An investigation of curriculum arrangements conducive to fostering creativity in post-compulsory education and training institutions

So often, we put students in classrooms marked English, history, math or biology where we attempt to fill their ears with facts through lectures, textbooks, and rote learning, and they see little use or application of what they are learning except to pass a test. Because they fail to see much meaning in what they are asked to learn, most students don't learn it well enough to use the knowledge in future problem-solving situations.

– Dale Parnell (1997)

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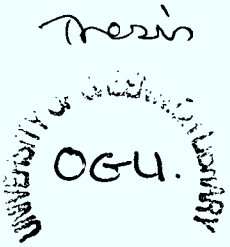
James Ogunleye



A thesis submitted in partial fulfilment of the requirements of the University of Greenwich for the Degree of Doctor of Philosophy

June 2002

Declaration

I certify that this work has not been accepted in substance for any degree, and is not concurrently submitted for any degree other than that of Doctor of Philosophy (PhD) of the University of Greenwich. I also declare that this work is the result of my own investigations except where otherwise stated.

Sign: James Ogunleye

.....

Date: 21 6.02

Professor Ian McNay (Supervisor)

.....

Date: 28.6.02

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LIST OF MAIN ACRONYMS

Access to Higher Education (Access to HE)

Advanced Level (A level)

Advanced Vocational Certificate in Education (AVCE)

Confederation of British Industry (CBI)

Cross Content Ratio (CCR)

Department for Culture Media and Sports (DCMS)

Department for Education and Employment (DfEE)

Department for Education and Skills (DfES)

Department for Trade and Industry (DTI)

Further Education Development Agency (FEDA)

Further Education Funding Council (FEFC)

Further Education Unit (FEU)

General Further Education Colleges (GFEC)

General National Vocational Qualification (GNVQ)

Learning and Skills Council (LSC)

Learning and Skills Development Agency (LSDA)

Mt. Hood Community College (MHCC)

National Advisory Committee on Creativity and Culture Education (NACCCE)

National Vocational Qualification (NVQ)

Qualifications and Curriculum Authority (QCA)

Reynolds High School (RHS)

Sixth Form College (SFC)

Student Initiation Ratio (SIR)

Teacher Question Ratio (TQR)

Training and Enterprise Council (TEC)

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Special thanks also go to the many hundreds of students in the UK who took part in the study. My decision to explore creativity in the 16-19 curriculum is informed by a view that students are often not engaged in learning or are often (mis)labelled underachieving when the reasons for not engaging in learning or for not achieving might have more to do with the arrangements and delivery of the curriculum and arguably less to do with their academic ability.

Support and guidance of the supervisory team, ably led by Professor Ian McNay (Greenwich) and Michael Bloor (Greenwich) is deeply appreciated, as with endless support of a number of non-supervisors, in particular Dr. Patrick Ainley (Greenwich), and fellow doctoral researchers at Greenwich. Thanks also go to Professor Carol Taylor Fitz-Gibbon (Durham) for giving insights in other contexts.

Lastly, a deep gratitude and special thanks to my beloved family for its round-the-clock support throughout the duration of this work.

This thesis is set in Microsoft Office v97/v2000. Graphs and tables were created in SPSS v10.

STATEMENT

In line with the University 'disclosure' requirements (University of Greenwich, 2001), the following work were published by the researcher using some materials from this thesis:

Peer review journals:

Ogunleye, J. (2002) Creative approaches to raising achievement of adult learners in English further education, *Journal of Further and Higher Education*, Vol. 26 [2] pp173-181

Ogunleye, J. (2000) Facilitating creativity in further education: A key to improving retention in 16-19 full-time courses. *Goldsmiths Journal of Education*, Vol. 2 [2], pp13-24

Specialist Journals and e-media (CD-ROM):

Ogunleye, J. (2001, January) Creativity training techniques: how to spell success in creative organisations, *Training Journal*, pp21-23

Ogunleye, J. (2001) Teachers' perceptions of constraints to creativity in the further education curriculum, *LSRN Conference Proceeding* CD-ROM. London: Learning and Skills Development Agency

Ogunleye, J. (1999, November) Fostering employee creativity: the key to job success, *Training Journal*, pp34-35

Ogunleye, J. (1999, Autumn) Creative colleges: the post-16 curriculum is more important that creative accountancy, *FE Now!* London: Association of Colleges

Reference

University of Greenwich (2001) *Academic Regulations for Research Awards*, University Framework, London: UoG. para A7.4, p.23

ABSTRACT

This study aims to investigate curriculum arrangements conducive to fostering creativity in post-16 (further) education institutions and classrooms, to analyse factors promoting or impeding creativity, curriculum content and processes, and also to offer/develop models of good practice for encouraging creativity in a further education context.

The study addresses among others the following questions. What are students' perceptions of their creative attributes? What are students' perceptions of their classroom behaviours and practices? What are students' perceptions of teachers' classroom behaviours and practices? What are leaders', managers', teachers' and students' perceptions of creativity? To what extent are colleges' institutional variables, curriculum arrangements and teaching approaches driven or not driven by the leaders', managers' and teachers' conceptions of creativity? What factors impede or promote creativity in a further education context?

10 further education colleges in four of the seven regions of the (former) Further Education Funding Council in England took part in the study. The study adopts an appropriate mixture of quantitative and qualitative methods. 800 students from the four qualification areas of academic, applied vocational, occupational and Access to HE returned a survey-questionnaire, which explored their creative attributes, their classroom behaviours and practices, as well as their perceptions of their teachers' classroom behaviours and practices. Complementary research methods include classroom observations, designed to cross-check or corroborate certain information in the student questionnaire; semi-structured interviews with leaders, managers, teachers and students, explored their conceptions of creativity, constraints to creativity, and the extent to which college institutional variables, curriculum arrangements and teaching approaches were driven or not driven by the leaders', managers' and teachers' conceptions of creativity. To achieve a comparative perspective, two case study institutions – one community college and one high school in the USA – were presented to portray good practice in creativity-facilitating curriculum arrangements and delivery.

The results showed highly significant differences in students' self-perceived creative attributes. The students' creative attributes and their self-perceived classroom behaviours and practices are found to be significantly related, but the relationship is complex – there is little evidence that students express their creativity in classroom discourse. The study also revealed that teachers in further education currently spend a disproportionate amount of lesson time on subject matter and less on creativity-supporting activities such as motivation, questions, thinking, practical examples and reference to real-world contexts. Leaders, managers, teachers and students in the study showed familiarity with the word creativity and related concepts and their characterisation of creativity as a product, a process, a personality and as a condition of the environment were consistent with the literature themes on creativity; but college institutional variables were found not to be driven by the interviewees' (excluding the students) conceptions of creativity. Several external and internal constraints to creativity were identified.

The implications of these findings in terms of post-16 education policy, curriculum arrangements and teaching practices (teacher pedagogy) were highlighted and, in conclusion, a model for fostering student creativity in post-16 (further) education context was developed.

NOTES TO THE TITLE

Curriculum, according to Pring (1997, p.125) 'means more than' the subject specification and the syllabus. 'It embraces the overarching aims and values as well, the ways in which learning is organised, the methods adopted and the links between teaching and assessment.' An important element of curriculum, therefore, is teaching and learning.

This study is set within that broad definition; references to curriculum arrangements in post compulsory education and training in the title and elsewhere refer mainly, but not only to teaching and learning. They also embrace other arrangements in 16-19 provision (such as college provision for the wider student experience) and Access to Higher Education provision.

To my beloved family

INTRODUCTION

Perhaps the major difference between those we label academically talented and all others rests in their abilities (and willingness) to tolerate a learning situation that is neither motivating nor effective for most students. We can issue reams of position papers on (among other things) more achievement tests, better assessment practices and other "hot" topics, but it will not make much difference in what students know and can do. The difference is made when classroom teachers begin to connect learning with real-life experiences in new, applied ways.

– Dale Parnell (1997)

An investigation of curriculum arrangements conducive to fostering creativity in the post-16 (further) education is timely. It comes on the heels of increasing concern – some would say simmering complaints – by employers that further and higher education college graduates are not well equipped with the creative skills needed to apply knowledge in a variety of real-world contexts – in both familiar and unfamiliar situations (see Morita, 1992). It also comes at a time when national policy documents on post-16 education – be it emanating from the Department for Education and Skills, the Department of Media, Culture and Sports or the Department of Trade and Industry – are increasingly emphasising creative skills as important skills to develop in the young people (DfEE, 1998; DMCS, 2001; DTI/DfEE, 2001; DfES, 2002). These are genuine and realistic expectations, which the present curriculum arrangements in post-16 (further) education have not realistically addressed. While a small, but significant amount of work has been done on exploring creativity in teaching and learning in compulsory

education, most notably in the primary curriculum, the absence of similar work in the post-compulsory (further) education sector is seemingly palpable. This absence of empirical research has implications not only for national policy on post-16 education, but more significantly, on students' learning experiences. Students, it is often claimed, do not engage in learning, often because they do not find relevance in curriculum arrangements and meaning significant in their lives with what they do in college. It is for these reasons of the inadequacy of curriculum arrangements in 16-19 provision that this study was undertaken (see aims of the study in paragraph 1.26).

The body of this thesis is divided into eight main chapters. A review of the literature is presented in chapter one. The review examines the main concepts of creativity; the UK government's post-16 education policy vis-à-vis creativity; a review of the examining bodies' assessment objectives vis-à-vis creativity, etc., culminating in a discussion on the framework of the current study. The chapter ends with an outline of the research questions.

Chapter two presents the methodological framework for the study. It sets out a number of key assumptions that guide the research design; it discusses the methods and process of the design as well as the data collection instruments used in the study - namely, survey-questionnaire, classroom observation, interview and case study. The chapter also discusses the limitations of the design.

Chapters three to six present the results - in the order of student questionnaire, classroom observation, interviews and case study. Each chapter ends with a discussion of the results.

A general discussion and summary is presented in chapter seven, followed by recommendations in chapter eight.

CHAPTER ONE

1.0 LITERATURE REVIEW

1.1 Overview

Given a lack of research in the area of creativity in the further education curriculum, this review will identify and categorise publications according to how they are relevant to the current investigation. This approach is similar to the one used by Paper and Johnson (1997). The review will look specifically at the concepts of creativity; creativity and national policy on education; creativity and syllabus/specification, aims and assessment objectives; and creativity in the curriculum. It will highlight the paucity of existing empirical studies and government policy documents in relation to creativity and further education and argues the need for the current investigation. It will argue that a new government's drive to promote young people's creativity will not achieve the desired results if such initiatives (including research) focus almost exclusively on teaching and learning in the compulsory education sector. The review will set out the framework of the current investigation within the context of creativity, curriculum, and the institutional factors that promote or hinder creativity in further education. The chapter will end with an outline of both research aims and research questions. The review of the literature on creativity, which now follows, will examine the work done in the last 30 years, particularly in the 1970s and 1980s, the periods that are often regarded as the peak of creativity research.

1.2 Concepts of Creativity

1.3 Introduction

Fifty years after J.P. Guildford's Presidential Address to the American Psychology Association on the theme of creativity, and after voluminous research and studies into the subject, there has not been a universal agreement among psychologists and subject investigators on the definition of creativity and what counts as a demonstration of creativity, and neither do investigators 'share' a language for creativity (Welsh, 1973; Ford and Harris, 1992; Parkhurst, 1999; Joubert, 2001). This development can be attributed to the nature of the subject: creativity is not a single variable, but a complex multifaceted and multidimensional process and a construct that might not be easily characterised by a single definition (Guilford 1970; Anastasi *et el*, 1971; Cole and Parsons 1974; Webster, 1989; Feildman, 1999). Its multifaceted nature is reflected by many investigators' use of words such as originality, innovation, imagination, and intuition to characterise creativity. There is, however, a general agreement among investigators that (a varying degree of) creativity traits exist in every human; that the attributes of creativity can be so subtle in humans as to make an individual oblivious of his or her creative behaviour and practices.

An example is often cited of a twenty first-century woman who in the course of her every-day life has to negotiate her time between job, home, family and possibly part-time studies. Creativity in her case is used daily as a 'coping strategy', an ability that is found in everybody (Timmerman, 1985); and not a preserve of the 'genius' or the gifted few (Lytton, 1971; Webster, 1989; Ogunleye, 1999). The type of creativity highlighted in this example is often regarded as 'ordinary creativity' (Ripple, 1989). Ordinary creativity, according to Ripple, is what people draw upon to solve 'everyday real-life problems of

less than heroic proportions and (which), helps us get through the day better and or more effectively.' (Ripple, 1989, p.190). Craft (2001) attempts to extend the concept of 'ordinary creativity' into what she calls 'little c Creativity' (LCC). Craft draws heavily on the work of Gardner (1993) which examines 'personality' creativity. Although Craft hinged LCC on personality creativity, she made a distinction between high level (extraordinary) creativity that is often associated with the genius and low level creativity that is used in everyday life. 'LCC focuses on the resourcefulness and agency of ordinary people, rather than the extraordinary contributions and insights of the few' (p.49). LCC is offered as a life skill which can be used to 'cope' with everyday (real-life) problems - a skill that can be applied in both familiar and unfamiliar situations. Craft gave practical examples of how LCC can manifest in people's everyday life. In cooking, for instance, a person who is faced with inadequate cooking ingredients will employ some element of creative thought process in permutating (available) ingredients to meet cooking goals. Within the context of teaching and learning, Craft in an earlier work illustrates practical applicability and manifestation of low-level creativity in pupils' and teachers' classroom behaviours and practices (Craft, 2000; see also, Rowe and Humphries, 2001, on more insights into the daily manifestations of 'ordinary' creativity in a school context).

Boden (1994) distinguishes between two senses of creativity: psychological (P) creativity and historical (H) creativity. P-creative ideas are original/unique to the individual, but may have been thought of by someone else before. H-creative ideas are both unique to the individual and to the world; these are ideas that no one has thought of before. Boden points out that both H-creativity and P-creativity are not mutually exclusive, but interdependent. Lytton (1971) distinguishes between two types of creativity: objective creativity and subjective creativity. Objective creativity can be judged by its power to radically transform particular problems or constraints in a new, beneficial and fruitful

way; subjective creativity on the other hand involves the production of 'effective surprise' recognised and felt by the observer, with a 'distinct shock' (Cropley 1971).

There is, in essence, a universal agreement among investigators that creative output must show some elements of novelty and value, as well as serve the purpose for which it was created (Boden, 1994; Cropley, 2001).

1.4 Defining creativity

From the foregoing, creativity remains a 'psychological constellation' (Cropley, 2001, p.26), which has no single definition. Creativity takes place (often) when knowledge or skill is applied; when a new discovery takes place or when an improvement to an existing discovery occurs (Osborne, 1984). Osborne states (perhaps questionably) further that for creativity to be meaningful, it must be specific to a particular area or activity. He stated that creativity must also be novel by, for example, finding a more effective way of operating a particular item or object, but not when a new addition is made to the object or item in question. He added that the product of creative work must be valuable and must have unconformable uses, which enables new findings or new ways to be made out of doing 'ordinary' things. Creativity, according to the UK Design Council (2000, p.6) 'comes from an ability to (apply) knowledge across contexts, to use knowledge and skills from one arena (subject domain) in another, completely different arena'.

A number of characteristics have been associated with creativity. Among them are variability in behaviour (Daniels, 2000); good memory, adaptability to new experience, hard work and self-discipline (Hughes, 1969), persistence and independence. Other features include introversion, which takes the form of feelings and emotion; divergent thinking, which enables an individual to think imaginatively; and the use of time to think.

Caropreso and Couch (1996) cited other characteristics of creativity as awareness and valuing of creativity, risk-taking, intuition, questioning, humour and curiosity. Research suggests that creativity, like other human qualities and skills, has to be encouraged, nurtured and developed (Wolverson, 1971; Seltzer and Bentley, 1999). Studies on creativity can be classified under the following (largely overlapping) four main themes: product, process, personality and environment. Each will be briefly explored below.

1.5 Creativity as a product

Pfeiffer (1989) defines creativity within the context of creative products, explaining that a person can be creative if s/he has the ability to realise creative products usually the result or outcome of a creative act. Creativity has also been defined as 'imaginative activity fashioned so as to produce outcomes that are both original and value' (DfEE, 1999, p30). Originality is a concept central to creative product. To be original is to be novel, with fresh and unusual ideas. Also to produce originality often means to be self-sufficient, indefatigable, and non-conforming in carrying out daily routine; and to be original is to be able to think a task or problem through to stimulate creative ideas (Jones, 1972). More so, to be original, a person must produce or create something new or think up creative ideas. Nilsson (1978) posited that such ideas do not have to be original to show evidence of creativeness. Originality can be enhanced through idea formulation and adaptation (McMullan, 1977). Idea formulation, McMullan explained, can be engendered through brainstorming, checklists, metaphorical thinking and morphology, while adaptation can be generated through attribute listing and analysis of existing solutions. The evidence of originality lies in a creative work which, as Pfeiffer (1989) argued, must be significantly new, unique and original, and 'fit' the intended purpose.

Creative products can be measured in many different ways. These measures of creativity overlap significantly with those of creative process (discussed below). Fluency of thinking and ease with which an individual uses and stores information and the speed with which s/he sums up ideas (Child, 1993), provides key measures of creativity. Others are flexibility, which measures the variety of responses; and originality, which measures (any) rare or infrequent responses given by the subject. Creativity test results have, to some extent, confirmed the reliability and validity of these measures (Dewing, 1970; Davis, 1989), and longitudinal studies (Cropley and Clapson, 1971; Torrance, 1972) have shown that they can be used to predict later-life performance of a creative person. The test results have also thrown up some problems, not the least the investigators' subjective judgement and prejudice. Test tension, on the part of examinees, might 'mitigate' against creative product or output, while scoring could be at the whims and caprices of the scorers (Child, 1993), and their predispositions (Foster, 1970; Jones, 1972). Serious problems of validity have also been raised. Simple measures of fluency, flexibility and originality, for example, might not provide sufficient and ample test measures in determining what amounts to a creative task or challenge for the subject or examinee (Treffinger *et el*, 1971).

1.6 Creativity as process

Powell (1972) sees creativity as a cognitive process - how an individual uses and handles knowledge (Gregory, 1987) - which combines flexibility, originality and sensitivity to produce ideas that ultimately give satisfaction to that individual. The production of such ideas, however, need not follow the 'usual sequence of thought' of the individual nor should the process of creativity hinge solely on the discovery of a new 'product'. However, a rediscovery of an existing product might be seen as sufficient evidence of creativity (Deroche, 1968). Creativity has also been defined as the ability to deal with

information in a manner that is productive and innovative (Forman and McKinney, 1978). Cognitive processes such as idea finding, idea-recognition and the application of knowledge were found to be ingredients of process creativity (Reese *et el*, 1976). Also looking at creativity as a process is Mayer (1989), who defines creativity as the ability to solve problems that an individual might not have previously learned to solve. Mayer apparently sees no connection between a person's (prior) knowledge and his or her ability to apply the knowledge to solve a new problem, but his contention that process creativity is intertwined with a problem-solving ability accords significantly with Morita (1992) who locates his conception on process and product creativity in the context of industry. He defined creativity as the ability to 'approach the unknown knowledge to make a breakthrough' (p.13). Presenting the UK first Innovation Lecture in 1992, Morita lamented a certain lack of creativity in the college curriculum. Citing his company's (Sony Corporation of Japan) experience, he regretted that students' knowledge, in many cases, becomes stale and 'old fashioned' (out-dated) by the time they leave colleges for work and that the curriculum has not adequately equipped college graduates to 'apply, analyse, study and approach the unknown' (p.13). Morita may have used the words 'college graduate' in the American sense, which in the UK context, will include college leavers from both further and higher education.

