	**7 (the eighth student will complete later)**
GCSE	**15**	**9**

In addition, formulating statements for Q-sorts requires a certain level of verbal ability in students. Perhaps a reduction of the number of statements to be generated would help since some students find ten Good Learner and ten Poor Learner statements too many to create and reflect upon. The effort required may also result in a lack of

enthusiasm, on the part of students, for altering their Q-sorts in the second year. Although most students gave the reason that they did not have any alterations to make to their Q-sorts, a lack of enthusiasm for this task cannot be ruled out. The students who did make changes were all highly motivated students with an interest in learning about their study approaches. In addition, if the Q-sort was to be used with younger children, an adult would need to help them express what they wish to say and this would be time-consuming.

With regard to the predictive validity of the Q-sort/lecturer assessment, the lecturer predictions, based upon the students' assignments throughout the year, appear to be more accurate predictions than the Q-sort statements especially with some of the male students. Thus its predictive validity is only as accurate as the self-perception of the students concerned. However, it could be used, in conjunction with lecturer predictions, to add a more qualitative dimension to UCAS forms. Indeed, the Q-sort and the lecturer assessment, when in agreement, might provide a strong indicator of a student's future performance in examinations and thus give admissions tutors in universities a more accurate idea of how each student will perform in their 'A' levels.

The word 'education' comes from the Latin root 'educo, educare' meaning to 'draw out' or 'to lead out' (Kidd (1957)). Some teachers, working on Piagetian lines, would see this process as a way of bringing students out of one stage into another through the processes of assimilation and accommodation, (Piaget (1958, 1972)). Other teachers, working on Skinnerian lines, would see this process as teacher-led, a 'leading out' or leading forth by the teacher, (Skinner (1968, 1971,1974, 1981)). Rogers (1951, 1959, 1974, 1983), would see the process as one of providing an environment to facilitate student learning. Biggs (1987) and Honey and Mumford

(1986) would measure this process with the view to offering remedial assistance to students. The revised Q-sort (1999) would attempt to elicit a student's self-perceptions of their study approaches. However, to encapsulate those approaches into typologies would be like trying to return an inflated dinghy into its original container. Some parts will fit into place, others will not, because once released, it takes on a life of its own. It becomes an unknown entity. Perhaps the learning process can only be charted in part, like a cartographer mapping an unknown continent. Each cartographer may chart a small part and add it to another part until, finally, the continent is revealed. Whereas, with the SPQ and LSQ, Biggs and Honey and Mumford were the cartographers, with the Q-sort, this task falls to the students to perform.

To reflect upon the part of the map revealed by this study, I will examine how this research can influence my practice. Since it was carried out by a working lecturer, it is pertinent here to outline some tentative changes in my practice which can be defended by data generated in this study.

This thesis began with the author reflecting upon key influences in her early years of teaching - Piaget, Skinner and Rogers. It then looked at ways in which the learning process can be measured by teachers - the SHEIK, Biggs's SPQ and Honey and Mumford's LSQ and finally created a new version of an old technique (the Q-sort) for eliciting data from students on their learning habits.

While developing and using this latter technique, observations were made of the extent to which this study has altered and refined the writer's approach to the learner and certain points can be made:

(1) while some students accurately assess their learning habits and correctly predict success (True Positives) or failure (True Negatives), others do not (False Negatives

and False Positives). Thus it is necessary to complement students' Q-sorts with the lecturer's predictions which have been shown to be more accurate;

(2) the Q-sort can best be used in a diagnostic way to examine student self-perceptions, accurate or otherwise, so that they can be reinforced, or changed; this can be used in conjunction with the learning support system in use at a college;

(3) students' self-perceptions cannot be studied in isolation from other factors such as assignment marks, mock examination results and lecturer predictions; thus the Q-sort can also be used in conjunction with other assessment procedures like Biggs's SPQ as part of a test battery; and

(4) any measure of students' self-perceptions will benefit from being flexible enough to allow growth and change among these perceptions as a result of assignment and mock examination marks so that students can review them periodically throughout their courses; the Q-sort lends itself to this type of ongoing self-reflection.

In conclusion, the work of all the researchers in this study contributes to a more complete understanding of the learning process since none is mutually exclusive of the rest. It is hoped that eventually, after further research into the use of the Q-sort as a device for charting students' self-perceptions about their study approaches, this technique can be used to contribute, in the above ways, to the existing body of research.