Creative process can be defined as a mutual interplay between a creative person's internal experiences and external environment and situation that enable the individual to make a transformation. There are four stages of creative process: preparation (when the problems are investigated and facts and background knowledge are acquired); incubation (when the problems are 'brewing' in a person); illumination (the sudden and unexpected flash of thoughts, ideas, and suggestions in a person), and verification (when the myriad of thoughts, ideas, suggestions illuminated are tested, validated, and sifted to exact form

(Lytton, 1971)). There are three factors, which can be used to enhance the creative process, according to Karlins (1968). They are exploration, consolidation and application. Karlins posited that a creative person or individual should be a gatherer of information, or an active explorer of information; such an exercise provides a basis for, or stimulates creative thoughts. By consolidation, the information at a person's disposal is processed in ways that are 'new' and meaningful to enable a creative solution to be reached and allow the person to be able to deal with the world. Application of creative process is concerned with decisions such as whether to modify, discard or retain a creative product.

Divergent thinking is intertwined with creativity and studies have often conceptualised it as a process in creativity. Divergent thinking is the ability of a person to produce a variety of (quality) solutions to a given task which require no single right answer (Fontana, 1995). Divergent thinking, like creativity, has traits that are present in humans and it is unaffected by age, education and cultural variables (Dacey, *et el* 1969). In education, studies by Cropley (1971) and Franklin and Richards (1977) found that appropriate instructional, teaching methods and approaches can help schoolchildren to develop divergent thinking ability (indeed, an earlier study by Haddon and Lytton, 1968, showed that an informal school setting can play a part in helping pupils to develop divergent thinking ability). Teaching techniques and approaches that might be used to nurture pupils' divergent thinking ability would include asking 'what would happen if ...?' questions; the use of puzzles, paradoxes and conundrums (Hughes, 1969; DfEE, 1999). Divergent thinking tests the meaning of words; consequences; and uses of objects; where marks are given for the novelty of responses (originality), variety of responses (flexibility) and the number of appropriate responses the subject makes (fluency), all provide key measurements of creativity. These tests aim to evaluate critical underlying cognitive abilities of examinees, but it is unclear whether the test results are a predictor of later life

creativeness (Cropley, 1971; Davis, 1989), or whether they provide conclusive proof of individual success in creative work (Fontana, 1995).

Creative problem solving is another key process in creativity. Cole and Parsons (1974) characterised creativity as an on-going process in problem solving which everyone uses and depends upon. Problem solving is the ability to generate new ways to attain a goal, ability to adapt prior learning to new situations and ability to acquire a new pattern of responses (Powell, 1977). It is a characteristic of creative thinking, which aims to find solutions to problems. The steps in techniques in problem solving include: describing the situation, fact finding, stating the problem, searching for a solution, implementing the solution, evaluating the implemented solution and proposing modification or improvement of the solution (Labelle, 1974). A key feature of any creative problem solving process lies in breaking previous patterns of thinking (Cackowski, 1969), as well as in developing cognitive skills. The process of creative problem solving is geared toward provoking ideas and methods for evaluating the usefulness of such ideas (McMullan, 1977). It is often the case in creative problem solving that the problem is established and the circumstances that gave rise to it are described before ideas are generated to find (quality) solutions to the problem.

1.7 Creativity as a personality

Creativity has also been defined as an aesthetic cognitive and emotional operation which seeks to find solutions to a problem (Wason, 1968). Even though (this line) of definition of creativity embraces both cognitive and aesthetic activities, creative output will be shaped by the person's cognitive skills and their emotional experience. Fisher (1990) relates creativity to human attitudes and abilities which, together, 'lead a person to produce creative thought, ideas or images.' The emphasis in Fisher's submission is on

intuition, something that a person has to use to make connections in a fruitful and productive way. In her study of creativity in Irish children, Lynch (1970) characterised creative children as ones who produced more ideas, more original responses; ones who set themselves high standards; ones who had a wider vocabulary, and ones who displayed superiority in capacity evaluation. Additionally, highly creative children were said to be open to suggestion, because they are suggestible by nature (McHenry and Shouksmith, 1970). A person's creativity is shaped by three main parameters, according to Davis (1989). They are attitudes (a reception to innovative ideas); abilities (of fluency, flexibility, and originality), and creative thinking techniques (which may include attribute listing).

Creative ability in an individual can be expressed in many ways and in different fields of human endeavour, but a person need not possess high intelligence to be creative (Trachtman, 1975); nor does a person's creative behaviour depend solely on intelligence (Powell, 1977; Fisher, 1990). In a study of the personality profile of Israeli students, Milgram and Milgram (1976) found a relationship between creative thinking and creative performance, but found no evidence of correlation between the two variables and intelligence and school grades. An earlier study by Yamamoto (1965) suggests that beyond a certain minimum level of intelligence, having more intelligence will not result in a corresponding increase in creativity. Many commentators agree that some degree of intelligence is needed for creativity. Guilford (1970) attempts to conceptualise creativity as a set of (cognitive) abilities intrinsic in the structure of the intellect. Such abilities include idea recognition, idea finding, knowledge and judgement (Reese *et al, 1976*). The structure of the intellect model created by Guilford embraces content, product and operation. In setting out the model, Guildford argued the need to acquaint learners with their 'various' intellectual resources prior to acquiring new information. Adequate and sufficient information is a key ingredient of intellectual functioning, as well as a

requirement for creative problem solving. Walkup (1971) underlined the importance of intellectual orientation (i.e. the need for an underpinning knowledge) in creative people - an orientation that enables the thinker to improve uniquely the material under processing by the brain (see Cropely, 2001, for examples of differences between creativity and intelligence).

Motivation is an important characteristic of 'personality' creativity. In a classroom context, student personality creativity can be nurtured if the subject and the mode of instruction are made interesting and engaging and tasks cognitively challenging (Stevenson, 1990). Taft and Gilchrist (1970) observed that students who 'indulge' in creative activity will have a strong motivation to participate in creative ventures. One measure of personality creativity is the Personality and Biographical Inventories Test, which assesses, among other things, attitude, awareness, motivation; and histories of creative abilities (Davis, 1974; Davis, 1989). Studies (see, for instance, Halpin and Halpin, 1973) have shown that motivation affects creative thinking abilities as measured by the Torrance test (see, for instance, Torrance, 1972).

1.8 Creativity as a condition of environment

Creativity, as stated elsewhere, is multi-faced and multi-dimensional, but does not exist in isolation. Creativity is a condition of the environment in which people live and operate: the environment nurtures, enriches, and sensorily stimulates human creativity (Cheyette, 1977; Taylor, 1971). A creative environment within the context of education can be defined as one which affords opportunities for learners to develop their creative potential; or one which enables a learner to establish creative interactions with the (college) body polity (Russel, 1971). The role of the environment in creativity can be one of a facilitator. The environment will facilitate creativity by providing students with

adequate resources and other educational experiences to stimulate imagination; and by providing study experience which is motivating, challenging, and yet stimulating (Heck, 1978). Such an environment can be brought into being through 'sensory' stimulation, as well as through interaction between the organism and the environment (Taylor, 1971; Chambers, 1973). More recent studies have also supported this assertion. Life and Wild's (1981) investigation of the development of creative engineers suggested that the creativity of engineers is affected to some extent by the environment (institutional variables) in which they work; and it is affected even more by the constituents (intra-team interactions) of the environment. Other features of creativity in the educational environment include the existing knowledge of the students, their creative profile, and the structure of the curriculum, which might help to shape or nurture their personality (Ogilvie, 1973). The thrust of Ogilvie's argument is that a properly structured college environment - which sets out the ideology, the organisational structure, and the instructional practices (Brookover, 1982) can be used to develop students' creative behaviour. The classroom learning environment can also impact on creative culture. In a study of the relationship between classroom learning environment variables and creative performance of students in three Caribbean countries, Richardson (1988), found variables such as satisfaction and competition are not only desirable for creative output, but they can also nurture the development of students' creative potential. A college environment is made up of elements such as the students, the staff; business and public sector clients; the government, which provides much of the funding; and the community, in which a college operates (Frain, 1993); physical resources (rooms) and teaching and learning resources.

1.9 Creativity and national education policy

1.10 The Learning Age

Successive UK Governments' policy on education in the last century has been dictated largely by the social, political and economic exigencies of the time (see, for instance, Bailey, 1997). The election of the New Labour Government in 1997 heralded a raft of policy documents and reforms of education at school, further education and higher education levels. An important government policy document relevant to further education was released in 1998, entitled *The Learning Age: a Renaissance for a New Britain* (DfEE, 1998). The document set out a government commitment to improve the work skills of the UK workforce through lifelong learning. David Blunkett, then Secretary of State for Education and Employment, in his foreword to the Green Paper said *The Learning Age* would, among other things, help the nation to use learning to build human capital, 'by encouraging the acquisition of knowledge and skills (that) emphasise creativity and imagination' (p7).

The Green Paper defined life long learning as 'the continuous development of the skills, knowledge and understanding' that are essential for today's job and personal fulfilment (DfEE, 1998, p.11). Life long learning is predicated on economic, cultural and social factors. Central to these factors are the acquisition of skills to meet the ever changing needs of the job markets; development of a culture of learning to help create personal independence; and the encouragement of people's 'creativity and innovation' (p.10). The Green Paper also underlined the need for a national workforce with 'imagination and confidence' (p.15), with a diverse skill base, while stressing the importance of teachers

and trainers in helping learners to acquire these skills. Explicit reference to the term creativity in the policy document was significant and it suggests that the government may have identified creative skills as important skills to nurture in the new knowledge economy.

1.11 Dearing and Kennedy reports and their implications for curriculum arrangements

The forerunners of *The Learning Age* were the report of the Committee on Inquiry into Higher Education (NCIHE, 1997), and the report of the committee on widening participation in further education (Kennedy, 1997). Both these reports called for increased access and widening participation in post-compulsory education and training. The government endorsed the main themes of the two reports and promised an extra 700,000 places in further and higher education by 2002 (press reports at the time of writing suggest that the government's expansion target might be missed). What have not been fully assessed until now, however, are the implications for arrangements/delivery of the curriculum in further education.

The challenge for further education can be located within the context of the standards and frameworks for curricula and qualifications (FEDA, 1998). The further education sector is being asked to encourage people to acquire the 'learning habit,' and to respond flexibly to the learning needs of new clients, be it individual or business clients. A key implication here is that clients' demand will be central to what would be taught in colleges and other PCET institutions. Even though the further education sector is widely noted for delivering courses to a diverse range of clients with diverse backgrounds, what

the on-going government's widening participation project demands is more innovation (creativity) in the sector.

Widening access and participation in the PCET institutions will also impact on the design, arrangements and delivery of the curriculum. If learners are expected to recognise, record, and 'celebrate' their learning gain, it follows that the curriculum will, to a significant extent, be tailored to meet learners' needs. This means making the curriculum more flexible. This also means encouraging the development of individualised learning pathways for learners. More significantly, the further education curriculum will, by implication, be responsive to the needs of business by emphasising the development of work-specific skills. As a pointer to current industry requirements, a Chartered Institute of Personnel and Development (IPD, 1998) survey showed that 70 per cent of employers now see creativity skills as key to job success. (In asking further education to meet the needs of learners and business, however, it is debatable whether those needs are consonant with one another.)

Also implicit in the on going post-16 education reform is the demand on colleges to improve the content of learning and ensure successful learning experience for all clients. The Kennedy review called for optimum standards in the delivery of learning programmes to help those 'who have previously not succeeded' (p.77). This implies better teaching, with clear strategies in relation to the whole learning process: it means adjusting teaching styles, techniques and approaches to meet the needs of different clients. It also means delivering teaching flexibly, creatively and responsively; and it means training and developing teachers to meet 'new challenges of wider participation in education' (p.78).

Another implication of the rolling reform in the PCET sector relates to the qualification frameworks in further education colleges. An earlier Dearing report published in 1996 (Dearing, 1996), examined the pattern of qualifications for the 16 - 19 years age group. It divided qualifications into three categories - Academic (A level), Applied (GNVQ) and Vocational (NVQ); this later provided the basis for developing Curriculum 2000 (D*f*EE, 1997) that was introduced in schools, sixth form colleges and general further education colleges in September 2000. The aims of the reforms were, among others, to make the post-16 (further) education curriculum broader and more flexible by encouraging students to mix and match academic and vocational subjects as appropriate. The Dearing review of 16 - 19 qualifications, as well as Curriculum 2000 did not address the mechanism (curriculum arrangements) through which these qualifications would be delivered, thus giving further education the flexibility to arrange and deliver the curriculum as it saw fit. This study will examine the curriculum arrangements in further education to determine whether or not they match the goals of these qualifications.

1.12 NACCCE Report

In 1998, the Government amplified its interest in creativity when it established the National Advisory Committee on Creative and Cultural Education (NACCCE), chaired by Professor Ken Robinson, formerly of Warwick University. NACCCE was asked to examine how creativity can be encouraged, enhanced and supported in the development of young people and the role of the education system in preparing them for the social, economic and cultural demands of the new century. NACCCE submitted its report in 1999, which included a wide range of recommendations. The four-part report (D*f*EE, 1999) addresses issues such as the difficulty of defining creativity, development of creativity in curriculum, creativity and teaching and learning, and schools' links with outside organisations and agencies. NACCCE's definition of creativity is premised upon

four characteristics of creative processes: imagination, purpose, originality and value. Creativity is defined as 'imaginative activity fashioned so as to produce outcomes that are both original and of value' (DfEE, 1999, p.29). The report explored these processes and underlined the importance of practical application of knowledge, in all fields, as central to developing young learners' creative abilities. It proposed that education provide opportunities for young learners to express their ideas, values, feelings and imagination.

The report identified two themes that NACCCE believed would have implications for arrangements and delivery of the curriculum. They are the need to underpin the concept of creativity with knowledge, and to give learners' the freedom and confidence to experiment (p.38). It acknowledged that unrestrained, unfocused or non-goal specific creativity can be counterproductive and might be of little value. A brief review preceded the NACCCE assertion that the National Curriculum has not served the cause of creative education. Factors such as the policy instability that has characterised curriculum organisation and structure in schools, and high levels of prescription on schools have impeded creativity in the school curriculum. The report proposed that official policy statements and government rationale for the compulsory education curriculum must make explicit reference to the importance of creativity in teaching and learning. It urged governments at both local and national levels to effect a reduction in current levels of external prescription on schools and to allow schools greater freedom and flexibility in the arrangements and delivery of a 'broad and balanced' curriculum. It proposed that creativity be promoted in all areas of the curriculum and across subject disciplines.

The report identified the need for creativity in teaching and learning, by making a link between creative teaching and creative learning; it said both are complementary and not mutually exclusive. It rejected the debate about the choice between traditional teaching

methods and progressive teaching methods, arguing instead that a balance be struck to enable the best of the two methods to be combined. There is clearly the need for teaching strategies to emphasise content and skills, as well as the need for teaching methods to provide opportunity for learners to inquire, experiment, question, and express thoughts and ideas. The report offers a two-pronged concept to nurture creativity in teaching and learning: teaching creatively and teaching for creativity. The concept identifies teachers (and teachers' instructional techniques) as the linchpin of creative education. In teaching creatively, the teacher's role is to encourage young people's autonomy and belief in their own creative ability; another role is to help discover or identify their creative strengths and abilities; and help them to develop and foster their creativity by developing ordinary ability and skills; 'common' capacities and sensitivities; and understanding of creative processes. A teacher's role in teaching for creativity includes providing an enabling environment in which learners can feel the confidence to make mistakes, to take risks and to work; encouraging freedom, self-expression of ideas, thoughts and values; stimulating curiosity and imagination and originality through free-play of ideas.

The report recognised the importance of external agencies, organisations and individuals in developing creative education. It acknowledged that schools alone cannot provide the creativity-facilitating educational experiences that young learners need in the "new knowledge economy". The report noted the resources that external agencies and organisations (including further and higher education) can extend to schools. Creative partnerships between school, business and the wider community will be mutually beneficial to all the parties involved, and a national strategy is needed to identify and build on current good practice. The report also identified the link between life long learning and creativity, sustained by mutual personal attributes such as motivation,

enterprise, persistence, curiosity, questioning, reflection, problem-solving and solution-finding techniques.

Although the government has, at the time of writing, welcomed the work of NACCCE, it has yet to make the document official government policy. But there have been attempts by the government to explore some of NACCCE's recommendations. The government has commissioned a number of universities including Westminster, Northumbria and Imperial College to investigate the concepts of innovation and creativity in relation to their place in the undergraduate curriculum. The NACCCE report remains the most important step yet taken by the UK government to place creativity into the mainstream educational discourse, but its implementation faces practical problems of ideology, politics and bureaucracy (see, for instance, Joubert, 2001). More significantly, the context of, and focus of the report was wholly compulsory education at a time when the emphasis is one of developing and delivery of a coherent curriculum covering the 14-19 age group. The report identified links between creativity and lifelong learning, business and the wider community, but did not address the question of sustainability of pupils' creativity beyond compulsory education and into work.

1.13 Culture and Creativity: The Next Ten Years

While the NACCCE report is essentially an advisory document, the government has made important attempts recently to place creativity at the heart of education with the publication of two papers that made explicit reference and commitment to developing the creativity of young people. One such is a Green Paper entitled Culture and Creativity: The Next Ten Years (DCMS, 2001). Published by the Department of Culture, Media and Sports, the Green Paper looks specifically at ways to nurture creativity in the areas of culture and sports, but envisions a role for schools and further education colleges in

developing curriculum pathways to enable students to develop their creativity. Primary education is seen as crucial in providing the foundation for developing creative skills and qualities of schoolchildren; apparently taking cognisance of the NACCCE concerns, the paper proposes that the government build on the flexibility and freedom, which the revised National Curriculum offers, as well as encourage schools to create and broaden the range of opportunities that are available for children in art, drama, music and sports education.

The paper acknowledges the role of secondary education in developing schoolchildren's knowledge and creative skills in preparation for post-16 education and training and careers; it proposes a number of initiatives designed to enrich pupils' learning experiences. One such initiative is the development of 'Creative Partnerships' aimed at fostering relationship between individuals, schools and professional cultural organisations. Such individuals would include film and video makers and web designers. Professional cultural organisations would include theatre companies, broadcasters, museums and universities. A system of learning credits is proposed to encourage and reward pupils who participate in Creative Partnership projects. 'Pupil Learning Credits' will be developed alongside Creative Partnerships to provide the opportunities for schools to buy into such partnerships and connect schools with local arts bodies and creative organisations, to provide an enriched 'education with character' (DCMS, 2001, p.26). The government anticipates that the introduction of vocational GCSEs from September 2002 will encourage more creativity in the curriculum since the 'curriculum will focus more on the needs of the individual and will offer them a significant degree of choice between pathways' (DCMS, 2001, p.26).