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APPENDICES

APPENDIX 1

You are being asked to take part in a two year study to pilot a new learning inventory. Although your name will be required on the inventory so that your opinion can be sought at periodic intervals, your inventory will be confidential and you have the right to withdraw from the study at any time.

INSTRUCTIONS

(1) On the sheet marked 'SELF-GENERATED LEARNER'S INVENTORY - A', you will find the phrases, 'A good learner...' written 10 times and 'A poor learner...' written 10 times. Please generate 20 statements about your view of learning, 10 of them beginning, 'A good learner...' and 10 beginning, 'a poor learner...'

(2) Next, on the sheet marked 'ORDERING OF SELF-GENERATED STATEMENTS - B,' order these statements from those most like you to those least like you, both for the way you feel now and for the way you would like to be.
(1ST = those most like you to 20TH = those least like you.)
When completed, there should be 6 different orderings: 2 for each 'A' level subject, the first ordering for each subject being 'Am now' and the second ordering being 'Would like to be.'

Thank you for your co-operation.

SELF-GENERATED LEARNING INVENTORY

Name:.....

Subject and Course:.....

		1 - 20	1 - 20
1	A good learner		
2	A good learner		
3	A good learner		
4	A good learner		
5	A good learner		
6	A good learner		
7	A good learner		
8	A good learner		
9	A good learner		
10	A good learner		
11	A poor learner		
12	A poor learner		
13	A poor learner		
14	A poor learner		
15	A poor learner		
16	A poor learner		
17	A poor learner		
18	A poor learner		
19	A poor learner		
20	A poor learner		

SELF-GENERATED LEARNER'S INVENTORY - A

Name of student:.....

Subject and Course:.....

STATEMENT NUMBER	STATEMENT
1	A good learner
2	A good learner
3	A good learner
4	A good learner
5	A good learner
6	A good learner
7	A good learner
8	A good learner
9	A good learner
10	A good learner
11	A poor learner
12	A poor learner
13	A poor learner
14	A poor learner
15	A poor learner
16	A poor learner
17	A poor learner
18	A poor learner
19	A poor learner
20	A poor learner

ORDERING OF SELF-GENERATED STATEMENTS - B

Name of student:.....

Subject and Course:.....

ORDER 1ST-25TH	'A'LEVEL/GCSE PSYCHOLOGY		SECOND 'A' LEVEL/GSCE		THIRD 'A' LEVEL/ GCSE	
	Am now	Would like to be	Am now	Would like to be	Am now	Would like to be
1ST	,					
2ND						
3RD						
4TH						
5TH						
6TH						
7TH						
8TH						
9TH						
10TH						
11TH						
12TH						
13TH						
14TH						
15TH						
16TH						
17TH						
18TH						
19TH						
20TH						

APPENDIX 2

DISCUSSION TOPICS

1) YEAR'S WORK

Ordering notes in file
- arranged chronologically, not by topic
- markers left if work temporarily removed

Note-taking from textbook
- students read text before lecture
- highlight relevant areas in colour
- teacher identifies important points
- teacher explains difficult concepts
- students formulate notes/mind maps

Essay-writing
- best method of ensuring students read text
- students read complete text before beginning essay otherwise they are less selective and copy text verbatim
- helps get notes together and test mind maps
- helps speed up thought processes
- helps students to discipline themselves
- helps students to understand new concepts and ideas
- helps them to learn and remember descriptions of research

Lectures
- good if they explain the text
- need to contain humour and anecdotes

- students gain maximum benefit if they read the text first

Discussion

- popular with students
- enables students to test their ideas
- helps students to exchange ideas

Videos

- beneficial when informative
- enables students to have vicarious experience of brain functions, experimental techniques, human and animal behaviour, beyond the scope of the classroom
- uses up-to-date technology

Syllabus

- students preferred social to comparative psychology
- they liked topics related to themselves
- they liked topics which could be understood initially at a 'common sense' level.