The Green Paper recognises the centrality of teaching and learning and, particularly teachers' roles in developing and nurturing learners' creativity. It proposes a working arrangement between the government and the Teacher Training Agency (for schools) in ensuring that the teacher education curriculum and continuing professional development programmes place greater emphasis on developing teachers' creativity. In-service training opportunities within schools will also be expected to provide pathways for teachers to develop their creativity.

The paper locates creativity at the heart of vocational education and training and sees a role for further education through the Learning and Skills Councils (LSC). The LSC superseded the Further Education Funding Council (FEFC) for England and Training and Enterprise Councils (TECs) from April 2001. The LSC is an executive non-departmental public body and is charged with wide-ranging responsibilities, which include planning, funding, management and quality assurance of post compulsory education and training (excluding universities), but 'its primary function will be to meet the learning needs of businesses, individuals and communities by putting in place a consistent and coherent system of funding' (D*f*EE, 1999, para. 3.3, p.23). The LSC is advised by two committees - Young People's Learning Committee and The Adult Learning Committee - both of which are charged with different responsibilities relating to specific needs of their clienteles. In the 16-19 provision, the Young People's Learning Committee has a specific duty 'to ensure that young people learn in ways which improve their employability and contribute to their personal development' (DfEE, para.3.12, p.25). Although the White Paper did not specify the particular methods for delivery of the curriculum, it is obvious that further education is being asked to contextualise learning and to relate learning to the real-world. The government's expectation in *Creativity and Culture* (DCMS, 2001) is that creativity will be central to the newly

introduced Foundation Degree curriculum, as well as to the development of qualifications based on national occupational standards, currently being undertaking by the National Training Organisations (which will be replaced by Sector Skills Councils from March 2002). More significantly, greater involvement of business in the design and delivery of the further education curriculum will be expected to emphasise creativity skills as part of specification aims and assessment objectives. Arts, media and craft-focused Centres of Vocational Excellence (CoVES) within further education colleges are expected to lead a national drive for creativity in vocational education.

1.14 Enterprise, Skills and Innovation

While the DCMS Green Paper may or may not become official government policy in its entirety, the government's White Paper on *Enterprise, Skills and Innovation* (DTI/DfEE, 2001) is probably the most significant attempt to underpin the country's continuing economic success with creativity and innovation in skill-building capacity. The paper identifies creative skills as vital for job success and proposes that creativity and innovative abilities and qualities are placed at the heart of the education and training available to young people. The paper characterises process and product creativity, as a person's ability to generate and turn ideas into successful products and services; it demands that teaching and learning adapt and respond to such challenges. 'Academic achievement remains essential, but it must increasingly be delivered through a rounded education which fosters creativity, enterprise and innovation. This will only be secured if teaching and learning are of a consistently high standard' (DTI/DfEE, 2001, paragraph 2.11). The paper, to that end, proposes to bring together work to reform teaching and learning so that students in every sector of learning are given opportunities to develop their creativity and capacity for innovation.

The White Paper also highlights the importance of developing teachers' creativity as a key to nurturing creativity of learners; it proposes a range of measures that are designed to improve teaching and learning capacity and strengthen leadership in schools. In the further education sector, the Learning and Skills Council is charged with the responsibility to develop practitioner skills and qualifications, as well as to monitor the delivery of teaching in colleges, teacher education, and teachers' continuing professional development. The White Paper acknowledges the negative perceptions in some quarters of the current vocational education system and proposes to develop and raise the profile of vocational courses on a par with academic study.

This is the government's first major attempt to put creativity at the heart of vocational education in further education, but the focus of the two papers (and the proposals that they contained), like a number of initiatives before them, is on compulsory education. There appears to be little appreciation, due possibly to lack of research evidence, of the need to foster creativity of learners beyond compulsory education. Although the documents acknowledge that creativity can be developed and nurtured in all subjects, the thrust of the proposals are in arts, media, culture and sports education (in the case of the DCMS paper) and vocational education (in the case of DTI/DfEE paper). The implication is that not every student will leave further education 'well-rounded'; students on academic study in particular will be left out of the government's drive to foster creative skills of all learners. It is contended that fostering creativity in the post-16 curriculum will be contingent upon setting up curriculum frameworks and arrangements through which the government proposals can be delivered; this is an important aspect that the two papers did not examine and which the current investigation will seek to explore.

1.15 Examining boards: a review and analysis of assessment objectives with particular reference to creativity

1.16 Context and framework of review and analysis

The further education sector can be described as a hotbed of qualifications (see Cantor *et al*, 1995). Unlike the school sector, there is no National Curriculum and nor is there a single curriculum to which the sector can truly lay claim even though it offers more than 17,000 qualifications, a quarter of which are in vocational areas (FEFC, 1997). Added to this are an estimated 500 examining and awarding bodies that FE colleges have to deal with annually. Although a significant number of these bodies have 'devolved' the design of the curriculum to colleges, suffice it to say that they still retain the control and setting of examination and assessment objectives (Cantor *et al*, 1995). The aim of this section is to examine a range of syllabuses and specifications and establish whether or not creativity is referred to in the assessment objectives. For ease of reference and analysis, and in line with the Dearing recommendations (Dearing, 1996), the syllabuses and specifications will be divided into three categories of qualifications on offer in FE. They are: academic (AS/A level), applied vocational (GNVQ/AVCE) and occupational/vocational (NVQ). The review will define creativity within the context of teaching and learning - as a process, a product, a 'personality' and a condition of the environment. It will define creativity in terms of a student's ability to apply knowledge to forge or make new connections and find solutions (valuable outcomes) to a given task or problem, either in a class assessment and/or in external examinations. The review will test whether assessment objectives specifically require students to use knowledge to make or forge new connections in answering examination questions (or in attempting vocational assessment tasks). The review will also test whether assessment objectives

require students to apply knowledge to both familiar and unfamiliar situations. It will distinguish between the application of knowledge to find solutions to assessment/examination tasks and the application of knowledge (in a variety of contexts) to make new connections to solve examination/assessment tasks.

1.17 Review and analysis: AS/A level (Academic)

Until very recently, the Advanced level GCE qualifications were regarded as the benchmark qualification for 16 - 19 year olds in the United Kingdom (excluding Scotland). The A level system of qualification emphasises content knowledge and the use of examinations to test such knowledge. Students are assessed after two years of study via a linear system of examination, but the non-linear (modular) system of examination is increasingly popular in many colleges following the introduction of a new post-16 curriculum in September 2000. The following sample of courses covered both the old curriculum and new curriculum 2000: the reason for reviewing the two curricula is that the fieldwork for the current study (which included classroom observations) took place between November 1999 and December 2000.

Mathematics, Applied Mathematics and Pure Mathematics and Statistics (OCR Examinations):

There are ten broad aims of the mathematics specification. One is to encourage students 'to recognise how a situation may be represented mathematically and understand the relationship between 'real world' problems and standard and other mathematical models and how these can be refined and improved.' (OCR, 2000, p.5). The assessment objectives for both the AS and A2 are the same and they are divided into five parts. A key aim of assessment objectives is to test candidates' ability to 'recall, select and use their knowledge of mathematical facts, concept and techniques in a variety of contexts,'

(p.7). The wording of the assessment objectives is significant in that it does not accord with the broad objectives of the specification. For instance, words like 'recall', 'select', 'use (their) knowledge,' were used in the assessment criteria; whereas words like 'apply' were used in the broad specification aims. There is no specific reference to creativity in either the specification aims or the assessment objectives. Although the aim quoted above implies creativity, what is being required in essence is the application of skills to a set of prescribed tasks and, arguably, regurgitation of information or lessons content.

Science (OCR Examinations, Curriculum 2000):

The science specification has eight aims. One of the aims of the specification is to encourage candidates to 'show knowledge and understanding of facts, principles and concepts from different areas of science and to make and use connections between them' (OCR Science, 2000, p.6). The assessment objectives are divided into three parts. They are knowledge, understanding and application, analysis and evaluation; and experiment and investigation. In applying knowledge, candidates are expected, among other things, to 'apply scientific principles and concepts to unfamiliar situations including those which relate to the ethical, social, economic, and technological implications and applications of science' (p.9). There is an explicit requirement on candidates to demonstrate creative skills in the Science examination as candidates are expected to apply knowledge in a variety of contexts (e.g. application of scientific principles to *unfamiliar* situations which requires a degree of creative thought process).

Chemistry (Cambridge Examinations, old syllabus):

One of the assessment objectives for the Chemistry paper features an attribute of creativity, even though there was no specific reference to it. According to the Chemistry syllabus, candidates are expected to apply knowledge, understanding and other skills to

new situations, (and be able to solve related problems). It's unclear how this criterion feeds into the marking scheme, as this was not stated in the syllabus.

Humanities:

Government and Politics (London Examinations) and Law (Associated Examining Board). Both syllabuses (and their marking schemes) make no reference to creativity, but emphasise the application of knowledge as candidates are expected (in Government and Politics) to 'apply knowledge to relevant political ideas, concepts and theories' (Edexcel, 1997); and (in Law) to demonstrate the ability to apply 'accurately the appropriate substantive legal rules ...' (AEB, 1997). The specification for the new (2000) AS/A2 Government and Politics has a dozen aims and they are very similar to those of the pre-2000 syllabuses. The assessment objectives for Government and Politics are divided into three areas – knowledge understanding; analysis and evaluation; and communication and presentation. The specifications for the new AS and A2 Sociology listed six aims and two assessment objectives; one such assessment objective requires candidates to 'demonstrate the acquisition and appropriate application of skills of identification, analysis, interpretation and evaluation ... .' (OCR, 2000, p.6).

Business Studies (London Examinations):

The business studies syllabus outlines five broad aims. One is to 'encourage students to adopt a problem solving approach to the investigation and analysis of business' (ULEAC, 1996). Problem solving is a key feature of creativity, which can be defined as the ability to generate new ways to attain a goal; the ability to adapt prior learning to new situations, or the ability to acquire a new pattern of responses (Powell, 1972). The business studies paper has seven assessment objectives assessable in all three components of the examination. One assessment objective requires candidates to demonstrate ability to

apply 'knowledge and understanding to problems and issues arising from both familiar and unfamiliar situations' (p.2). However, the contradictions in the order of listing of assessment objectives and the percentage weight of the marking scheme become obvious as just 12 per cent weighting was allocated to the criterion that requires demonstration of creative qualities. It trails significantly behind 'Analyse' and 'Organise and Present' which weigh 22 per cent and 22 per cent respectively. The Curriculum 2000 specification for AS/A2 Business Studies identified 16 broad aims and four core assessment objectives, which included a requirement on candidates to apply 'knowledge and understanding to problems and issues arising from both familiar and unfamiliar situations' (OCR, 2000, p.7). This requirement in the OCR specification was identical (word-for-word) to the ULEAC (1996) syllabus requirements.

Economics and Business (Nuffield):

This is the only paper which explicitly requires candidates to display originality and creativity in their answers to examination questions. The Nuffield marking scheme and the assessment objectives of the Economics and Business paper emphasise application of knowledge to problems and issues; and this attracts 26 per cent of the total weighting in the marking scheme. For any one candidate to attain level 4 (100 per cent), answers must show 'clear, logical, convincing, creative and original' arguments (Nuffied News, November 1997, p.1). The curriculum 2000 AS/A2 Business and Economics Nuffield specification identified broad five aims and emphasis is placed on the application of knowledge to real-world issues (Edexcel, 2000, p.5).

Accounting (Associated Examining Board):

The accounting syllabus embraces a broad approach to the subject. It is neither exclusively vocational nor professional (AEB, 1996). There are six assessment objectives

for the accounting paper. One such assessment objective requires candidates to demonstrate the ability to analyse, interpret and apply 'appropriate procedures' to accounting problems. Also significant is the fact that the latter attracts a total percentage weight of 30, second only to 'knowledge and understanding,' which attracts a total percentage weight of 40. The syllabus makes no specific reference to creativity nor did the marking scheme/grade provide marks for novelty or originality in candidates' answers. It nonetheless emphasises the application of knowledge via transferable skills. The curriculum 2000 AS/A2 Accounting OCR specification identified five aims and four core assessment objectives including knowledge demonstration, application, analysis and evaluation. It also made certain demands on the candidates' creative abilities. For instance, candidates are required to 'apply knowledge and understanding of accounting procedures, practices and principles to familiar and unfamiliar situations' (OCR, 2000, p.7). Morita (1992), for example, regards a person's ability to apply knowledge in unfamiliar situations as a demonstration of creativity.

1.18 Applied Vocational and Vocational A levels (GNVQ/AVCE)

General Vocational National Qualifications (GNVQs) are the second of the three major qualifications for 16 - 19 year olds. The GNVQ was introduced in schools and colleges in 1992 by the National Council for Vocational Qualifications, now subsumed into Qualifications and Curriculum Authority (QCA), to provide broad education 'both for training leading to employment, and for further and higher education' (NCVQ, 1995, p.5). Unlike the A level which emphasises content knowledge, the GNVQ lays emphasis on competent performance, while (arguably) content knowledge gets less priority (Green, 1997). Also, unlike the traditional A level examinations, assessments generally take the form of observations of performance; assignment, project work and written evidence. The vocational system emphasises development of general skills, knowledge and

understanding and production of evidences (in the form of a student portfolio). Assessment in GNVQ has two broad grading themes - which are common to all units. They are: Process and Quality. Process includes planning, monitoring and evaluation; while Quality denotes the quality of outcomes of students' work. The grading themes are 'designed to recognise and reward those students who consistently produce high-quality work above the standard requirement; demonstrate the process of planning, using information (research) and evaluating their work,' (NCVQ, 1995, p.6).

One of the key aspects of a new post-16 curriculum introduced in schools and colleges in September 2000 was the introduction of Vocational Certificates of Education (VCEs) developed from Advanced GNVQs. The new VCEs are conceived as alternatives to General Certificate of Education (traditional GCE A levels) so that, for the purpose of university admissions, grades for VCEs will have equal standing with grades for GCEs. Students can take Advanced Subsidiary VCE (three units), Advanced VCE (six units) and Advanced VCE double award (12 units) in business, engineering and travel and tourism. Assessment methods used for the new AVCE are, to some extent, similar to those of the GNVQ. Students are assessed by coursework set and marked by subject teachers (similar to portfolio work in the old GNVQ); they are also assessed through external written tests in at least two units. In a marked departure from the multiple-choice format of the old GNVQ external tests, the new AVCE external tests are believed to be more rigorous and more challenging and rather more academic.

GNVQ Advanced Business (BTEC):

There are eight mandatory units in GNVQ Advanced Business. The GNVQ Business is aimed at developing students' 'creative and analytical thinking through investigating businesses and markets, analysing business systems, proposing improvements to systems

... and producing business plans,' (BTEC, 1994, p.5). The old GNVQ Advanced Business specification (syllabus) is therefore specific (and emphatic) in its reference to creativity. The new AVCE has 32 units, of which six are mandatory. Among the mandatory units are Business At Work, Competitive Business Environment, and Finance. Both OCR and Edexcel issued guidance to teachers on a range of issues including teaching and assessment strategies for grading coursework. In distinguishing the grades in the Business units, Edexcel asked teachers to focus on four key general qualities, which include 'increasing independence and originality' (Business At Work, Edexcel, 2000, p.27). It is worth noting that the OCR guidance to teachers did not make the same demand. It is also significant to note that both the AS/A level Business Studies and GNVQ Advanced Business and AVCE Business make specific reference to creative qualities among general qualities that are expected of candidates.

GNVQ Advanced Engineering (BTEC):

There are eight mandatory units in GNVQ Advanced Engineering. The course is designed to 'provide opportunities for students to develop the skills, knowledge and understanding that underpin the creation of engineered products, and engineering systems and services,' (NCVQ, 1995, p.13). Even though engineering is among a number of key subjects which demand creative skills or abilities (Cropley and Cropley, 2000), suffice it to say that neither the specification nor the grading themes for Engineering state creative skills or qualities as an assessment objective. The Curriculum 2000 VCE Engineering has six mandatory units (for AVCE) including Engineering In Business and the Environment. Unlike the old GNVQ Advanced Engineering specification and grading scheme, originality is a key demand by the Edexcel in awarding grades for coursework in the new curriculum (Engineering In Business and the Environment specification, Edexcel, 2000)

GNVQs Advanced are also available in other subjects such as Science, Leisure & Tourism, Health & Social Care, Art & Design. In common with other GNVQ subjects, assessments are carried out largely by means of project/assignment in which students are asked to investigate given tasks. According to the NCVQ (1995, 1996 & 1997), the grading themes for students' assessment in these units are broken into a merit and a distinction. For students to achieve a merit, they must show their usage of knowledge, skills and understanding 'effectively to produce high-quality responses to discrete tasks' (p.17, 1996). To achieve a distinction, students must show that they have used their knowledge, skills and understanding 'effectively to produce high-quality responses to complex activities' (p.17). There is no specific reference to creativity in the grading themes. AVCE specifications for Health and Social Care and Travel and Tourism (Edexcel) are assessed by a combination of coursework and a written external test. But, unlike the old GNVQ, assessment guidance made reference to 'autonomy, independence and originality' in the award of grades on coursework.

1.19 Occupational/Vocational (NVQ)

The National Vocational Qualification (NVQ) was set up principally to meet the needs of the employers. The NVQ adopts a competence-based approach to assessments and qualifications. This means that to gain an NVQ award, a candidate must provide evidence of how competent s/he is at performing a set of duties or prescribed tasks at work or, in some cases, in a simulated work environment, while meeting a set of (pre-determined) performance criteria set down by the relevant Industry Lead Body (LB). NVQs are available in a range of vocational areas, such as Accounting, Administration, Customer Service, Construction, Health, Social Care, Child Minding, Hairdressing, and Beauty Therapy. The purposes of the occupational standards are: 'to provide competent

well-trained staff as a means of enhancing the effectiveness of the industry' and 'to recognise actual work performance with nationally recognised qualifications and develop the skills and knowledge necessary for effective performance' (Administration; Hairdressing; Beauty Therapy (NVQs flyers, Edexcel, February 1999). Candidates are assessed by observations of performance; by assignment, project work and simulation. Even though the emphasis is on competent performance, a number of accredited bodies (such as the Association of Accounting Technicians) are now assessing underpinning knowledge via 'Central Assessment' or 'External Examination'.

1.20 Conclusion

The AS/A level system, in every respect, tests candidates' content knowledge and their ability to apply skills to solve examination questions. The GNVQ/AVCE lays emphasis on developing general skills and qualities, where students are required to work independently and investigate solutions to given tasks while encouraging them to apply knowledge in a variety of contexts. Students are also assessed externally to test underpinning knowledge of the subject. To the extent that students are asked to investigate tasks/ problem, their creative abilities can be developed - although it has to be mentioned that none of the specifications under review (besides GNVQ Advanced Business, Nuffield A level Economics and Business), explicitly states creativity as an assessment objective. The new Curriculum 2000 AVCE Business (Edexcel Examinations) identified originality as a key indicator that should be used by teachers in distinguishing between grades for coursework; but the OCR did not state this requirement in its guidance on teaching strategies and grading of coursework issued to teachers. The NVQ system is largely prescriptive and has the potential to stifle creativity, as candidates are only required to demonstrate competence by meeting the performance criteria. The system has no grading themes (unlike the GNVQ) as candidates are either

judged 'competent' or 'not yet competent'; 'achieved' or 'not yet achieved'. Assessments are largely by observations and, in the absence of work-related evidence, simulation. Nonetheless, both the NVQ and the GNVQ/AVCE schemes were introduced as part of the successive UK governments' attempt to encourage breadth of subjects in 16-19 provision and stimulate innovation in further education curricula by making qualifications relevant to further study and the world of work. What has yet to be investigated is the arrangements/delivery of the curriculum (the syllabus/specifications) in further education and whether or not they match the assessment objectives of these qualifications.

1.21 Creativity in the curriculum

Of many investigations and inquiries into creativity in the curriculum in England, little has yet extended into further education. The key question that has yet to be explored is 'What are students', teachers', managers' and leaders' perceptions of creativity and how can creativity be facilitated in 16-19 year-old curriculum?'

Investigators and other commentators on creativity have sought to provide insights into how creativity can be fostered in the teaching and learning process. Wason (1968) reported her research experiments into how creativity can be nurtured in young children in an English infant school. Children were encouraged to explore and seek out natural and man-made objects. Children played with torches, experimented with mirrors and measured shadows and found the use of air. Haddon and Lytton (1968), in examining the effects of teaching approaches on divergent abilities (creativity) of 11 to 12 year olds found association between a certain teaching approach and the development of divergent thinking abilities. The study also found an association between informal schools and the environment that aided high-level creativity. Lynch's (1970) study of creativity among Dublin adolescents revealed differences in the levels of creativity among children; the findings enabled her to build-up a profile of 'highly creative' children. Ogilvie's (1974) follow-up study on Haddon and Lytton examined the relationship between curriculum structure and creativity. Creativity tests designed to measure complex associative fluency and originality were administered to pupils aged 10 to 11 in five schools in England. Unlike Haddon and Lytton, the study did not find evidence to support relationships between (informal) school environment and children's creativity. More recently, Woods (1996) reported his inquiry into how creative teachers have adapted teaching practice and

have nurtured pupils' creativity within the milieu (or constraints) of the National Curriculum. Also, work by Craft (2000) explored creativity across the primary curriculum and suggested, based largely on a mixture of experience and research evidence, how it can be fostered in children in a variety of subject domains and contexts. All these studies have been conducted exclusively in the context of compulsory education, and little have yet identified the need to nurture and sustain pupils' creativity right through to their postsecondary education particularly in sixth form colleges and general further education colleges.

The implications of limiting investigation to pupils in compulsory education are significant given that creativity displayed by pupils at such an early age is largely 'quasicreativity' (Cropley, 2001, p.91) and of less significant value: children's creative outputs are created largely for their own consumption and not for the wider world. Cropley contrasted children's creativity and adults' creativity. Children's creativity – compared to adults' creativity – is subjective and less cognitively and socially matured. Indeed, what often passes for childhood creativity is a certain disposition exhibited in children's behaviour – e.g. relative originality that has no social value (Ward, 1974), which is not predictive of future performance (Dudek, 1974). Unlike children, adults also have the capacity to 'preserve' their creativity. Viewed in that context, it is contended that creative output can only be beneficial to both the child and the wider world if it is nurtured and supported through to the child's post-compulsory education and beyond (e.g. lifelong learning).

Where attempts have been made to explore the relationship of creativity and the curriculum structure in further education, they have been no more than position/ discussion papers. In 1989, the Confederation of British Industries (CBI, 1989) proposed

the development and introduction of key skills - known then as core skills - in 14-19 provision. The government accepted the CBI proposals and they were acted upon by both the National Curriculum Council and National Council for Vocational Qualifications (Jessup, 1991). A key reason for introducing key skills was to make 'education in schools more relevant to work and life and (to) improve transfer and progression in vocational training' (Jessup, 1991, p.81). The key skills that were initially proposed were (not necessarily in order) problem solving, communication (literacy), personal skills, numeracy, information technology and Modern Languages competence. There have been over the years repositioning and re-titling of key skills such that in Curriculum 2000 (D*f*EE, 1997), the key skills of application of number, communication, information and communication technology were privileged over the so-called 'soft' key skills of problem solving, team building and personal skills while Modern Languages competence tends to be forgotten. Problem solving is a cognitive skill, and it is recognised as a key creativity stimulant and technique (Ogunleye, 2000). The decision of the government's Qualifications and Curriculum Authority not to make problem solving skills compulsory in the delivery of Curriculum 2000 is at variance with the CBI's original proposals (CBI, 1989) and may have implications for the awarding bodies' assessment requirements in Curriculum 2000 - requirements that candidates be able to respond to both familiar and unfamiliar situations, as well as employers' demand that students are adequately equipped with 'real-life' skills.

The Further Education Unit discussion paper entitled Creative and Arts Activities in Further Education (FEU, 1985) remained the most comprehensive and authoritative paper on creativity and the further education curriculum. The paper identified the need, in further education, for new curriculum arrangements and delivery to foster learners' creative thinking and action, 'underpinned by teaching strategies which promote

adaptability and the transferability of skills among students' (FEU, 1985, p.5). The FEU paper is located within the context of the vocational curriculum in further education and it argued that students should be equipped to 'transfer skills learnt in one vocational context to another' (p.5). Even though the FEU paper was published long before the reforms of 16-19 year-old curriculum in the 1990s and more recently in 2000, its arguments were not grounded on empirical research. Also, the paper focused (perhaps understandably, given the remit of the FEU) exclusively on the vocational curriculum and left out students following curricula such as A-level. The terms 'adaptability' and 'transferability' were used loosely as to suggest that 'adaptability' and 'transferability' skills were the same as creativity skills. Not withstanding these shortcomings, the FEU paper remains the only authoritative document on creativity and the further education curriculum from which an exploratory investigation of this nature should draw.

1.22 The framework of the current study: definition of creativity, the further education curriculum and institutional factors

1.23 Creativity and the further education curriculum

Curriculum has been described variously as an expression of educational intent (Heathcote, *et al*, 1982). The further education curriculum embraces course aims, objectives and learning outcomes which are largely set or validated by the examining and awarding bodies, many of whom have competing interests. It is often said (see, for instance, Ainley and Bailey, 1997) that further education can do little to change the content of the curriculum which is written by bodies over whom it does not have direct control. But further education does have control over the way the curriculum process is structured, arranged and delivered – which is not necessarily a function of the way the curriculum is set, or the units of competence in vocational courses and performance criteria that are prescribed by the awarding and validating bodies (Ogunleye, 2000). Creativity in the curriculum can be conceptualised as a process and a product, as well as a condition of the environment. This study will provisionally define creativity as the ability of a person to use prior knowledge to generate new ideas or new (valuable) solutions to a task. Such a task might arise from classroom discourse, the work environment, or from the home environment. This definition will be refined and located within the context of teaching and learning where creativity will be defined as the ability of a student to apply knowledge in a variety of real-world contexts and across a variety of subject domains. Knowledge is central to this concept of creativity; there is a positive association between creativity and knowledge/skill (Nickerson, 1999; Boden, 2001), although research has not fully established how knowledge and skill are used in creative thinking (Weisberg, 1999). (For an extensive discussion on further education curriculum, see Dimbleby and Cooke, 2000; Cantor *et al*, 1995.)

1.24 Creativity and institutional factors

Management organisational structure: Organisation is an element of management which is concerned with change or growth of the structure (Appleby, 1987) and the relationships that exist among individuals. Organisation structure can be described as a division or grouping of tasks, jobs and functions designed to help achieve the overall long-term objectives. An effective organisation is key to improving work performance and this explains why managers spend time and resources to ensure that the structure is right: because an ill-conceived structure can have far-reaching (perhaps a destructive) consequence for an organisation (Drucker, 1955). The analyses of activities (tasks), decisions, and relations in the organisation (Drucker 1955) generally precede the designing of the structure. The tasks are classified, grouped and assigned to the relevant departments or sections. A key challenge for managers lies in how to group activities in a way that avoid conflict between units or components that make up the organisation (Appleby, 1987). Strong and effective structure can a play a part in the way an organisation manages its day to day activities. This is more so for further education colleges today than at any other time since the sector was created over a century ago. The FE sector is today being asked to be many things to its various stakeholders including the external requirement to deal with different elements and components of the curriculum (i.e. sub-systems which include processes and products and people skills). The challenge for further education lies in how to devise an organisational structure that provides flexible and creative links for this myriad of sub-systems.

Departmental and matrix are two structures of organisation that are commonly found in further education. A departmental structure of organisation involves the grouping of organisation according to functions, tasks or activities, and it is particularly suitable for

organisations which operate in an environment where there is stability (Dawson, 1993). A departmental structure has many benefits: it aids specialisation (which can lead to internal economies of scale - increase efficiency - in staffing and curriculum structure); it enhances clear-cut lines of authority, responsibility and aids efficient delegation of duties and tasks. It lessens potential for division and facilitates co-ordination within itself (but not across the college). Departmental systems can also be an effective and convenient means of administration (Dawson, 1993). Some of the drawbacks of departmental structures include problems of management, especially in a multi-site organisation or muti-campus colleges. Also in a departmental structure, people might be tacitly encouraged to have a narrow vision or outlook for the organisation, while students' need may receive less attention.

A matrix structure of organisation is a hybrid form of functional and product structures, which is said to aid decision-making (Kingdom, 1973). A key feature of matrix structure is that it emphasises teamwork. But a matrix system has to be flexible to make it work (Dawson, 1993). A matrix system is said to aid cross-college co-operation. It is a good and effective means of promoting flexibility in the curriculum; it may also make different college components - curriculum, resources and support responsive to students' demand. The system brings more members of staff into decision making process (Dawson, 1993) which may improve creative/divergent thinking; it encourages and fosters co-ordination and communication and aids participatory styles of management. But the matrix system is likely to add to the running costs and maintenance, and there might arise confusion (among staff) during the introductory stages. More so, when the internal operations become complex, there might be individual or group conflict with wider corporate objectives. The question is what type of management structure can best support student creativity in a further education context? Or to what extent do existing

structures of management support student creativity? This project will seek to explore these questions.

Culture, ideology, ethos and staff attitudes: Culture in the FE context amalgamates among other things Culture, ideology, ethos and staff attitudes. It explains and reflects the particular way a college carries out, among other activities, its teaching and learning. The way people in the college behave and relate to each other either formally and informally (Harper, 1997; Turner, 1990) influences culture. Attributes such as beliefs, assumptions, behaviour, ideology and language are manifestations of culture: therefore, to change a college culture would mean changing these manifestations (FEDA, 1999).

The cultural values of any college will be dictated to a significant extent by the dynamics of its environment, which are influenced by factors such as the economic (i.e. employment), social and political. Past studies (see, for example, Frain, 1993) have shown that a college culture may not necessarily reflect or accord with its needs or environment. A college may have more than one culture (sub-cultures) and this is more likely if a college operates on more than one campus and if it offers more than one curriculum. Likewise, sub-cultures may exist between departments and curriculum areas; and between professional groups and vocational areas (Robson, 1998). A college can encourage a unified culture by the way it structures its organisation. Harper (1997) referring to the work of Charles Handy (1985) identified four types of cultures in further education. They are: power culture (suitably used during a time of crisis); role culture (when a college structures its organisation according to functions or expertise; used to steady the state of affairs, likely to encourage bureaucracy); person culture (used where the interest of employees is a primary goal) and tasks culture (used for innovation and creativity). These four classes/characteristics of culture on the whole mirror McNay's (1995; 1999) four-

part quadrants – colloquium, bureaucracy, corporation and enterprise – found in higher education.

In the past, culture in further education was heavily influenced by its relationship with industry (Simpson, 1989). But recent studies (see Robson, 1998) have found a new culture of managerialism in further education. This culture has been brought about by the new orientation in the sector, an orientation that places emphasis on resource management. According to Robson, the 1992 Further and Higher Education Act and the ensuing incorporation of colleges in 1993 have induced a business-like approach to the running of the further education colleges. The overriding objective of college management now is to meet a myriad of targets (Perry, 1998) imposed by the FEFC/LSC in order to secure funding for college curricular activities. How this matches or misses a new government's drive to foster creativity in vocational education is among the issues that this project will examine.

Ideology in an FE context can be defined as a set of ideas or beliefs that holds a college together; it is a college's perception of the world and a set of values which relate to its action in that world (Collier, 1983). Turner (1990) described ideology as the ethos of organisational culture. It also includes values, norms and expectations. Brookover (1982) finds evidence that links students' performance with the level of expectations that school staff hold for such students. UK higher education is said to be influenced by ideologies such as the academic ideology, while further education (perhaps questionably) is concerned with the ideology of economic renewal (Collier, 1983). The challenge for ideology in further education is how to remain relevant, sustainable and adaptive to its changing environment (FEDA, 1999). A college ethos includes curriculum enrichment described as 'activities which colleges provide in order to extend students' education

beyond the main course of study.' (FEFC, 1996, p.3). The FEFC's report says 14 percent of the 207 colleges sampled see curriculum enrichment as a central feature of college objectives.

People's attitudes and dispositions towards change (in particular) and creativity (in general) can facilitate or hinder creativity in the curriculum. There are many variables to attitudes: they are generally informed by radicalism and by conservatism. Thus no matter how creative an idea from the top management (for example) might appear to them, the way the people (staff) down the hierarchy of the college implement change would be most important. The idea would be in trouble if the staff are opposed to it or if their own concepts of novelty are at odds with those of the management. To overcome resistance, however, it is incumbent upon the leadership (agent of innovation) to devise strategies to arrest the problem (Hoyle and Bell, 1972). Attitudes of staff towards one another can impact upon creativity - especially where creativity is dependent upon close working relationships (Hoyle and Bell, 1972). Also teachers might unwittingly discourage creativity by their teaching styles: they can encourage students to approach their work with teachers' own mind-sets (Turner, 1991) and perspectives. If staff attitudes are not disposed favourably towards creativity, implementation of new ideas will become difficult.

Resources are arguably a key factor in the teaching of the curriculum. They include money, materials (equipment), trained personnel, and time (Hoyle and Bell, 1972). This project will explore the impact of resources on the teaching of the curriculum.

1.25 Summary

Investigators have not yet agreed on a single definition for creativity, but there is a general acceptance that creativity exists (in a varying degree) in every human and it involves production of ideas, thoughts, behaviours, etc. that are novel, valuable and effective (i.e. fit for the purpose). It has also been established that creativity ought to be nurtured, fostered and facilitated in the post-16 (further) education curriculum.

A number of recent government policy documents on post-16 education have either implicitly or explicitly, identified creativity as an important skill that young people should develop in the new knowledge economy and further education appeared to have been assigned a key role in helping young people to develop those skills. However there has been little empirical work to examine the implications for arrangements and delivery of the curriculum in the further education context.

The National Advisory Committee on Creative and Cultural Education (DfEE, 1999), which examined creativity and the role of education, discussed its work almost exclusively within the context of the school curriculum; it did not extend its arguments to the 16-19 curriculum. The government has attempted to investigate some of NACCCE's recommendations when it commissioned a number of universities (including Imperial College and the University of Westminster) to investigate creativity and innovation in relation to the undergraduate curriculum. Their work has not been completed at the time of writing this thesis in spring 2002. The further education arm of the PCET institutions was not included in the government's inquiry; this raises the question of how the government can possibly sustain schoolchildren's creativity before they reach higher education or enter into the job market. The government took important steps in 2001 to place creativity at the heart of vocational education in England with the publication of

two papers – a White Paper on Enterprise, Skills and Innovation and a Green Paper on Culture and Creativity. The White Paper on Enterprise, Skills and Innovation is particularly significant in that it sets out, for the first time, the government's commitment to promote creativity in teaching and learning. But, as with the government's policy initiatives before it, the focus is almost exclusively on compulsory education, particularly the new 14-16 vocational curriculum (which will be introduced in schools from September 2002). This development might be due to lack of research evidence to support similar schemes in the further education sector. Limiting the nation's drive to promote creativity in teaching and learning to schools will have implications for government policy on enterprise, skills and innovation. The goal of the White Paper is to ensure that young people leave education with skills that match the requirements of employers. Such a goal cannot be possibly achieved if the same young people are expected to pass through post-16 education (excluding universities) without a similar drive to nurture their creative abilities and qualities while in further education. Besides, as Cropley (2001) points out, creativity skills displayed in early education by schoolchildren are 'quasicreativity' and are unlikely to be of significant use by the time they enter the job market or progress in their academic career without being developed, nurtured or supported every step of the way.

Examining boards are largely responsible for course syllabus and specifications in further education and they clearly demand creative qualities and skills in candidates' work; they demand knowledge application in both familiar and unfamiliar situations in a number of academic and applied vocational courses. Examining boards agree significantly on the contents of syllabus/specification aims and assessment objectives, but some discrepancies were found with respect to qualities that candidates are required to demonstrate in coursework. For instance, in assessing and grading vocational candidates'

coursework, Edexcel will give consideration to qualities such as 'independence and originality' but OCR did not ask for such qualities in its guideline to teachers. A key issue that is yet to be examined is whether curriculum arrangements and delivery match or miss the examining boards' course specifications and assessment objectives.

Work done to date on creativity and the curriculum has not been extended to further education; and efforts to promote or nurture young people's creativity will not achieve the desired results if research is limited to teaching and learning in compulsory education. The FEU (1985) discussion paper on creativity and the curriculum structure in further education, although acknowledged to be a landmark, was not based on empirical work; but it remains the only significant work on creativity and the further education curriculum and it provides a basis for the current investigation.

1.26 Aims of the investigation

The aims of the current investigation therefore are as follows:

- To investigate curriculum arrangements conducive to fostering creativity in PCET institutions and classrooms in England.
- To analyse factors promoting and impeding creativity in curriculum content and processes.
- To develop models of good practice for encouraging creativity in a PCET context.

For the purpose of this study, PCET institutions refer to sixth form colleges and general further education colleges in England. The PCET curriculum refers to 16-19 provision – such as A level, GNVQ/AVCE, NVQ and one year (full-time) Access to HE courses. Comparable case study institutions in the United States are community colleges, which share similar characteristics with further education colleges in England (DES, 1990) and high schools, which offer curriculum provision similar to sixth form colleges and schools sixth form in England. The next chapter examines the context and the methodological framework of the study.

CHAPTER TWO

2.0 Methodological framework

2.1 Introduction

The criteria for the research design adopted in this section are similar to those suggested by Kerlinger (1973, p.322-344), namely that the design answers the research questions, that it adequately tests the hypotheses and that it acknowledges the extent to which the results of the study can be generalised. Since the study is essentially exploratory, the research questions generated are comprehensive and are placed within the context of the overall research aims. This section introduces the data and subjects studied and it describes the process and methods used in collecting data for the study. It outlines and discusses the data collection instruments - questionnaire, classroom observation, interview and case study - and the rationale for using these instruments. The section ends with a discussion on the limitations of the research design.

2.2 Research Questions

The following research questions informed the methodological framework; the questions, comprehensive as they are, reflect what the researcher clearly feels are researchable within the operational context of the further education curriculum:

Research Aim (1): To investigate curriculum arrangements conducive to fostering creativity in post-16 education institutions and classrooms - specifically in 16-19 provision

Exploring beliefs and perceptions about creativity in teaching and learning in a further education context

- What are students' perceptions of creativity? What are students' perceptions of their own creative attributes? What are students' perceptions of their own behaviours and practices in the classroom? What are students' perceptions of teachers' behaviours and practices in the classroom?
- What are teachers' perceptions of creativity? What are teachers' perceptions of a creative lesson and what would they treat as evidence? To what extent are teachers' teaching practices guided (or not guided) by their perceptions of creativity?