Textbook

- witty, interesting, good examples, good essay questions
- it encourages students to read more chapters
- it enables students to find out about themselves

2) REVISION

Note-making

- mind maps
- linear notes
- regular reviews needed
- wall charts made
- study skills 'carried over' from GCSE

	- revision per se, left to last minute
Mind maps	- better for some subjects, e.g. Psychology, than for others, e.g. Chemistry
	- all the information can be displayed on one page and more information can be added
	- linking ideas can be seen
	- prior knowledge is helpful in creating the inner spokes of the mind map
Mnemonics	- interactive imagery
	- rhymes
	- rote learning
	- mind maps on walls
	- regularly reviewing work
	- inventing stories
Time questions	- helpful to use revision texts
	- helpful to attempt time questions
	- practise as often as possible
Reading good essays	- helps students to understand what is required
	- increases within-group co-operation
	- 'Psychology Review' quarterly magazine is good for giving model answers, examiners' comments and definitions of Skill A and Skill B activities.

3) EXAMINATIONS

Mock

- some students were very nervous
- some answered the wrong questions
- some ran out of time
- some wrote irrelevant answers
- some forgot research, or invented it

Real exam

- students very nervous
- conflict between time to be allotted to the revision of each subject
- need for more self-discipline to keep to a revision schedule
- anxiety over understanding the meaning of some of the questions
- anxiety that, in the structured questions, they would be unable to answer both parts
- mistakes made in the mock had alerted them to: answer the correct question, revise more thoroughly, memorise research more carefully, practise more time questions, and use their time more effectively during the exam.

APPENDIX 3

SUMMARY OF TAPED GROUP DISCUSSIONS

1) YEAR'S WORK

Making Notes in Files - Notes tended to be arranged in chronological order, term by term. If notes were removed for any reason, some students left markers to show where notes should be returned. This looked neat and students could go to any topic by remembering the date it was covered. However, I pointed out that some subjects were returned to, and therefore covered more than once. It might have been a better idea to file topic by topic.

Note-taking from the text book - all students agreed that they preferred me to go through the text and highlight the important areas, explaining them as I went along. They then highlighted, in colour, their own copies of the text book and then either made reduced notes from the text or created mind maps. Some students suggested that they preferred to read the text before I went through it so that they were already aware of the parts they didn't understand and were primed ready for my explanation. Some students said they read other texts and others also added that if they did not understand anything, they were in a position to ask a friend or relative for help.

Essay-writing - all the students agreed that this was the best way of making them read the textbook. Students said one mistake they are now learning to avoid is that of not beginning to write too quickly and therefore writing, verbatim, irrelevant ideas. Indeed, they saw the benefit to be gained by reading the textbook first, and planning what should be written.....As one student said, "Essays make you read all you've got

to write about first." Students felt that essays were essential for helping them get their notes together and enabling them to learn how to present their ideas. Essays also helped them to understand new concepts and ideas. It also enabled them to practise the Skill A activities (describing the research) and Skill B activities (evaluating the research and reaching novel conclusions by synthesising ideas). The students also thought that essay-writing was essential for speeding up thought processes as practice for writing examination answers. Essays also helped them to learn, and to remember descriptions of research as well as to test out their mind maps.

Lectures - lectures were good if they explained the textbook, contained humorous comments and anecdotes and kept extraneous, confusing, psychological, subject-related concepts to a minimum. Students said they gained optimum benefit from a lecture if they had read the relevant material in their textbooks prior to the lecture.

Discussions - these were popular with the students who remarked that they were excellent and enabled them to hear other points of view and to absorb other students' ideas. It also allowed them to try out their ideas by 'bouncing' them off others.

Videos - students liked these and thought them 'good' and 'beneficial', when informative. It enabled them to vicariously experience research, experimental techniques and concepts in biological psychology, ethology and comparative psychology which could not normally be demonstrated in the classroom. Also, brain functions could be explained using up-to-date technology not available in colleges.

Opinions on the syllabus - students preferred social psychology to comparative psychology. The reasons they gave were that they enjoyed topics which could be related to themselves and could be understood, initially, at a 'common sense' level.

Comparative psychology had only vague and barely discernible links with human behaviour.

Opinions on the textbook - the new textbook for the modular 'A' level (A.E.B. course) is entitled, " 'A' Level Psychology", by Mike Cardwell, and it received an emphatic thumbs up. Student comments included such comments as: 'witty', 'interesting', 'excellent', 'best text book of all the 'A' level subjects', 'good examples given in the text', 'good essay titles given at the end of each chapter', and 'not too much jargon which, when used, is well explained'. The chapter sub-headings lend themselves to mind-mapping, and the summary at the end of each chapter is very helpful. In addition, the students have read more chapters than those set down in their part of the syllabus. This is because they have wanted to find out more about themselves and have commented that some chapters have made compulsive reading.

2) REVISION

Note-making - students either formulated mind maps or reduced their notes to linear notes or trigger words on file cards. Some put these on the walls of their home and reviewed them regularly, especially at times when they were bored and their brains were searching for stimulation, i.e. when waiting for a kettle to boil, in the shower, etc. Wall charts in one subject were replaced after that examination, by wall charts for another subject. (I suggested that the replacements should be in different places to avoid confusion.) The students who had developed mind-mapping skills found them very useful because all the information was in colour, on one piece of paper, and links could be clearly seen.

Some students had developed study skills for their GCSEs and either kept them, or slightly modified them for 'A' level. These students were wary of any radical change. Many students revised in groups, or with a friend. Some asked relatives to help them review the material and question them, though admitted that they became frustrated if parents became too interested and asked simple questions on their own behalf. They considered that this was a waste of their revision time. (I pointed out that it was probably helping students to learn since teaching others (i.e. their parents) is an excellent way of reviewing information.)

Most students admitted to leaving revision, per se, until the last minute because they worked better under pressure.

Mind maps - students either loved mind maps, or strongly resisted them, preferring linear notes. Some students used mind maps in some subjects (e.g. psychology), but not in others (e.g. chemistry). (N.B. I have often entertained the thought that scientists were more rigid and less accepting of mind maps than other students, but it may be the case that they find mind maps difficult to create for science subjects. However, while some science students resist doing mind maps in psychology, other science students succeed in doing them. This would suggest that not all science students are rigid so much as strangers to the mind-mapping process.) This may be because psychology can be taught at any level using web teaching, i.e. beginning with any topic first and teaching it at any level. In science subjects, the teaching of a topic tends to rely upon prior knowledge and is therefore taught in a linear way. Gaps in knowledge may therefore make it more difficult to see links.

Students who use mind maps in psychology find them useful because they can add information easily, see links within and between topics, colour code them, use them as

bases for essays, and reproduce them on an examination paper to aid their memories and provide the basis for an examination answer. This could be done by numbering points on the mind map in the order in which they would be included in the essay. Other comments were that a certain expertise in the subject or topic was needed to create the mind map in the first place, i.e. the student needed to read and understand the topic in order to see the links. These mind maps could be reduced, carried round on file cards, or placed on walls at home.

Mnemonics - in order to retain information for examinations, students devised their own mnemonics, either by using interactive imagery, rhymes, rote learning, putting mind maps on walls and regularly reviewing them, being tested by relatives and friends, or making up stories using the researchers' names and their research. Students had difficulty remembering researchers' names and the dates of the relevant pieces of research.

Practice of examination answers/time questions - students found it helpful to answer examination questions from a revision text, or to answer the questions at the end of the relevant chapters in the textbook - as many and as wide a range as possible.

Reading 'good' essays - students found it helpful to read each other's essays, especially the good ones. It not only helped them to see how to organise the material, but it also increased the co-operative tendencies of students in the group.

The 'Psychology Review' (four editions a year) is helpful in that it, too, produces good examples of examination answers and explains how the examiners would have marked them. It also gives clear definitions of Skill A and Skill B activities.

3) EXAMINATIONS

Mock examinations - feelings about what went wrong - students mentioned that they had been nervous, yet did not do enough revision. They had practised essays in the classroom, but some students had not noted the teacher's comments, or noted the tips she gave them. Some students had answered the wrong questions. (A question is set for each area of the syllabus. Teachers choose certain areas and don't teach others - this cuts down on the work to be done. Students have therefore to be vigilant and select only the questions which apply to their area of the syllabus.)

Some students ran out of time because they spent too long organising their ideas into an examination answer. Others wrote without due consideration of the requirements of the question and their answers were largely irrelevant. Some found that their memory had failed them and invented researchers' names. Some transcribed comments here were:

"All it really comes down to is luck."

"I wouldn't feel as bad if I'd not worked and failed as I would if I'd worked and still failed."

"It's been a laugh and I've learned something even if I fail the exam."

"It's good to make a mistake in the mock. You don't make it again when it really counts."

"I don't really see any point in panicking."

"Panicking can help stir students to revise . I have to be panicked to start revising."

"It's getting started that's difficult.....after that it's all right.....It's the same with my essays."