Research Aim (1): To investigate curriculum arrangements conducive to fostering creativity in post-16 (further) education institutions and classrooms - specifically in 16-19 provision

Exploring beliefs and perceptions about creativity in the further education curriculum

- What are curriculum managers' perceptions of creativity? What are curriculum managers' perceptions of a creative curriculum and what would they treat as evidence? To what extent are curriculum managers' definitions of a creative curriculum consistent (or not consistent) with their perceptions of creativity? To

what extent is creativity manifested in the present arrangements of college curriculum?

Research Aim (1): To investigate curriculum arrangements conducive to fostering creativity in post-16 (further) education institutions and classroom - specifically in 16-19 provision

Exploring leaders' beliefs and perceptions about creativity in a further education context

- What are college leaders perceptions of creativity? What are college leaders' perceptions of a creative college and what would they treat as evidence? To what extent are leaders' definitions of a creative college consistent (or not consistent) with their perceptions of creativity?

Research Aims (2) and (3): To identify and analyse factors promoting or impeding creativity in curriculum content and processes and to offer/develop models of good practice for encouraging creativity in a further education context

Exploring factors promoting or impeding student creativity in a further education context

- What are the roles of teachers, the curriculum and the college in facilitating student creativity? What are institutional factors that facilitate or impede creativity in teaching and learning? To what extent are financial resources constraining creativity in curriculum content and process?

2.3 Assumptions in methodological framework

1. The geographical spread of the college regions is representative of the former Further Education Funding Council (FEFC) regions. The four regions from which the colleges were selected represent approximately 57 per cent of the FEFC regions.

2. All colleges (sampling units) are homogeneous - they (arguably) share similarities - with respect to the variables and characteristics (sampling elements) under study and, as such, they are likely to provide an accurate indication of views, beliefs and understanding of creativity and factors that impede or promote creativity in a further education context. The sampling units in this study exclude tertiary, agriculture and horticulture, art and design and specialist designated colleges.

3. The sampling unit of 10 – approximately 3.2 per cent of the 324 sixth form colleges and general further education colleges – is representative in the sense that it has approximate characteristics of the population of study (see Kerlinger, 1973). It is also considered sufficient to meet the analysis of the study. Also, many of the 324 colleges in the general population offer similar 16-19 provision, which is the focus of the current study. However, a highly representative sample of the sampling elements (such as classroom observations) need not be absolutely necessary, due to the exploratory nature of the survey (Zikmund, 1997).

4. The research will benefit from the strengths of quantitative and qualitative methods. Also, the verification and validation of the subjects' responses/answers

are best achieved by using a mixture of quantitative and qualitative data collection instruments (see Bryman, 1988).

2.4 Rationale for choice of methodologies

> *The distinction between qualitative and quantitative research is really a technical matter whereby the choice between them is to do with their suitability in answering particular research questions (Bryman, 1988, p.109)*

A key assumption in the methodological framework (item 4 in paragraph 2.3) is that this research will benefit from the strengths of both quantitative and qualitative methods. Five distinctive approaches to the study of creativity have emerged since Guilford's (1950) presidential address to the American Psychological Association on the subject. They are *psychometric*, *experimental*, *historiometric*, *biometric* and *biographical/case study* approaches (Plucker and Renzulli, 1999; Runco and Sakamoto, 1999; Gruber and Wallace, 1999; Simonton, 1999; Martindale, 1999). Each of these approaches uses a mixture of qualitative and quantitative design instruments. The use of qualitative and quantitative instruments in this study, therefore, is consistent with the conventional methodological approaches to the study of creativity. In making judgements over the choice of research methods, the researcher was guided primarily by the need to design instruments that seek to address the research aims; the need to answer the research questions, and the need to 'triangulate' research design instruments, data and results (see Clark and Causer 1991; Bouman and Atkinson, 1995; Robson, 2002; see, also, paragraphs 1.26 and 2.2 on the research aims and the research questions, respectively).

Quantitative research models emphasise the importance of measurement in empirical research (Bouma and Atkinson, 1995; Bouma, 2000). It adopts a 'nomothetic approach' that 'seeks to establish general law-like findings which can be deemed to hold

irrespective of time and place' (Bryman, 1998, p.100). This means that the relationship between the researcher and the subject is 'distant'; and that results of the research would be theoretically replicable even if someone else did the study (Weinreich, 1996). To that extent, the use of quantitative instruments in this study sought to ensure objectivity, reliability and generalizability of results or findings to a larger population. The quantitative design instruments - student questionnaire and classroom observation - used in this study were deemed by the researcher appropriate to examine or explore the behavioural elements of the research design variables. These variables include students' self-perceived creative attributes, students' self-perceived classroom behaviours and practices, students' perceptions of teachers' classroom behaviours and practices; and features of classroom interactions that were collected through the classroom observations.

The research also benefited from the flexibility, in terms of the treatment of data, that quantitative paradigm provides (see Jones, 1997). The broad data generated in this study was used comparatively in the analysis of univariate, bi-variate and multivariate analysis (it will be noted that 800 students returned the questionnaire; and 974 minutes of classroom observations were carried out). Univariate analysis produced a descriptive summary of the results; bi-variate analysis tested for differences and examined relationships between two variables; multivariate analysis further highlighted variables(s) that explained these differences and relationships. Viewed in that context, it can be argued that the reliability and validity of data and statistical results or findings were more objectively determined.

A weakness of the quantitative methods - student questionnaire and classroom observation - which the qualitative methods sought to overcome (see below), is that they

did not provide an in-depth explanation of the statistical results. Consequently, the statistical results showed what is essentially a 'snapshot' of the phenomenon or variables under study (Jones, 1997), in that the results did not take into account 'effects of variables that have not been included in the model' (Weinreich, 1996). The use of qualitative methods in this study sought to address some of these shortcomings.

Important features of the qualitative paradigm are its richness and flexibility (Miles and Huberman, 1994; Bouma, 2000). These features of qualitative methods enable particular research questions to be explored in-depth with the subjects, while comments, remarks, views, etc., are followed-up (Bouma and Atkinson, 1995). In this study, the qualitative methods – interview and case study – were particularly useful in exploring the research questions. Among the issues addressed in the research questions are the subjects' conceptions of creativity and the subjects' perceived factors that impede or promote creativity in a further education context. The use of a qualitative research model, therefore, provides deeper understanding of the subjects' constructions of creativity and other qualitative variable measures. Another positive attribute of the qualitative paradigm is that verbatim quotations from interviews can be used to exemplify the subjects' particular comments or views (Denscombe, 1998). Evidence of the use of verbatim quotations can be found in chapter five of this report.

Bryman (1988, p.100) describes qualitative research as 'an ideographic approach (which) locates its findings in specific time-period and locales'. This means that, the sample is often small and limited; it also means that if qualitative design is used as a sole data collection instrument, the research is unlikely to be replicated. Bryman (1988), Jones (1997), Marshall and Rossman (1995), and Rao and Woolcock (2002) have pointed out other weaknesses of qualitative research. They include problems of interpretation and

validity of results or findings and difficulties of drawing generalisations about the wider population. The use of multiple methods in the current study sought to overcome many of the weaknesses of a single design method.

The combined use of qualitative and quantitative research designs in this study has a number of benefits – not the least the ease with which triangulation was permitted. This process involves checking, cross-checking, corroborating and validating results within and between methods (Clark and Causer 1991; Robson, 2002). With this approach, the researcher was able to triangulate results or findings of the quantitative counts such as student survey questionnaire, and classroom observations, and the qualitative counts such as interviews and case study. The use of multiple research designs in this context sought to improve the overall interpretation and reliability of the research findings.

2.5 Research instruments, design and methods

As explained, this study employed a mixture of quantitative and qualitative research instruments; they are questionnaire, classroom observation, interview, and documentation review. Qualitative instruments were used because the researcher considered them suitable for the exploratory nature of the study (see Biklen, 1992; Zikmund, 1997) while quantitative instruments were employed to determine or identify statistically the significance of differences and the relationships between phenomena; and to use the probability thereof (discriminant function) to identify the variable(s) that explain these differences. An evaluation of a number of research methods preceded the choice of methods and data collection instruments used for the study. This evaluation

was carried out to determine the appropriateness and suitability of each method (see below). The research methods used are questionnaire, observation, interview, documentation review, and case study (used only for two North American case study colleges – see paragraph 2.18 below).

An important aim of the qualitative methods used was to obtain the subjects' (i.e. students', teachers' and managers') perceptions of creativity and their views about how creativity can be nurtured or facilitated in the teaching and learning process. The interview method is deemed relevant and appropriate for what is essentially an exploratory study; it is meant to obtain depth of information on the subjects' understanding of creativity. An interview has the capacity to obtain a full range and depth of information which might be difficult with a questionnaire. Interviews were also chosen to complement other research methods such as observation, questionnaire and documentation review, as well as to confirm quantitative research findings. The interview method also plays an important role in cross-checking and validating students' understanding of creativity, having self-reported their creative attributes and classroom behaviours and practices in the student questionnaire. Other considerations for choosing the interview method include pressure of time (Oppenhein, 1992) and the logistical difficulty of getting a senior college manager of a principal's status to complete a questionnaire. The interview method was chosen also to enable the researcher to provide background information on the research topic to the interviewees beyond what was stated in the initial correspondence to college leaders, as well as to engage respondents' interest, rapport and confidence at interviews. Both the nature and the format of the interview questions also inform the use of the interview method - these questions are fairly large and open-ended and will not be comprehensively answered by a survey-questionnaire.

Observation is another research method used in this study. Classroom observation was chosen to complement other research instruments, but its primary aim was to record classroom interaction such as teachers' and students' classroom behaviours and practices. Section C of the student questionnaire (in appendix B) sought to explore students' perceptions of teachers' classroom behaviours and practices and the researcher took the view that complementary classroom observations would enable him to compare analysis of this section of the questionnaire with the observed (naturally occurring) behaviours and practices. A second aim of the observation method was to enable the researcher to look for possible contradictions in evidence (Dingwell, 1997).

The review of relevant college documentation is another complementary research method used for this study. The review was carried out on selected college documentation which contained information on institutional policy, on teaching and instructional strategies, college culture, ethos, and mission/value statements. The review and evaluation of documentation aided the researcher's understanding of a college's peculiar circumstances and the extent to which generalisation was possible from the data.

2.6 Why not other methods?

As stated earlier, relevancy and appropriateness informed the choice of methods for this study. Other research methods such as focus group and case studies were examined, but deemed not appropriate for the current investigation (the case study method is used in a study of two North American colleges; see paragraph 2.18 below). Focus groups are particularly useful for evaluation of studies and where research topics are explored in

depth with the aid of moderated discussion. Where the interview method is used in this study the researcher wanted to make certain that respondents gave spontaneous answers to questions on creativity without being influenced or affected by the views or opinions of others in a focus group. (It will be noted that except for students' interviews, no interviews with participants in this study were conducted in groups.) Information collected on a moderated focus group will not be objective and definite (Cheng *et el*, 1997). Another consideration is the practicality of bringing a group of teachers (to cite an example) together for discussion, given the pressure of time that has characterised teaching jobs in further education since incorporation in 1993 (Ainley and Bailey, 1997; Robson, 1998). One suggested approach to overcoming the problem of capacity in the focus group method is to train the moderator of the focus group something that is not practicable in the current circumstances given the constraints of time and resources on the researcher. Another consideration is the external validity of the focus group as a data collection instrument. A focus group usually consists of 9 - 10 people (Greenbaum, 1998); there might be difficulty in identifying or separating individual views from the group (Gibbs, 1997), as well as difficulty in generalising from such a small sample. The case study method is used to research two colleges in North America, but the approach is not considered suitable for the main study due a number of practical difficulties. The sampling units consist of 10 colleges, made up of a number of sampling elements. To use the case study method on such a large-scale survey will result in problems of generalisation. Yin (1994, p.10) indeed points out that case studies 'are generalisable to theoretical propositions and not to populations'. Besides, the use of probability sampling negates the principle of case study methodology where each individual case study is considered as a 'whole' study (Tellis, 1997). The case study method will result in poor representation of the population and misleading inferences might be drawn because of its narrow focus (Moore, 2001).

2.7 Contingency, ethical consideration and other issues in data collection

The researcher had a relatively easy access to colleges once the regions were identified and the colleges randomly selected. (Names of participating colleges were picked randomly from a plastic bag.) A number of 'back up' samples were drawn for each region in the event of a college declining to participate. Letters were sent to principals requesting their permission to carry out the study in their institutions (see copy in appendix A). The letter set out the research aims and objectives and methods of data collection. It also set out the duration of the research work in each college; it requested among other things access to documentation. The letter also guaranteed college anonymity in any publication in which the research findings might be published. A promise was given to college principals to make available to them a copy of research findings for their respective institutions.

A key consideration for the researcher was the issue of disruption to college normal life during each research visit: an undertaking was given to minimise disruption to college activities. Each college appointed a 'co-ordinator' – usually a senior tutor or a curriculum manager and, in one case, a vice principal – with whom the researcher liaised throughout the visit.

Unexpectedly, two colleges which initially agreed to take part in the research later withdrew their participation apparently after reviewing the research protocol. They may have been concerned at some demands that the research would place on them. One college principal told the researcher in a letter that he would only participate if there were

financial returns to his college! Participating colleges were provided with additional information on the research protocol and a personal visit was made at the request of one college principal for a pre-research briefing.

Once a college agreed to take part, the researcher thereafter had a complete free hand as to how the data were collected. If there were teachers who did not want to be interviewed or observed the researcher did not know this. Aside from principals, individual teachers who wanted the researcher's feedback of their lesson observation had their request granted. Letters from college principals suggested that teachers and managers found the feedback useful for their professional development. Qualitative information such as the interview transcripts was not sent to the interviewees for 'checking' or for 'corrections' due to considerations of confidentiality. Also, one reason for using interviews was to get the subjects to respond spontaneously to questions on creativity. This information is therefore not meant to be subject to review as such an approach is likely to encourage interviewees to re-evaluate their views in the light of new knowledge of the subject (Scott, 1996). The researcher is also mindful of the implications of such approach on (subsequent) data analysis and interpretation.

2.8 The data and subjects studied

The research was carried out in ten colleges in the further education sector in England see appendix J). There are four sixth form colleges and six general further education colleges in the sample. All colleges are located in four of the seven (former) Further Education Funding Council regions in England - namely Greater London, Eastern, Southeast, and Northern regions. Data was collected between November 1999 and December 2000.

Ten college principals and vice principals; twelve directors of curriculum and heads of school; 51 teachers; and 180 full-time students were interviewed. Interviews were recorded and transcribed.

800 full-time students from four qualification categories of academic (AS/A-level), applied vocational (GNVQ/AVCE), occupational/vocational (NVQ) and one-year full-time Access to HE completed a survey-questionnaire.

974 minutes (23 hours) of lessons were observed in the following subject/curriculum areas: Humanities/Social Sciences, Maths and Sciences, Information Communication Technology, Business Studies/NVQ Administration and 'Other' (Health and Social Care, Hair and Beauty, Beauty Therapy). The classroom observation instrument used was an adaptation grid of the Flanders' Interaction Analysis Categories (FIAC) schedule; this was used to aid data interpretation.

2.9 Sample and sampling process

The population of interest for this study is all further education colleges, each of which consists of students, teachers and managers and support staff of various kinds. Key sampling elements in the study are (all) full time students following courses in the core qualification areas of academic (A-level), applied vocational (GNVQ/AVCE), occupational/vocational (NVQ) and one-year Access to HE. Part-time students and part-time courses are not included in the sample. Although a significant majority of further education students are part-time (see Melville and Macleod, 2000), the focus of this investigation is 16-19 provision which many colleges (in the population) run full-

time. Also, since the structure of qualifications varies markedly across the four countries that make up the UK, this investigation is confined to further education colleges in England which fall within the funding remit of the (former) Further Education Funding Council (FEFC). Most English further education colleges (in the population) arguably share broadly similar characteristics and run courses in some or all of the four qualification areas. Four geographically contrasting areas were selected from the seven English FEFC regions, namely Northern, Eastern, Southeast and Greater London. The purpose of these selections was to have a representative geographical spread. Considerations were also given to the social and economic classifications of the areas where these colleges operate - namely the inner city, sub-urban (affluent) and rural areas. The sampling system, in the light of the foregoing, is based on some choice of structure - the geographical regions of the participating colleges were selected; but the colleges were randomly chosen. Once the four regions were selected, a probability sampling method was employed and a simple random sampling technique was used to ensure that each of the 218 colleges in the four FEFC regions had a non zero probability (equal chance) of being selected. Certain colleges were eliminated from the sampling frame – namely Agriculture and Horticulture; Arts, Design and Performing Arts; and other designated institutions. These are specialist minority colleges in the sector and their inclusion in the sampling frame would limit the extent to which the data can be generalised. To ensure representation, a sample size of 12 was determined. Each college in the sampling frame was assigned a unique coded number, and categorised into sixth form colleges and general further education colleges. Each number was written on a piece of paper, folded and placed in a large plastic bag. The bag was tied, tossed several times before each (college) number was drawn. The process was then repeated twelve times to ensure that 'back up' samples exist should a college turn down a request to take part. Each college

was made a sampling unit, while students, teachers and managers were made sampling elements.

The researcher adopted and used standardised procedures for collecting data in each and every one of the 10 colleges that agreed to take part in the study. The following procedures were adopted. Day One and Day Two: The researcher would arrive at the classroom with the class teacher, usually well before the lesson started. A brief introduction to the students would be followed by the distribution of the questionnaire. Students would complete questionnaires in the first ten minutes of the lesson time. A 30-minute lesson observation would start once all copies of the questionnaire had been returned. Immediately after the lesson, selected students would be called out for an interview of an average of 20 minutes. To ensure that every student on the class registers had an equal chance of being selected for the interview, a representative sample of students were selected per each class; samples are drawn from every 3rd/4th/5th/6th name (depending on the number) on the student register. The questionnaire was completed and returned by every student in the class; students who were not in class for that particular lesson or absent from college on Day One of the research visit were tracked down in other lessons or on Day Two or Day Three of the visit and were requested to complete the questionnaire. Copies of the questionnaire were also left with the college to pass on to absentee students, who returned their completed questionnaire by post. Teachers' interviews would take place usually after students' interviews, for an average time of 30 minutes. Interviews with college principals/vice principals and curriculum managers, and the collection of relevant college statistical information would take place usually on Day Three of the visit. In summary, 10 colleges were surveyed (appendix J), from which 10 principals/vice principals; 12 curriculum directors, managers, heads of schools; 51 teachers and 180 full time students were interviewed; 974

minutes (23 hours) of lessons were observed and 800 full-time students returned the questionnaire.