Some students also remarked that they are better at writing essays in examinations, whereas, at home, they take too long because they are never satisfied with what they have written. By the time they have re-written parts until they are satisfied with them, they have run out of time. Some said that writing time questions at home made them "go stale" and not feel like writing them yet again in the examination. However, they knew that they would have to, and got on with it. (They needed to be reminded to keep the syllabus close by and refer to it constantly.)

The real examination - how can mistakes in the mock be turned to advantage, and changes be made? - The feelings about the real examination consisted of fear, the need to revise, conflict between the differing demands of different subjects in the work each generated. There was expressed a general need for self-discipline to enable the students to revise more. Anxieties were raised about the phrasing of the examination questions and how to work out the complexities of the arguments required. With open-ended questions, students found it difficult to contain and organise the material; with structured questions, they were anxious that they would only be able to answer one part and not the other. They were worried that they would not know what was required of them.

The mistakes from the mock which alerted the students to be wary in the main examination were: answering the appropriate questions, revising more, remembering more research, practising more time questions, and using time more efffectively during examinations.

APPENDIX 4

Quotations from transcriptions of group discussions with Year One students in June 1997

The comments have been collected together under the topic headings used in the group interviews.

Discussion

Group 1

'Discussing it helps me to learn.'

'It helps you when you talk in groups.'

Group 2

'In the exams., some of the discussion points come back to me.'

'Discussions were good....the interaction....getting different points of view.'

'It helps you see connections.'

Group 3

'Discussions are interesting.'

'The time goes quickly when you're discussing things.'

Mind Maps

Group 1

'You write it down....it's so easy....everything's there on one page....you can see the links.'

Group 2

'Everything's there on one page...but key words don't help me with descriptions....I remember pictures.'

'I think mind maps are great.'

Group 3

'I can't do mind maps for Chemistry.'

'If I make a mind map and I still don't understand it, I read it (the topic) in more depth.'

'I read my notes then read my mind map again, then it makes more sense.'

'I go from the book to a large mind map, then make it (the mind map) still smaller....into key words.'

'Mind maps and essay plans help you to write things in order.'

'I have certain colours I keep for definitions and other things on my mind map.'

'I don't find mind maps helpful for Biology or Chemistry because there's far too much to put on.'

'Information in Psychology is easier to mind map.'

Text book

Group 2

'Of all the texts I've read in the past, that's the best by far.'

'I'm reading the bit on phobias now.'

'The bits you have to do get talked to death in the classroom, so I read other bits when I get home.'

'Reading the book helps you with your life generally.'

Group 3

'The text book's really good.'

'Read it till one o' clock in the morning.'

Essays

Group 1

'It makes you learn it (the topic). You really have to read the book to write an essay.'

'You have to read all you're going to write about before you start because, what I used to do when I first started, was get the book, see (from) the title what my essay was about and start writing from the book. Now I read it....I read all of it first. If you read it first, then go over it as you write it, you learn it and you can remember writing your essay and you've extracted only the relevant bits.'

Group 2

'If you write them (essays) for a certain question, you remember the answer.'

'(Writing) essays helps you to retain the information.'

'They (essays) definitely helped me to get it together in my mind.'

'Essays would have been good (if I'd kept to the deadlines)....but I slept all term then, at the end, had to work my knuckles off.'

Group 3

'Essays helped me sum up everything.'

'If you can put it down in an essay, it starts to make more sense.'

'When I do essays, I often get something in the wrong place and feel I want to start again.'

'I sometimes jumble things up in essays.'

'The essays we did this year were the most helpful for the exam. If we hadn't done them, we'd just be sitting in the exam. not knowing what to do.'

'The 'Psychology Review' helped....looking at good answers....it shows you what you need to do in your essays.'

Videos

Group 1

Everyone remembers different things (about the videos), then you bring it all together (in group discussions).'

Group 2

'The videos were useful.'

Links with other subjects

Group 1

'My Biology helped me with Comparative Psychology.....Darwin....genetics and such like.'

'The arguments in Psychology are not all black or white....It's a bit like Philosophy.'

'I can learn Law easier than I can learn this (Psychology).'

Group 3

'Doing Maths helped me with my Statistics (in Psychology).'

'I had a problem with the Comparative (Psychology) but doing Biology helped me.'

Colour coding

Group 3

'I do things in Chemistry in colour, because it helps me when I go over information and it's not boring, but I can't use mind maps (in Chemistry).

Note-taking

Group 2

'I make notes once I work it out....If I don't understand, I go to other books.'