2.10 Questionnaire as a collection instrument

A survey-questionnaire was used to obtain a representative sample of the further education (full-time) student population in the selected colleges, a large sample being needed to provide such representation (Chisnall, 1997). The sample consists of 800 full-time students. Besides the volume of data needed, issues of interviewer bias (which is largely reduced by the standardisation of interview questions), cost, logistics, and data analysis are other considerations for using the questionnaire to part-collect the data. The questionnaire (in appendix B) forms a significant part of the data collection instruments in that it seeks to explore students' answers to key research questions such as students' perceptions of their own creative attributes; students' perceptions of their own classroom behaviours and practices; and students' perceptions of teachers' behaviours and practices in the classroom. It also seeks to explore students' views about college extra-curricular activities and how such activities have helped their learning.

The process of designing and developing the questionnaire was quite challenging, caused largely by the researcher's relative inexperience in using survey-questionnaire for a complex, large-scale survey, but the training and induction in (M-level) Research Methodology received in the early stage of the research programme provided an opportunity to develop the necessary skills and expertise. The development of the questionnaire was meant to be a three-stage process – pre-pilot stage, pilot stage and post-pilot stage – but turned out to be a continually evolving and continually improving

process. (The data obtained by different versions of the student questionnaire compared well due to the homogeneous nature of the sampling units – see, also, paragraph 3.20.) In deciding the questions, a number of key topics identified through initial review of the literature were used to generate some questions and they were used among a small group of students (and their class teacher) in an East London sixth form college in September 1999. The purpose of this exercise was to generate questions for inclusion in the questionnaire (Gillham, 2000), but more importantly, to verify, check and correct the researcher's own questions. The supervision team, too, made a contribution to the questionnaire's revisions and re-drafting process. Following the revisions of the initial draft, the actual piloting of the questionnaire took place in mid-November 1999 during preliminary work at a sixth form college in Surrey. 75 students completed and returned this pilot questionnaire.

Analysis of the piloted student questionnaire revealed some shortcomings in the way the questions were drafted as well in the overall design of the questionnaire. Some of the questions were not clear to the students and took too long to answer. Many students simply left a number of questions partly answered, and, in a number of cases, unattempted. For instance, question 7 asked students to explain what they meant by each of the eight personal attributes that they had ticked in question 6. The researcher, being present in the classroom, noticed some difficulty that some students had in answering that particular question. Such questions should have been used in a more interactive research encounter (qualitative instrument) such as interview. Coding difficulties were also met during the analysis of the pilot questionnaire.

In revising the piloted questionnaire, a number of questions and statements were re-arranged, rephrased, re-written; a few questions were eliminated altogether. Other

questions were also added. To facilitate analysis, ordinal-scale measurement was used; also the questionnaire format and layout were improved using a 5- point Likert scale (the questionnaire contains 17 scaled and 1 routing questions). A Likert scale was chosen because of its coding and administration simplicity. The revised draft of the student questionnaire was administered during the extended preliminary work carried out in two further education colleges in northeast England in December 1999. Feedback from students as well as the analysis of the questionnaire suggested fewer shortcomings, while the questionnaire took an 'average' student 10 minutes to complete. Nonetheless, further revisions were made to the questionnaire on certain questions; the questionnaire was divided into clearer sections, each appropriately linked to relevant research questions; its overall format and layout were improved; and the number of questions was increased to 19. The final revised questionnaire was used in the final stage of the field study which took place between April and December 2000, in six general further education colleges and sixth form colleges. The final questionnaire overcame the problem of ambiguous questions as well as minimised omitted responses. The researcher was also on hand to deal with students' queries (one such query related to a typing error in the questionnaire). The researcher administered the questionnaire so it achieved virtually a 100 percent-response rate. The analysis of the returns showed little evidence of further shortcomings.

2.11 Classroom observation as a collection instrument

Classroom observation is a key complementary data collection instrument, designed to collect data, first-hand, on student-teacher classroom interaction as it naturally occurs, as well as to crosscheck and validate a key aspect of the student questionnaire - students' perceptions of teachers' certain behaviours and practices in the classroom. Each classroom observation lasted approximately 30 minutes. The observation techniques,

planning and procedures adopted for the investigation were consistent with features highlighted in Coolican (1999, p.111). The observation method was structured/systematic in that variables to be recorded were defined and categorised prior to observations. A single data collection device/system was used – i.e. on the spot coding and hand-written notes recorded on a behavioural grid, which was adapted from Flanders' (1970) classroom observation schedule. There are eleven variable measures which the classroom observation grid is designed to capture; they include 'lecture', 'praise', teacher-solicited and unsolicited questions (see student questionnaire in appendix B).

2.12 Interview as a collection instrument

The interview method is a primary instrument used to collect data from teachers, curriculum managers and principals, but used in conjunction with the questionnaire method to collect data from the students. As stated earlier, a number of factors informed the use of interviews as a key data collection instrument. One is the need to get interviewees to respond spontaneously to the questions about their perceptions of creativity (such acts of spontaneity are part of a creative process). The researcher had ensured that no interviewee saw or received interview questions in advance and that no prior discussions took place with the interviewees as to the content of the interview schedule, apart from the initial written notification of the research protocol. This was necessary to standardise the conditions in which the interview was administered and to ensure freshness of responses.

The key considerations in setting out the interview questions were the research questions and how the interview questions are linked to research questions as well as how they complement the questionnaire and the classroom observation grid. There were no major difficulties in developing the interview questions, as the process was preceded by a review of the literature on creativity in teaching and learning in schools. (As explained there is very little or no material on creativity in teaching and learning in further education.) However, the use of interviews during preliminary work that was carried out in mid-November 1999 highlighted issues of time and the arrangements of questions. The list of the pilot questions was a little too long and lacked logical arrangement and relationship; students and teachers in particular were noticed to have less time to spare (an average actual time of 15 minutes for students and 20 minutes for teachers) than originally anticipated (20 minutes and 30 minutes for students and teachers respectively), while some supposedly different questions produced similar answers. Interview questions for teachers were revised and some improvements were made to the format, arrangements and layout; questions were appropriately grouped and sectioned to facilitate the flow of interviewee responses. There were no major revisions to interview questions for curriculum managers and principals. Interviews with students, teachers and managers were semi-structured, to encourage respondents' flexibility and freedom to explore open-ended questions (see Bailey, 1982; King, 1994 cited in Robson, 2002); but the questions were standardised to enhance the reliability of interview method.

2.13 Highlights of interview aims

2.14 student interviews

Semi-structured, face-to-face group interviews were conducted with 180 students in groups of 3/4. Interviews were between 15 to 20 minutes in length and were recorded and transcribed. The aims of the interviews were to check students' understanding of creativity and explore their views about how they think teachers can help nurture their creativity; and to identify factors that promote or hinder creativity from the perspective of students. A subsidiary aim of the interviews is to ascertain consistency in students' responses vis-à-vis a sample of variables in the student questionnaire and classroom observation schedule.

2.15 Teacher interviews

Semi-structured, face-to-face interviews were conducted with 51 teachers (nine teachers were not available for interviews due to work/time constraints). Interviews were between 25 to 30 minutes in length and were recorded and transcribed. The aim of the interviews was to identify factors that promote or hinder creativity in teaching and learning in a further education context, from the perspectives of teachers. Interviews also aimed to explore teachers' perceptions of creativity; teachers' criteria of a creative lesson and what they would treat as evidence; teachers' perceptions of the role of teachers in facilitating student creativity; and their views about constraints to facilitating creativity in teaching and learning in a further education classroom. Interviews also provided the means through which to gain insights into teachers' own personal/professional development in creativity.

2.16 Curriculum manager interviews

Semi-structured, face-to-face interviews were conducted with 12 heads of school, directors of curriculum and deputy/vice principals whose responsibilities included curriculum, teaching and learning. Interviews were between 20 to 30 minutes and, in some cases, up to one hour in length and were recorded and transcribed. The main aim of interviews is to identify factors that promote or inhibit creativity in the curriculum in a further education context. Interviews also aimed to explore (curriculum) managers' understanding of curriculum goals; their perceptions of creativity; their criteria for a creative curriculum and what they would treat as evidence; their perceptions of the role of curriculum in facilitating student creativity; their perceptions of constraints to creativity in the curriculum in a further education context. A subsidiary aim of the interviews was to gain insight into curriculum managers' own personal/professional development in creativity.

2.17 Principal interviews

Semi-structured, face-to-face interviews were conducted with 10 principals or deputy/vice principals (one principal/deputy principal from each college). Interviews were between 30 to 40 minutes and, in some cases, up to one hour and were recorded and transcribed. The aim of the interviews was to identify factors that promote or hinder student creativity in a further education context, from the perspectives of college leaders. Interviews also aimed to explore leaders' views about creativity; their criteria for a

creative college and what they would treat as evidence; their perceptions of the role of the college (as an organisation) in facilitating student creativity; their views about constraints to creativity in a further education setting. An additional aim of the interview was to identify institutional variables that, in the opinion of college leaders, impact upon student creativity, as well as to gain insights into leaders' personal/professional development in creativity.

2.18 Case study as collection instrument

As explained, case study method was used for the North American leg of the study. The two institutions involved in the study were a high school and a community college. The two institutions were chosen in a further effort to achieve the aims of this study – which were to investigate curriculum arrangements conducive to fostering creativity in a further education context and to offer/develop models of good practice for fostering creativity in curriculum content and processes. In choosing the country and the case study institutions, the researcher was guided by a number of criteria set out in Yin (1993, p.34) – namely the relevance of the country and the cases, the relevance of the topic of research to the work of the cases, and the issues of feasibility and access. The United States of America, country of the cases, is relevant because its community colleges share some characteristics with the UK further education colleges in relation to curriculum provision (DES, 1990), while its high schools offer similar provision to school sixth forms and sixth form colleges in England. Also, the Tech Prep/School-to-Work programmes (Parnell, 1997) offered in some of its high schools are similar to UK government's proposals in the White Paper on 14-19 provision in England (DfES, 2002a). The two institutions were approached after being recommended: the community

college was recommended by researchers at the ERIC Clearinghouse for Community Colleges at the University of California, Los Angeles, while the high school is a major partner school of the community college. The two institutions have a national reputation for academic excellence and creativity is at the base of their curriculum provision. The institutions agreed to take part in the study and the work was carried out in May 2000.

The data for the case studies were collected using interviews and document review and analysis. Interviews were conducted with leaders, managers, teachers and students using adapted interview schedules used in the UK leg of the study. A small number of (qualitative) classroom observations was also carried out to 'get a feel' of classroom interaction in the two institutions. The case studies are presented in chapter six.

2.19 Limitations of research design

The researcher acknowledges the fact that the design in this study is not in any way perfect. Each of the data collection instruments highlighted above has its weaknesses. For instance, some interviewees' answers to questions were not as elaborate as others. While some interviewees (the subjects) were able to explore issues and discussion in depth, a number of others were very brief. This makes it difficult to give equal weighing to individual responses; it also makes it a little challenging to generalise from the data. The interview questions were standardised to aid reliability and response-comparability. A disadvantage of this approach is that some potentially useful information volunteered by some interviewees fell outside the remit of the research questions and so is not included in the analysis.

While the questionnaire gave a positive internal reliability alpha coefficiency (see appendix E), it is unclear how to establish the proportion of genuine responses from what Coolican (1999) described as 'headline responses'. (However, the questionnaire sought to reduce the occurrence of 'headline responses' by asking students to respond to each question/statement as it applied to them and not to worry about what might be expected see copy of the questionnaire in appendix B.) Also, the 5-point Likert scale used for the questionnaire ranking raised issues of interpretation, for example in interpreting rating score '3' ('neither agree nor disagree'). The question is whether the interpretation of 'neither agree nor disagree' should assume the same significance or should be given equal weighting with 'sometimes'.

The classroom observation instrument also has its limitations. Some events such as the physical environment that might affect classroom interaction (Wragg, 1999) had no category in the observation grid. For instance, a college in the Southeast holds some of its classes in a number of large open learning centres. In this particular college, the researcher noticed a high level of noise and interference in one science class that was held simultaneously with three other classes in the same room. The FIAC-adapted observation grid for the current investigation has only nine categories and was not able to capture facial expression and gesture communication. The Flanders' (1970) original 10-category observation grid suffered similar limitations. There was also ambiguity in the 'Question' category; it did not distinguished between levels of teachers' questions – e.g. whether students should recall or evaluate facts (evaluation of facts might involve some creative thought process). Also, the observation grid made no distinction as to whether events such as unsolicited talk relate exclusively to content. The researcher's training in the coding of the classroom observation grid was limited to intense reading and practising of the Flanders' schedule through the Open University (1976) course manual;

because the researcher worked alone on the project, 'inter-observer reliability' evaluation was not feasible.

2.20 Style of data analysis and presentation

A review of the research aims and the research questions preceded the analysis of the data in order to help organise and focus the analysis. Analysis was carried out in the following order, from student questionnaire, classroom observations, interviews and case studies. The computer programme SPSS v10.05 was used for the analysis of the quantitative data, namely the student questionnaires and the classroom observations. Editing, cleaning and coding of the 19-item questionnaire into 37 variable statements preceded the questionnaire analysis. The 37 statements were sub-divided or categorised into four sections. Section one provided a descriptive analysis of students' reporting (ranking) of their own creative attributes; section two provided similar analysis on students' classroom behaviours and practices; section three provided analysis of students' perceptions of teachers' behaviours and practices in the classroom; section four provided descriptive analysis of students' involvement in college extra-curricular activities and how these activities have helped their learning.

A descriptive analysis of the student questionnaire was carried out to provide initial insight into the distribution of the responses. The descriptive analysis focused on frequency distribution, median, mode, range and interquartile range, which are all suitable for an ordinal-scaled questionnaire (Diamantopoulos and Schiegelmilch, 1997). Descriptive statistics also provided the basis on which the tests of statistical significance of variables were built. In testing for statistical significance, variables of related measures

were examined and analysed as well as variables of different measures - e.g. gender, qualification and college-type - which were also examined. Multivariate analysis (Discriminant Function) was carried out in an attempt to understand the group differences on creativity, learning styles, gender, and college-type. Univariate (frequency distribution) analysis was also carried from the lesson observation grid. The analysis was organised according to curriculum areas, qualification, and college type. (Race was not examined in this study, but the need for it is acknowledged in the concluding chapter - chapter 8, paragraph 8.13.)

Descriptive statistics of the classroom observations was also generated, to provide information on the central tendency of the distribution; on the shape or form of the distribution; on the spread of the distribution; and on the variability of the distribution.

In presenting the quantitative data, techniques such as frequency tables, pie and bar charts are used. These techniques provide concise means of organising the data, as well as aiding visual analysis and comparability of the data.

The analysis of the qualitative data is organised around students', teachers', and managers' (including principals') interviews. Student comments are organised into categories - such as views, beliefs and understanding of creativity and their perceptions of factors impeding or promoting creativity in the learning process. Teacher comments are categorised into: teachers' beliefs and understanding of creativity; teachers' criteria of a creative lesson and what they would treat as evidence; and their perceptions of the role of teacher in facilitating student creativity in a further education setting. Manager comments are organised around beliefs about creativity, factors impeding and promoting creativity in the further education curriculum; and institutional factors that impact upon

student creativity. From these categories, emerging themes of patterns, key words, associations and relationships were identified and analysed (see Seidman, 1998; Day, 1993). (See chapter five for an expanded note on the analysis of the interviews.)

Further findings from this study will be examined in sections on discussion (chapter seven).

2.20 Summary

This chapter presents and discusses the research design for this study. A mixture of quantitative and qualitative methods was used, as they were considered appropriate to explore and to answer the research questions. Data collection instruments such as questionnaire, classroom observation, interview and case study were also used. The limitations and advantages of their use were acknowledged. The following chapter presents and analyses the data.

CHAPTER THREE

3.0 RESULTS

3.1 Student Questionnaire

3.2 Univariate Analysis: Descriptive statistics

3.3 Introduction

This is the first of the three-stage analysis of the data the others being hypothesis testing or tests of significance and discriminant function analysis. The purpose of descriptive analysis is to provide preliminary insights as to the nature of the responses (Diamantopoulos and Schiegelmilch, 1997) and to provide graphical or visual presentation of the data - in form of bar charts, pie charts, etc. Descriptive analysis will also help to detect and rectify errors that might otherwise slip through during the data coding and editing stages. The descriptive statistics presented here are generated by SPSS.

3.4 Univariate frequency distribution

An important starting point for any analysis is to organise and summarise a set of data in a frequency distribution - also called univariate frequency distribution, because it

measures the way single variables are distributed within a group of sampled populations (Rose and Sullivan, 1993). The aim of a frequency distribution is to indicate the number of times a particular case (variable value) occurs, and to appraise the characteristics of the data (Kiess, 1989). The student questionnaire was coded into a-37 variable statement and the SPSS produced a frequency table for each of these statements. All the 37 variable statements were measured either on nominal or ordinal scales. For instance variable statement 16, on student learning styles and variable statements 28 - 37 on students' learning experiences, were measured on nominal scale, whereby numeric values were assigned to indicate differences in cases, while the rest of the variables were measured on ordinal scales, where individual responses were ranked on a 5-point Likert scale. The ordinal scale was not intended to measure in absolute terms the amount of difference/ or the exact difference between the ranks or value labels; just as high-number ranks such as 4 (for instance) need not be twice of low-number ranks such as 2. The frequency table for each variable shows the frequency, percentage, valid percentage and cumulative percentage - with the cumulative percentage showing a running total of the scores. Population (N) = 555. Frequency of occurrence is symbolised by (*f*).

3.5 Central tendency of the distribution

There are many ways to estimate the central location (tendency) of distribution of each 37 variable statements. The aim is to describe each variable scores in the distribution in terms of their typical or central value (Cramer, 1994). The most common measures of central tendency are the mean, median and mode. The mean is better suited for interval or ratio level variables, but the median is best suited for ordinal level variables to give better estimate of central tendency. The mode is better for nominal level variables. Given the nature of these measurements, the researcher estimated the central location of data

by using the median and the mode. The median is defined as the mean of two middle value (it provides a better indicator of the middle value). The median is not affected by extreme values (outliers). The mode is the most frequently occurring value in the distribution.

3.6 Spread of the distribution

Having measured the central location of the variables via the median and the mode, the next step was to obtain reliable estimates about how the variables (data) are distributed – in other words, how data is spread or deviates around the central location (Hannagan, 1987) as well as to account for the difference between responses in a particular variable (Rose and Sullivan, 1993). Finding the degree of variation was also an attempt to answer questions such as 'To what extent are individual values similar or different from one another?' Or to answer whether the extent of such variation is greater or smaller in particular variable statement (Diamantopoulus and Schlegelmilch, 1997). Zero value indicates no variation, but the higher the number the greater the dispersion. Among the statistical methods generally used to estimate the spread of data are the range, the interquartile range, the index of diversity (D), the variance and standard deviation (the variance and standard deviation are best suited for the interval/ratio level measurements).

The measures of variability used for the purpose of the following analyses are the range for ordinal variables and the index of diversity (D) for nominal variables. The interquartile ranges for ordinal scale variables were also calculated (because the range is affected by extreme values that might make comparison of individual variables somewhat difficult). The range is taken as the difference between the highest (maximum) value and the lowest (minimum) value in the data – from which the degrees of fluctuation (in

variable values) were measured. The interquartile range is the difference between the value of 75th and 25th percentile. The index of diversity (D) attempts to measure the degree of concentration of the cases.