'I've got my notes ordered into the dates we did them.'

'I put paper in to mark where I take notes out, so I know where to put them back in (to maintain the chronological order).'

Psychology Topics

Group 2

'I hated Comparative Psychology....You don't see many gorillas and chimps walking down the streets.' ('You're going to the wrong places.')

'I enjoyed pro- and anti-social behaviour. I could get into that.'

'Aggression clicks with you.'

'It's more interesting because you find out the reasons why you act like that.'

'You were given better examples in pro-social behaviour, like Kitty Genovese....in Comparative (Psychology), the examples were the lily-trotting jacana - I can't even picture it.'

'It was on a very abstract level (Comparative Psychology). I should have watched more David Attenborough.'

Group 3

'(Psychology is about) real life situations. You can adapt it to yours and other people's lives.'

'Social Psychology is like common sense.'

'A lot of it's common sense (Social Psychology).'

Lectures

Group 3

'It helps to read the book first, then come to the lecture.'

'Once it's explained, I'm able to revise it.'

'The lectures are canny good.'

Revision

Group 1

'I need to work harder at remembering basic facts.'

Group 3

'I stick mind maps around the house.'

'I do this (mind-mapping) a lot for Biology and Psychology but not for Chemistry.'

'I stick to one subject, then when I've done that exam., I stick up the mind maps for the next subject.'

'I start revision about a week before the exams.'

'I revise when I'm bored.'

'I put mind maps up where I'm cooking'

'I think about my work in the shower.'

'I think about my work when I'm doing my hair.'

'I put notes on walls to revise my GSCE History. I saw my friend do this for her 'A' levels and thought she was mad, but I tried it for my GCSEs and it worked.'

'I don't like people asking questions to help me. I think to myself, 'Don't you know that?' and get irritated.'

'I find it easier to work by myself. I can't stand people trying to help me. I know what I have to do and I get on with it.'

'I got frustrated when I had to explain things to my mam because I could understand it and she didn't.'

'I got really sick of revising some topics - going over and over them.'

'I don't look at my book once I've made the notes. I just keep saying the notes over and over in my head and when I get into the exam., I remember them.'

Time Questions

Group 3

'I can't do time questions at home because I start thinking that's not right, I could do better....but in exam. conditions, I can usually do it....but at home, it has to be perfect so I keep wanting to change it and do it again and again. It's quicker in the exam.'

Mock Examinations

Group 1

'I didn't do much work for it.'

'It's good to make a mistake in the mock, then you don't do it in the exam.'

'I didn't spend a week (revising) before the last mock. I didn't spend a week (revising) before this mock either.'

Group 2

'All the revision I did was the night before the (mock) exam. I sat up a bit late and read the book.'

'I read over some names and dates and stuff and I read some cases.'

'I didn't know enough about the questions I should have answered.'

Group 3

'The mock helped me in that when I get to the real exam. I'll look at the paper and carefully study it before I choose my question.'

Examinations

Group 1

'As soon as I go into an exam., I know I know it, but my mind goes blank. I can't remember anything.'

'I've just got everything going around in my head and I can't associate with that question. Just everything gets muddled up together.'

'I can't remember who said what and when.'

'Evaluating is not too difficult. I can remember the criticisms but I can't remember what they did.'

'You've got to go for it (pass this module) now. It'll be too much work to do it in January with the rest (the second module).'

'If I worked hard and failed, I wouldn't come back; but if I failed because I hadn't worked hard enough, I would re-sit.'

'If we fail this, we'll have too much to catch up on.'

'I don't panic till the last minute.'

'It'll be three days before the exam. and I'll think 'Oh God! I've got to revise.' '

'If I start too soon, it won't go in.'

'I have to be panicked to make it go in.'

'I'd read through it and it wouldn't sink in because I'd know I had another couple of weeks.'

'You have to know every area (of the topic or chapter) because you don't know what question's coming up.'

Group 2

'I look for the question I'm hoping for.'

'I find when I walk into the exam. room, I can't remember anything.'

'Once I get started, I'm normally alright. It's just writing the first few sentences.'

'I've been concentrating more on my other two subjects....Get them out of the way first....There's five days between my last exam. and my Psychology exam. I'll revise then.'

'The main incentive to do well is to get the grades....It's not just for University....I want to be clever.'

Group 3

'If you don't panic, you have an idea, but while you're writing it down, you've forgotten what comes next.'

'The questions are twisted so you can't answer them from a learned essay.'

'The structured questions are difficult because if you know one part and not the other, you're torn between doing that question or choosing another you don't know so well.'

'I remember all sorts of irrelevant stuff. I know it's irrelevant, but I put it in anyway.'

'I hate it when you learn something and it's not in the exam.'

'In Biology and Chemistry you have to learn such a lot....six chapters per module....and you only get tested with two questions on each module. It's really frustrating if you've learnt something really well and you don't get it. I hate that!'

'Just before an exam. I don't look at my notes because I'll think, I don't know that!' '

'I can remember things I read just before the exam. sometimes....like names and dates.'

'If you get the right question, you're OK.'

'It's luck really.'

'They're not testing you on everything you know...It's not fair, in a way.'

APPENDIX 5

Dear

I am enclosing a copy of your 'Good Learner/Poor Learner' statements and the order in which you placed them. Since you have now taken the first Module of the examination, in June, and had your results, are there any changes you would like to make to either your statements or to the order in which you placed them? I have enclosed blank forms for you to re-write and re-order your statements should you wish to make any changes. Whether or not you do make changes, would you please return both your original statements and the new ones (either filled in or blank) to Room 935, the Staff Room.

I would also be grateful if you would complete the enclosed questionnaire and return it in the same envelope.

Many thanks for your help and co-operation. I very much appreciate the assistance you have given me in my research. Please let me know if I can help you in any way with your course. Good Luck!

Beth McLaren

QUESTIONNAIRE 1

1) Were you pleased with your examination results?

YES / NO

2) Did you get the result you expected?

YES / NO

3) If your answer was NO, what result did you expect?

4) Has your result changed your feelings

about yourself? YES / NO

about the subject? YES / NO

5) Do you plan to change your study techniques because of your examination result?

YES / NO

6) In what ways do you intend to change your study techniques?

7) Please make any additional comments in the space below.

APPENDIX 6

Dear

I have been told that you have left the 'A' level Psychology course. However, I would be very grateful if you would still remain in the research study I am currently conducting. If you wish to do so, your contribution would be very valuable.
I have enclosed a questionnaire for you to fill in and return in the envelope provided. Whatever you decide, I would like to take this opportunity to thank you for the help you gave me in my research last year, and to wish you luck for your current undertakings.

Yours Sincerely

Beth McLaren

QUESTIONNAIRE 2

1) Did you prepare well for the 'A' level June module in Psychology?

YES / NO

2) What did you do to prepare?

3) Did you expect the result you got?

YES / NO

4) Give reasons for your answer to Question 3:

I expected this result because.....

I didn't expect this result because.....

5) Why did you leave the course?

6) Would you take the course again, at a later date?

YES / NO

7) What are you doing now?

8) Any further comments.

APPENDIX 7

You are being asked to take part in a two year study to pilot a new learning inventory. Although your name will be required on the inventory so that your opinion can be sought at periodic intervals, your inventory will be confidential and you have the right to withdraw from the study at any time.

INSTRUCTIONS

(1) On the sheet marked 'SELF-GENERATED LEARNER'S INVENTORY, you will find the phrases, 'A good learner...' written 10 times and 'A poor learner...' written 10 times. Please think of 20 words or statements about your views on learning, 10 of them beginning, 'A good learner...' and 10 beginning, 'a poor learner...'

(2) Next, in the column marked 1-10, chose the ten statements most like you and place them in order from Most Like You (1) to Least Like You (10).

Thank you for your co-operation.

SELF-GENERATED LEARNING INVENTORY

Name:.....

Subject and Course:.....

		1 - 10	1 - 10
1	A good learner		
2	A good learner		
3	A good learner		
4	A good learner		
5	A good learner		
6	A good learner		
7	A good learner		
8	A good learner		
9	A good learner		
10	A good learner		
11	A poor learner		
12	A poor learner		
13	A poor learner		
14	A poor learner		
15	A poor learner		
16	A poor learner		
17	A poor learner		
18	A poor learner		
19	A poor learner		
20	A poor learner		

SELF-GENERATED LEARNER'S INVENTORY - A

Name of student:.....

Subject and Course:.....