3.7 Form or shape of the distribution

The skewness and kurtosis can be used to measure form of the distribution. A distribution can have a negative skew (when its frequencies tail off in one direction to the left) or a positive skew (when its frequencies tail off in one direction to the right). A symmetrical or normal distribution will have its mean, median and mode located at the same point on the curve at its highest point. None of the 37 variable distributions is symmetrically distributed – they are all skewed distributions, where the median lies between the mode and the mean, and while the mode is located at the highest point. Some of the variables have positive values (a positive skew) and some have negative values (a negative skew). Kurtosis can be used to determine whether frequencies are evenly distributed or whether they 'pile up closely around the centre of the distribution' (Rose and Sullivan, 1993, p.89). Some variables in the data have positive values for kurtosis (which indicates a leptokurtic distribution, where a pile up is evident) and some distributions have negative values (which reflects some platykurtic or relatively flat distribution). A mesokurtic distribution will have a relatively even distribution; it will be bell-shaped and will have a zero value (see full SPSS output in appendix F).

3.8 Reporting frequency distribution, central tendency and spread of distribution - median, mode, range, interquartile range, index of diversity of variable statements.

The statistics for each variable statement were computed by the SSPC - except the index of diversity, which was calculated manually by the researcher. The results are presented below (full SPSS output, descriptive statistics, tables and charts, are presented in appendix F):

3.9 Student experiences

Variable statement 1 – Are you enjoying your course? [Appendix F, table 1]
[Variable value and label for statements 1 and 2. not at all (1), sometimes (2), and not a lot (3), quite a lot (4), a lot (5)]

57.7 per cent of the students said they were enjoying their courses 'quite a lot' or 'a lot'; 32 per cent said 'sometimes' or 'not a lot'; 1.1 per cent of the students said they were 'not at all' enjoying their courses. The median is positioned at the 4th value, which divides the distribution in half and it lies between 'quite a lot' and 'a lot'. The median rating – 'not a lot' – can also be regarded as the 'typical' rating or response. The variable range is 4 and the interquartile range is 2, which indicates a relative variation in cases.

Variable statement 2 – Are you learning? [Appendix F, table 2]
80.6 per cent of students said they were learning 'a lot' or 'quite a lot'; 18.2 per cent said 'sometimes' or 'not a lot'; 1.1 per cent of the students believed they were not learning at all. The median rating is 4, which indicates 'quite a lot'. The variable range is 4 and the interquartile range is 1.

3.10 Students' perceptions of own creative attributes

Students were presented with six key creative attributes and were asked to indicate the level of agreement that best describe them. The creative attributes are originality,

curiosity, flexibility, risk-taking, humour and imaginative. The aim of this section is to explore students' perceptions of their own creative attributes.

Variable statement 3 - I would describe myself as original [Appendix F, table 3]

[Variable label and values for statements 3 - 8: strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4), strongly agree (5)]

Originality is probably the biggest creative attribute. 57.4 per cent of the students 'strongly agreed' or 'agreed' with the statement; 37.5 per cent were undecided; 0.8 per cent (four students) 'strongly disagreed'. The median rating is 4, which suggests the typical response. The variable range is 4 and the interquartile range is 2.

Variable statement 4 – I am a curious student [Appendix F, table 4]

70.1 per cent of the students 'strongly agreed' or 'agreed' with the statement; 21.7 per cent were undecided, 8.2 per cent 'strongly disagreed' or 'disagreed'. The median 'typical' rating is 4, which also indicates largest single number of cases at 58.7 per cent. It has a range of 4 and the interquartile range of 1.

Variable statement 5 – I am flexible [Appendix F, table 5]

72.1 per cent of the students 'strongly agreed' or 'agreed' with the statement; 21.7 per cent were undecided; 6.2 per cent 'strongly disagreed' or 'disagreed' with the statement. The median is positioned at 4 (63.5 per cent of the students). It has a range of 4 and the interquartile range of 1.

Variable statement 6 – I like to take risks [Appendix F, table 6]

Risk-taking is a key creative attribute. 57.9 per cent of the students 'strongly agreed' or 'agreed' with the statement; 29.7 per cent were undecided; 12.5 per cent 'strongly disagreed' or 'disagreed'. Both the median rating and variable range is 4, and the interquartile range is 1.

Variable statement 7 – I have a sense of humour [Appendix F, table 7]

Humour is an important nourishing agent of creativity. 91.7 per cent of the students 'strongly agreed' or 'agreed'; 6.1 per cent were undecided, 2.2 per cent 'strongly disagreed' or 'disagreed'. The median rating and variable range is 4, and the interquartile range is 1.

Variable statement 8 – I am imaginative [Appendix F, table 8]

82 per cent of the students 'strongly agreed' or 'agreed' with the statement; 14 per cent were undecided; 4 per cent 'strongly disagreed' or 'disagreed'. The median is positioned at the 4th value. The variable range is 4 and the interquartile range is 1.

3.11 Students' perceptions of own classroom behaviours and practices

This is section B of the student questionnaire (appendix B) and it contains eight variable statements. The aim is to explore students' perceptions of their own classroom behaviours and practices and how they perceive their learning styles/approaches.

Variable statement 9 – I ask questions in class [Appendix F, table 9]

[Variable label and values for statements 9 - 15: never true (1), almost never true (2), sometimes (3), often true (4), almost always (5)]

It is 'often true' or 'almost always' true that over a third (35 per cent) of the students ask question in class; 52.9 per cent of the students 'sometimes' ask questions in class; 12.1 per cent generally do not. The median is positioned at the 3rd value, which is 'sometimes'. It indicates that students do not often ask question in class. The variable range is 3 and the interquartile range is 1.

Variable statement 10 - In class I tend to avoid answering teacher's questions just in case I get it wrong [Appendix F, table 10]

It is 'often true' or 'almost always true' that 18.2 per cent of the students tend to avoid answering classroom teacher's questions for fear of getting the answer wrong; 41.8 per cent 'sometimes' tend to avoid answering teacher's questions; 40 per cent or fewer will answer teacher's questions regardless. The median rating is 3, which lends credence to the variable statement. The variable range is 3 and the interquartile range is 1.

Variable statement 11 - In class discussion I occasionally voice opinions that seem to turn some students off [Appendix F, table 11]

A third (30.9 per cent) of the students 'sometimes' express opinions in class discussion that turn off some fellow students; 10.3 per cent express such opinions 'almost always'; 68.3 per cent or fewer do not. The median rating is 2; the variable range and interquartile range is 4 and 1, respectively.

Variable statement 12 - I generally prefer to work on my own [Appendix F, table 12]

The frequency distribution of this variable shows that 28.7 per cent of the students generally prefer to work alone; 50.3 per cent prefer to work alone 'sometimes'; 21 per cent or fewer rarely prefer to work alone. The median rating is 3. The variable range is 4 and the interquartile range is 0.

Variable statement 13 - Working in a group inspires me [Appendix F, table 13]

Encouraging group work in class activities is often said to aid creative interactions. 42.6 per cent of the students indicated that they were 'often' or

'almost always' inspired working in a group; 47.5 per cent said they were 'sometimes' inspired; 9.9 per cent or fewer said they were rarely inspired. The median rating is 3. The variable range is 4 and interquartile range is 1.

Variable statement 14 - I try new ideas and approaches to problems or to class activities [Appendix F, table 14]

35.3 per cent of the students 'often' or 'almost always' try new approaches to problems or to class activities; 55 per cent 'sometimes' try new approaches to problem; and 9.7 per cent or fewer students do not. The median rating is 3. The variable range is 3 and the interquartile range is 1.

Variable statement 15 - I like to work on a problem or class assignment that has caused others great difficulty [Appendix F, table 15]

Disposition to challenge is a creative attribute. The frequency distribution of this variable shows that a quarter (24.9 per cent) of the students 'often' or 'almost always' work on assignment or problem that has caused others (fellow students) great difficulty; 43.9 per cent 'sometimes' work on such assignment, a third (31.2 per cent) or fewer rarely or do not. The median rating is 3; the variable range and interquartile range are 4 and 1, respectively.

3.12 Students' perceptions of own learning styles/approaches: risk-takers or conservatives?

Variable statement 16 - Which of the following best describe your learning styles? [Appendix F, table 16]

[Variable label and value: try out new unproven ways of doing things (1), work within tried and trusted methods (2)]

The learning preference of 37.4 per cent of the students is to 'try out new and unproven ways of doing things', while 62.6 prefer to work within existing methods. The case with the greatest frequency is 2 (the modal category). It indicates that a great majority of the students - 62.6 per cent - are 'conservatives' who prefer to work within existing methods, against 37.4 per cent (risk-takers) whose learning preference is to 'try out new and unproven ways of doing things'.

3.12.1 Index of variability (D) - risk takers or conservatives?

$D = 1\,[(205/548)^2 + (343/548)^2]$

$= 1 - [0.140 + 0.392]$

$= 1 - 0.532 = 0.47$

Actual value of D = 0.47, indicating almost even degree of concentration of the ratings in the two categories.

Calculating the maximum value of the index

= (c-1))/ c, where c is the number of categories in the data

= (2 - 1)/ 2 = 0.50

Then compare the (maximum) value with the actual value of diversity (D), i.e. 0.47 v 0.50. On the whole the result indicates a small degree of variation among students in terms of their learning styles/preferences.

3.13 Students' perceptions of classroom teachers' behaviours and practices

This is section C of the student questionnaire. It aimed to explore students' perceptions of their teachers' behaviours and practices in the classroom. There are 11 variable statements, each of which identifies important teachers' classroom characteristics/attributes (which might aid student creativity). These include among other things motivation, thinking, praise, encouragement; frequency of teachers' questions; teachers' knowledge of the subject; and the frequency of teachers' reference to real-world contexts in the class discourse (see appendix B).

Variable statement 17 – my teacher: motivates me to learn the subject [Appendix F, table 17]

[Variable label and values for statements 17 - 27: never (1), Hardly ever (2), sometimes (3), a lot (4), all the time (5)]

52.7 per cent of the students said their classroom teacher motivates them to learn the subject 'a lot' or 'all the time'; 38.6 per cent said their teacher motivates them 'sometimes'; 8.7 per cent or fewer said their teacher rarely or 'never' motivates them. The median is positioned at the fourth value. The variable range is 4 and the interquartile range is 1.

Variable statement 18 – makes me think [Appendix F, table 18]

59.5 per cent of the students said their classroom teacher 'makes' them think 'a lot' or 'all the time'; 34.2 per cent said 'sometimes'; 6.3 per cent or less said rarely or 'never'. The median is positioned at the fourth value. The variable range is 3 and the interquartile range is 1.

Variable statement 19 – praises me whenever possible [Appendix F, table 19]

31 per cent of the students said their classroom teacher praises them 'a lot' or 'all the time'; 46.7 per cent said their teacher praises them 'sometimes'; 22.3 per cent or less said rarely or 'never'. The median is positioned at the third value. It shows students' typical responses as 'sometimes'. The variable range is 4 and the interquartile range is 1.

Variable statement 20 – encourages me to take responsibility for my work [Appendix F, table 20]

71.8 per cent of the students said their classroom teacher encourages them to take responsibility for their work 'a lot' or 'all the time'; 23.5 per cent said 'sometimes'; 4.7 per cent or less said seldom or 'never'. The median is positioned at the fourth value. The variable range is 4 and the interquartile range is 1.

Variable statement 21 – allows me to express my views [Appendix F, table 21]

64.6 per cent of the students said their classroom teacher allows them to express their views 'a lot' or 'all the time'; 31.1 per cent said 'sometimes'; 4.4 per cent said their classroom teacher seldom allow them to express their views. The median rating is 4. The variable range is 3 and the interquartile range is 1.

Variable statement 22 – asks questions in the class [Appendix F, table 22]

The frequency/quality of teachers' classroom questions are said to aid student creativity. 73.6 per cent of the students said their classroom teacher

asks questions in the class 'a lot' or 'all the time'; 23.6 per cent said 'sometimes'. The media is 4. The variable range is 2 and the interquartile range is 2.

Variable statement 23 - is open to students' views [Appendix F, table 23]

72.8 per cent said their classroom teacher is 'open' to students' views 'a lot' or 'all the time'; 22.3 per cent said 'sometimes'; 4.9 per cent or fewer believed their teacher is seldom open to students' views. The median rating is 4. The variable range is 4 and the interquartile range is 1.

Variable statement 24 - accepts students' ideas [Appendix F, table 24]

64.8 per cent of the students said their classroom teacher 'accepts' students' ideas either 'a lot' or 'all the time'; 30.3 per cent said 'sometimes'; 4.9 per cent said 'hardly ever'. The median is positioned at the fourth value. The variable range is 3 and the interquartile range is 1.

Variable statement 25 - is knowledgeable about the subject [Appendix F, table 25]

88.6 per cent of the students believed their classroom teacher demonstrates subject knowledge 'a lot' or 'all the time'; 10.3 per cent believed their teacher 'demonstrates' the subject knowledge 'sometimes'. The median is positioned at the fourth value. It shows students' typical response as 'a lot'. The variable range is 2 and the interquartile range is 1.

Variable statement 26 – relates learning to real-life experience [Appendix F, table 26]

59.3 per cent of the students believed their classroom teacher relates learning to real-life 'a lot' or 'all the time'; 32 per cent believed their teacher relates learning to real-life 'sometimes'; 8.7 per cent or less believed their teacher seldom relates learning to real-life experience. The median is 4. The variable range is 4 and the interquartile range is 1.

Variable statement 27 – sets assignments that give me a chance to find solutions to problems [Appendix F, table 27]

61 per cent of the students believed their teacher's assignments give them a chance to find solutions to problems 'a lot' or 'all the time'; 33.8 per cent believed their teacher's assignments give them a chance to find solutions to problem 'sometimes'. The median is positioned at the third value. It shows students' typical response as 'sometimes'. The variable range is 4 and the interquartile range is 1.

3.14 Students' participation in college extra/co-curricular activities

Variable statement 36 – participation in college activities [Appendix F, table 36]

Approximately 56 per cent of the students did not take part in college wide activities; 44 per cent did. Of those who participated, approximately 22 per cent were engaged in work experience. (Students in the survey could tick more than one box.)

Variable statement 37 - Comments on college activities: how have these activities helped your learning? [Appendix F, table 37]

91.3 per cent of the students who participated in college extra/co-curricular activities said these activities have had a positive impact on their learning, compared to 8.7 per cent who said their participation has had no beneficial effect on their learning.

3.15 Conclusion

The foregoing results are essentially a descriptive summary of the variables in the student questionnaire. The next paragraphs will extend the analysis by performing tests of significance on some of these variables - in order to draw inferences from the results.

3.16 Bivariate Analysis

3.17 Introduction

By looking at the descriptive analysis, the researcher has so far provided some preliminary insights into the nature of the responses in the student questionnaire. However, there is a need to go beyond the initial analysis of the data in other to investigate the findings in more depth. An important starting point therefore is to perform tests of statistical significance (and hypothesis tests) on the relevant variables. A hypothesis, according to Zikmund (1997, p.558), is 'an unproven proposition or supposition that tentatively explains certain facts or phenomena; a proposition that is empirically testable'. It is also an assumption made about the nature of a particular object (population). Hypothesis testing therefore provides the researcher with a basis for both univariate and bivariate statistical tests of significance.

The researcher preceded the tests by setting the alpha level. The setting of the alpha (significance level) has no established criteria - the judgement is in the gift of the investigator. However, in education and social science research, significance levels of 1 per cent and 5 per cent - written as 0.01 and 0.05, respectively, are generally considered appropriate. As Rowntree (1981, p.118), points out, 'A difference that is significant at the 5% level is often merely called 'significant'; while a difference significant at the 1% level is called 'highly significant; (0.1% level 'very highly significant').' The researcher sets the alpha at 1% in order to determine whether (or not) highly significant differences will exist in the sample population. Another consideration for setting the alpha level at 1% is the need to guard against the risks associated with the Type I errors and, by extension,

the need to reduce the risk of making the Type II errors. (According to Zikmund (1997, p.565), Type I error occurs when the researcher 'concludes that there is a statistically significant difference when, in reality, one does not exist.' Type II error occurs when the researcher wrongly rejects the alternative hypothesis, when the null hypothesis is, in fact, false.) More so, the researcher wanted to be very confident in accepting or rejecting his experimental/research hypothesis (this hypothesis is referred to as alternative hypothesis in this analysis).

3.18 Preliminary Tests

3.19 The reliability analysis of the student questionnaire

Questions 6 and 15 of the student questionnaire - SPSS variables 3 - 8 and 17 - 27, respectively - are two important sections of the questionnaire (see appendix B). Question 6 has a set of six variables designed to explore students' perceptions of their own creative attributes; question 15 has a set of eleven variables, designed to explore students' perceptions of their teachers' classroom behaviours and practices. Although these sixteen variables provide valid measures (content-wise) of both students' creative attributes and teachers' classroom behaviours and practices (see literature review on creativity; Chamber, 1973) the researcher nonetheless established, quantitatively, the reliability of these variables. The aim is to show the consistency and stability of the variable measures. As Frude (1993, p.194) puts it 'The aim in estimating the reliability of a test is to assess how much of the variability in test scores is due to error and how much it reflects the variability in the true scores'.

Another reason for performing a reliability analysis on the questionnaire is to be able to draw firm conclusions from the data (Nairne, 2000). The researcher used alpha

coefficience to measure the internal consistency of the scores; alpha gives an estimate of the expected correlation between the scores observed and the 'true' scores that should have been obtained if the measures of scale variables were perfect. The alpha correlation (reliability coefficient) is +. 60 and +. 87 for students' creative attributes and teachers' classroom behaviours and practices, respectively (see extracts of SPSS output in tables 3.19(a) and 3.19(b) below and full SPSS output in appendix E). The measure of the reliability, according to Frankfort and Nachmias (1992, p.164), varies on a scale from 0 to 1, 'having the former value when the measurement involves nothing but error and reaching 1 when there is no variable error at all in the measurement'.

3.19(a) Reliability Analysis students' creative attributes

****** Method 2 (covariance matrix) will be used for this analysis ******

R E L I A B I L I T Y A N A L Y S I S S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
STATE3	19.3372	5.5830	.3812	.1726	.5370
STATE4	19.2736	5.7976	.3085	.1058	.5680
STATE5	19.2389	6.1050	.2753	.0847	.5799
STATE6	19.4220	5.6923	.2642	.0790	.5925
STATE7	18.7553	6.0037	.3614	.1897	.5491
STATE8	18.9730	5.4549	.4434	.2590	.5112

Reliability Coefficients 6 items

Alpha = .6013 Standardized item alpha = .6075

3.19(b) Reliability Analysis - Students' perception of teacher's classroom behaviours and practices

****** Method 2 (covariance matrix) will be used for this analysis ******

R E L I A B I L I T Y A N A L Y S I S S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
STATE17	38.1128	31.1521	.6577	.5256	.8518
STATE18	38.0185	32.5589	.5734	.4572	.8581
STATE19	38.5619	31.8874	.5254	.3576	.8618
STATE20	37.7689	32.5447	.5312	.3028	.8608
STATE21	37.8429	31.3549	.6374	.4546	.8533
STATE22	37.6839	33.1018	.5035	.2889	.8626
STATE23	37.7172	31.2662	.6475	.5698	.8525
STATE24	37.8447	31.1203	.6713	.5756	.8509
STATE25	37.3364	33.5162	.5209	.2952	.8616
STATE26	37.9760	32.0642	.5063	.2956	.8633
STATE27	37.9205	32.5029	.5050	.2949	.8628

Reliability Coefficients 11 items

Alpha = .8694 Standardized item alpha = .8702

3.20 Conclusion

The results of the reliability analysis indicate high internal consistency/reliability of the student questionnaire. These tests provide a basis for an in depth assessment of the statistical significance of questionnaire variables; these tests are presented in the following paragraphs.