STATEMENT NUMBER	STATEMENT
1	A good learner
2	A good learner
3	A good learner
4	A good learner
5	A good learner
6	A good learner
7	A good learner
8	A good learner
9	A good learner
10	A good learner
11	A poor learner
12	A poor learner
13	A poor learner
14	A poor learner
15	A poor learner
16	A poor learner
17	A poor learner
18	A poor learner
19	A poor learner
20	A poor learner

ORDERING OF SELF-GENERATED STATEMENTS - B

Name of student:.....

Subject and Course:.....

ORDER 1ST-25TH	'A'LEVEL PSYCHOLOGY	
	Am now	Would like to be
1ST	,	
2ND		
3RD		
4TH		
5TH		
6TH		
7TH		
8TH		
9TH		
10TH		
11TH		
12TH		
13TH		
14TH		
15TH		
16TH		
17TH		
18TH		
19TH		
20TH		

APPENDIX 8

QUESTIONNAIRE 1R

1) **Were you pleased with your examination result?** Yes / No

2) **Did you prepare thoroughly?** Yes / No

3) **What preparation did you do?**

   a) **Text book reading** Yes / No

   b) **Note taking** Yes / No

   c) **Mind maps** Yes / No

   d) **Essay practice** Yes / No

   e) **Identifying Skills A and B** Yes / No

   f) **Rote learning (learning information by heart)** Yes / No

4) **Do you plan to change your study habits as a result of your examination result?** Yes / No

5) **If the answer to Question 4 is Yes, how do you propose to change?**

6) **Additional comments.**

APPENDIX 9

TEACHERS AND LEARNERS QUESTIONNAIRE

ABOUT THE STUDENT

(1) What technique do you use for retaining information?
(2) Where do you learn most effectively?
(a) at home (b) at College
(3) If the answer is 'at home', whereabouts in your house do you learn most effectively?
(4) If the answer is 'at College', whereabouts at College do you learn most effectively ?
(5) Under what conditions do you learn the least?
(6) How do you need to feel in order to learn best?
(7) When you learn least, how are you feeling?
(8) What do expect from yourself?

ABOUT THE TEACHER

(1) What type of teacher do you learn from best?
(2) What type of teacher do you learn from least?
(3) What do you expect from your teachers?
(4) What do you think your teachers expect from you?
(5) Do you ask a teacher for advice?
(6) Do you follow advice:
(a) when you have asked for it?
(b) when the teacher has given it to you without you asking for it?
(7) Do you learn anything from your teacher/s during lesson-time?
(8) If the answer is yes, what sort of information do you learn during a lesson?

APPENDIX 10

SUGGESTIONS FOR DISCUSSION TOPICS

1) YEAR'S WORK

Ordering notes in file.

Note-taking from textbook.

Essay-writing.

Lectures.

Discussion.

Videos.

Syllabus.

Textbook.

2) REVISION

Note-making.

Mind maps.

Mnemonics.

Time questions.

Reading good essays.

3) EXAMINATIONS

Mock examination.

Real examination.

APPENDIX 11

'A' level - Chi Square Tables (Good Learner qualities - Actual/Ideal Learner)

Ideal Learner (n = 16)

	Good (+)	Poor (-)	Totals
Good (+)	228	136	364
Poor (-)	23	60	83
Totals	251	196	Grand Total = 447

Actual Learner (n = 16)

	Good (+)	Poor (-)	Totals
Good (+)	198	97	295
Poor (-)	9	27	36
Totals	207	124	Grand Total = 331

GCSE - Chi Square Tables (Good Learner qualities - Ideal/Actual Learner)

Ideal Learner (n = 12)

	Good (+)	Poor (-)	Totals
Good (+)	120	80	200
Poor (-)	40	0	40
Totals	160	80	Grand Total = 240

Actual Learner (n = 12)

	Good (+)	Poor (-)	Totals
Good (+)	91	62	153
Poor (-)	8	0	8
Totals	99	62	Grand Total = 161

APPENDIX 12

'A level Chi Square Tables (lecturer/student prediction accuracy)

	Lecturer	Students	Totals
Correct	13	9	22
Wrong	3	7	10
Totals	16	16	Grand Total = 32

	Males	Females	Totals
Correct	4	5	9
Wrong	5	2	7
Totals	9	7	Grand Total = 16

GCSE Chi Square Tables (lecturer/student prediction accuracy)

	Lecturer	Students	Totals
Correct	10	5	15
Wrong	3	8	11
Totals	13	13	Grand Total = 26

	Males	Females	Totals
Correct	2	3	5
Wrong	4	4	8
Totals	6	7	Grand Total = 13