3.21 Bivariate Analysis: comparing two or more variables of related measures

3.22 Students' creative attributes

The six variable measures are originality, curiosity, flexibility, risk-taking, humour, imaginative. The test objectives are to determine whether students' self-perceived creative attributes are the same across the six measures, and to determine whether certain attributes are more often perceived than others.

Hypothesis #1 [Tables 3.22a & 3.22b, Appendix G]

H_0: there are no differences across the six measures of students' creative attributes.

H_1: students' creative attributes differ across the six measures.

Statistic test: the Friedman test.

Significant level: α is set at 0.1, N is 519, the degree of difference (df) is 5

Rejection region: H_0 will be rejected if H_0 is $P<0.01$.

Result: The result is significant. The result indicates that significant differences exist between students' creative attributes across the six measures. 'Risk-taking' and 'originality' (which have the lowest mean ranks of 3.00 and 3.05, respectively) are the least perceived attributes. 'Humour' is the most self-perceived creative attribute (it has a mean rank of 4.39).

3.23 Students' perceptions of teachers' classroom behaviours and practices

Question number 15 in the student questionnaire (SPSS variable statements 16 - 27) has the following statements: 'My teacher motivates me to learn the subject', 'makes me

think', 'praises me whenever possible', 'encourages me to take responsibility for my work', 'allows me to express my views', 'asks questions in class', 'is open to students' views', 'accepts students' ideas,' 'is knowledgeable about the subject', 'relates learning to real-life experience', 'sets assignments that give me a chance to find solutions to problems on my own'. The test objectives are: (a) to determine whether students' perceptions of their teachers' classroom behaviours and practices are the same across the eleven measures, and (b) to determine whether certain teachers' classroom behaviours and practices are more often perceived than others.

Hypothesis #2 [Tables 3.23a & 3.23b, Appendix G]

H_0: there are no differences in students' perceptions of teachers' behaviours and practices across the eleven variable measures.

H_1: students' perceptions of teachers' classroom behaviours and practices differ across the eleven measures.

Statistic test: the Friedman test.

Significant level: α is set at 0.01 ($p = .99$); the degree of difference (df) is 10

Rejection region: H_0 will be rejected if H_0 is $P<0.01$.

Result: The result is significant. The result (table 3.23b, appendix G) shows that significant differences exist in students' perceptions of teachers' classroom behaviours and practices across the eleven measures. A close inspection of the ranks table indicates that 'praise' (which has the lowest mean rank, of 3.64) is the least often perceived teacher attribute. 'Knowledge of the subject' is the most often perceived teacher attribute with the highest mean rank (8.16).

3.24 Correlations coefficient

3.25 Test of significance of relationships

The researcher used measures of correlation to represent the degree of association (relationships) between students' scores on two paired variables. The test objective is to determine whether the following variables are related – students' originality and students' approaches to classroom problems, activities and assignments; students' curiosity and students' classroom questions; and students' risk-taking attribute and students' learning styles/approaches.

Hypothesis #3 [Tables 3.25a & 3.25b, Appendix G]

H_0: students' originality is not related to students' approaches to classroom problems and activities.

H_1: students' originality is related to students' approaches to classroom problems and activities.
Statistic test: the Spearman (r_s) test.

Significant level: α is set at 0.01.

Rejection region: H_0 will be rejected if H_0 $P<0.01$.

Result: The result is significant ($P<0.0005$ $r_s = 0.232$). Correlation is significant at the 0.000 level (two-tailed). The result indicates that students' originality is significantly related to their approaches to classroom problems, activities and assignments.

Hypothesis #4 [Tables 3.25c & 3.25d, Appendix G]

H_0: students' curiosity is not related to students' classroom questions.
H_1: Student curiosity is related to students' classroom questions.
Statistic test: the Spearman (r_s) test.

Significant level: α is set at 0.01.

Rejection region: H_0 will be rejected if H_0 $P<0.01$.

Result: The result is significant ($P<0.000$, $r_s = 0.24$). Correlation is significant at the 0.0005 level (two-tailed). Students' curiosity is significantly related to their classroom questions.

3.26 Bivariate Analysis: comparing variables between independent groups

The preceding paragraphs have attempted to compare the same units of measures on the same variables (related measures). The purpose of the following paragraphs is to compare different units of measures on the same variables. Specifically, the researcher will focus on student gender, qualification, and college. Student gender is SPSS-coded as 1 and 2, for male and female students, respectively. Qualifications are coded into four categories of A level, GNVQ/ACVE, NVQ and Access to HE. Colleges are coded into two categories of sixth form colleges and general further education colleges. The test objective is to determine whether significant differences/relationships exist between the unit of analysis (a particular group) and the characteristics of interest (a particular variable).

3.27 Student gender

Hypothesis #5 [Tables 3.27a, 3.27b & 3.27c, Appendix G]

> H_0: there are no differences in gender and students' self-reported learning styles/approaches.
>
> H_1: differences exist.
>
> Statistical test: chi-square test (Phi coefficient, r_ϕ is reported along with the X^2 (chi-square) results. Siegel and Castellan (1988) and Kinnear and Gray (2000) recommend the suitability of Phi coefficient when the particular sets of variables are measured on nominal scale. Phi coefficient, like the Cramer's V shown in table 3.27c (appendix G), provide 'a measure of the strength of the association rather like that of the Pearson correlation coefficient' (Kinnear and Gray, 2000, p.297). The paired variables in this hypothesis were measured on nominal scale).

Significant level: α is set at 0.01 ($p = 0.99$)

Rejection region: H_0 will be rejected if the $p < 0.01$

Result: The result is not significant. The null hypothesis cannot be rejected on the basis of this study. The Pearson statistic shows a value of 3.791 with a significance of .052 (two-tailed). The value is above the alpha level of .01, indicating a non-significant result. A close inspection of the observed cells frequencies, however, reveals that female students are least likely to take risk and are more likely to be 'conservatives' in their learning styles/approaches. The Phi correlation shows a value of .084 with a significance of .052. These indicate positive (but non-significant) relationships between gender and learning styles.

Hypothesis #6 [Tables 3.27d & 3.27e, Appendix G]

H_0: Male and female students show no differences in innovation and approaches to problem or to class activities and assignments.

H_1: they exhibit differences.

Statistical test: Mann-Whitney test

Significant level: α is set at 0.01 ($p = 0.99$).

Rejection region: H_0 will be rejected if the $p < .01$.

Results: From the table 3.27e (appendix G), the result is not significant ($p = .095$).

Hypothesis #7 [Tables 3.27f & 3.27g, Appendix G]

H_0: Male and female students show no differences in their classroom questions.

H_1: they exhibit differences.

Statistical test: Mann-Whitney test – the variables measurements were mixed.

Significant level: α is set at 0.01 ($p = 0.99$).

Rejection region: H_0 will be rejected if the $p < .01$.

Results: From the table 3.27g, the result is not significant ($p = 0.699$).

Hypothesis #8 [Tables 3.27h & 3.27i, Appendix G]

H_0: Male and female students show no differences in their self-perceived creative attributes.

H_1: they exhibit differences.

Statistical test: Mann-Whitney test

Significant level: α is set at 0.01 ($p = 0.99$).

Rejection region: H_0 will be rejected if the $p < 0.01$.

Results: From the table 3.27i, the result is not significant ($p = 0.531$).

Hypothesis #9 [Tables 3.27j & 3.27k, Appendix G]

H_0: Male and female students show no differences in their perceptions of classroom teachers' behaviours and practices.

H_1: they exhibit differences.

Statistical test: Mann-Whitney test

Significant level: α is set at 0.01 ($p = 0.99$).

Rejection region: H_0 will be rejected if the $p < 0.01$.

Results: From the table 3.27k, the result is significant ($p < 0.01$).

3.28 Qualification

Hypothesis #10 [Tables 3.28a & 3.28b, Appendix G]

H_0: the paired variables of qualification and student learning styles/ approaches are independent.

H_1: the paired variables are interdependent.

Statistical test: Kruskal-Wallis Test

Significant level: α is set at 0.01 ($p = 0.99$).

Rejection region: H_0 will be rejected if the $p < 0.01$.

Result: From the table 3.28b, the result is not significant ($p = .016$). The null hypothesis cannot be rejected on the basis of this study. The paired variables of qualification and students' learning styles/approaches are independent. It should be noted, however, that the results could have been significant (and the null hypothesis rejected) if the alpha had been set at .05.

Hypothesis #11 [Tables 3.28c & 3.28d, Appendix G]

H_0: the paired variables of qualification and student creative attributes are independent.

H_1: the paired variables are interdependent.

Statistical test: Kruskal-Wallis Test

Significant level: α is set at 0.01 ($p = 0.99$).

Rejection region: H_0 will be rejected if the $p < 0.01$.

Results: From the table 3.28d (appendix G), the result is not significant (p = .521): students' creative attributes and qualification are independent on the basis of this study.

Hypothesis #12 [Tables 3.28e & 3.28f, Appendix G]

H_0: the paired variables of qualification and students' perceptions of teachers' classroom behaviours and practices are independent.

H_1: the paired variables are interdependent.

Statistical test: Kruskal-Wallis Test.

Significant level: α is set at 0.01 ($p = 0.99$).

Rejection region: H_0 will be rejected if the $p < 0.01$.

Results: From the table 3.28e, the result is significant ($p < 0.0005$). This indicates that students on A level, GNVQ/AVCE, NVQ and Access to HE qualifications perceived their teachers' classroom behaviours and practices differently.

3.29 College

Hypothesis #13 [Tables 3.29a, 3.29b & 3.29c, Appendix G]

H_0: students' self-perceived learning styles/approaches are not different from one another irrespective of the college they attend.

H_1: differences exist.

Statistical test: chi-square test.

Significant level: α is set at 0.01 ($p = 0.99$)

Rejection region: H_0 will be rejected if the $p < 0.01$.

Result: The result is not significant and the null hypothesis cannot be rejected on the basis of this study. The Pearson statistic shows a value of 1.520 with a significance of 0.218 (two-tailed). The value is above the alpha level of 0.01, indicating a non-significant result. The observed cells frequencies suggest that sixth form college students are more likely to work 'within tried and trusted methods' (conservatives) and are least likely to 'try out new unproven ways of doing things' (risk-takers). The Phi correlation shows a value of -.053 with a significance of 0.218. These indicate negative and non-significant relationships between sixth form college and general further education college students and their learning styles/approaches.

Hypothesis #14 [Tables 3.29e & 3.29f, Appendix G]

H_0: students' self-perceived creative attributes are not different from one another irrespective of the college they attend.

H_1: differences exist.

Statistical test: Mann-Whitney test

Significant level: α is set at 0.01 ($p = 0.99$).

Rejection region: H_0 will be rejected if the $p < 0.01$.

Results: From the table 3.29f, the result is not significant ($p = 0.815$). The null hypothesis cannot be rejected on the basis of this study.

Hypothesis #15 [Table 3.29g & 3.29h, Appendix G]

H_0: students do not differ in their perceptions of their teachers' behaviours and practices irrespective of the college they attend.

H_1: students differ.

Statistical test: Mann-Whitney test

Significant level: α is set at 0.01 ($p = 0.99$).

Rejection region: H_0 will be rejected if the $p < 0.01$.

Results: From the table 3.29h, the result is significant ($p < 0.001$). The null hypothesis is rejected on the basis of this study.

3.30 Conclusion

The foregoing paragraphs have attempted to establish statistical significant differences between a range of variables in the student questionnaire. The following paragraphs explore some of these differences and attempt to establish variables that caused them.

3.31 Multivariate Analysis: Discriminant Function Analysis

3.32 Introduction

In a further attempt to understand the group differences, as well as to predict the likelihood of cases (students) belonging to a particular group based on the six variables on student creative attributes and the eleven variables on students' perceived teachers' behaviours and practices, the researcher performed discriminant function analysis on the questionnaire data (discriminant function analysis is a non-parametric equivalent (the inverse) of the multiple analysis of variance one-way (MANOVA), except that the dependent variable is dichotomous instead of quantitative in the case of MANOVA). The need for conducting multivariate analysis on the data set is informed also by the multivariate nature of the behavioural problems in the study, as well as the need to take cognisance of the inadequacy of both the univariate and bivariate analysis for complex behavioural scientific and educational research (see Kerlinger, 1973). One of the shortcomings of bivariate analysis is that it can only consider one independent and one dependent variable at a time - a shortcoming that multivariate techniques seek to overcome.

As a multivariate technique, discriminant function analysis is considered appropriate by the researcher in this particular context for a number of reasons: (1) the dependent and independent variables are distinguishable, (2) there was one dependent variables used in each discriminant function analysis, and (3) the variables were measured using nominal and ordinal scales - e.g. non-metric measurements (see Hair *et el*, 1995, pp.18-19; Diamantopoulos and Schlegelmilch, 1997, pp.213 - 213; Zikmund, 1997, pp.657- 659).

This section will focus on the two-group discriminant function analysis, which will have a linear equation of the type: $L = b_1X_1 + b_2X_2 + \ldots b_nX_n + c$, where b's are the discriminant coefficients, the x's are discriminating (independent) variables, and c is a constant. The dependant variables are student learning styles and student creativity. The predictor variables are the (six) variables on student creative attributes and the (eleven) variables on students' perceived teachers' classroom behaviours and practices.

3.33 Discriminant function analysis: creative learners and non-creative learners

The test objectives are (a) to understand the differences between student groups ('risk-taking' and 'conservative' students) that have been established in the earlier results on univariate and bivariate analysis, and (b) to identify which variable(s) account for, or explain these differences.

3.34 Underlying assumptions and test for possible violations

A number of underlying theoretical assumptions have to be investigated and addressed before embarking on the discriminant analysis (Bishop and Drew, 1999; Kinnear and Gray, 2000). They are (a) size of the sample (b) linear relationships between predictor variables (c) univariate and multivariate normality (i.e. test that the scores on predictor variables are randomly distributed, or that sampling distributions are linearly distributed) (d) homogeneity of variance-covariance matrices, and (e) multicollinearity (test whether the relationship between the predictor variables and the grouping variable and are independent of each other). The following steps were taken to test possible violations of the underlying assumptions.

I. The sample size for the discriminant analysis is 555; it is therefore significantly large enough for the analysis.

II. To confirm the linear relationship between predictor variables, the researcher checked individual predictor for the extreme outliers by using the SPSS Explore command (full SPSS output of both stem-and-leaf plots and boxplots are presented in appendix H, table 3.35, pp.361 – 372).

3.35 Extreme outliers

As the boxplots for the six predictor variables show (see appendix H), the majority of the boxplots are generally satisfactory with no significant (extreme) outliers – except imagination and risk-taking, which all violate the assumption on univariate normality. Each of the boxplots showed differences in the size of the boxes as well as extreme outliers. The two variables were therefore removed from the discriminant analysis. Assumptions d and e will be tested in the discriminant analysis (see 3.36e, appendix H).

3.36 Discriminant Analysis: creative learners and non-creative learners (SPSS output)

Table 3.36a (appendix H, from p.373) provides information about the data - i.e. the number of cases (both valid, as well as missing cases used in the discriminant analysis) in each category of dependent variable.

Table 3.36b (Group Statistics in appendix H) shows the mean, standard deviation as well as the number of valid cases for each independent variable within each level of the grouping variable.

Table 3.36c (appendix H) shows univariate analysis of variance (ANOVA), used to determine (if any) a statistically significant difference among the dependant variables (group) means for each predictor (independent) variable. One variable – originality – shows significant difference (in other words, the two groups are significantly different from each other with respect to student originality). All other regressor variables show no statistical significant differences among the group variable means; also the regressors show no discrimination between the group variable means.

The table also shows Wilks' Lambda value of .963 and the F ratio of 19.441 in this variable (i.e. F test for originality). The F ratio is the ratio of the between-groups variance in the data over the pooled average within-group variance; it is a measure of the extent to which a variable makes a unique contribution to the predicted group membership (Stassoft Inc, 2001). Wilks' Lambda, on the other hand, shows difference among the group means; it is an important statistical yardstick used to add or remove variables(s) from the analysis. The smaller the Wilks' Lambda for an independent variables, the more that variable contributes to the discriminant function and vice versa. (Wilks' Lambda with higher F ratio, and a significant p value are a measure of the importance of this variable to the analysis.)

Box's M (Table 3.36e, appendix H) is not significant (p = .527), suggesting that the underlying assumption of homogeneity of variable-covariance has not been violated (as stated in the foot of the output, Box's M tests the null hypothesis that the covariance matrices do not differ between groups formed by the (two) dependent variables of 'risk-taking' and 'conformist' students). For the researcher to accept the null hypothesis that the group do not differ, Box's M must not be significant.

Table 3.36f (with its three sub tables in appendix H) provides information about the variables that have entered the analysis. One variable records the highest Wilks' Lambda - originality (with Wilks' Lambda of .963). The variable was entered because it minimises the overall Wilks' Lambda at each (and every) step and the associated probability; also because the variable's F to Enter value is bigger than the criterion of 3.84 (see additional information at the bottom of the table.)

It should be noted, however, that those variables curiosity, flexibility and humour - were removed because they show extreme multicollinearity and thus failed the tolerance test. (Variables which F to Enter values are smaller than the criterion of 3.84 are never entered.) The researcher also used this statistics to check that the multicollinearity assumption was not violated.

Table 3.36g (appendix H) shows correlation between the discriminate function and the original (four) variables. The table also gives the percentage of the variance accounted for by the discriminant function generated (one discriminant function was generated because there are only two groups). The function provides the overall discrimination between the two groups. The canonical correlation is relatively low, because one variable is expressed

by the function. Table 3.36h (appendix H) shows the significant of the function p = .001 in this study is very highly significant.

Table 3.36i (appendix H) shows the variable originality as having the largest standardised canonical discriminant function coefficients, and it contributes solely to the prediction of group membership.

The researcher used standardised discriminant function to assess (unique) contribution of each of the nine independent variables to the discriminant function. Table 3.36j (appendix H) shows the pooled within groups correlations between the discriminating variables and the function (see table foot notes). It also shows the associations between the predictor variables (i.e. curiosity, flexibility and humour) and the discriminant function. The variable that explains the difference between the two student groups is originality – it loads highly on the function.

Table 3.36k (appendix H) shows the function values for the group means. The group centroids are different for the two groups.

Tables 3.36l, 3.36m and 3.36n (appendix H) show classification summary, prior probabilities for groups and results classification, respectively. Table 3.36m shows prior probabilities being used in classification. Since the observed group sizes are largely unequal, SPSS default prior .5 is used. Table 3.36n shows overall success prediction of membership (classification rate of the original cases) at 57.3 per cent (i.e. it correctly classified over half of the cases). The table also shows that risk-taking students are most accurately classified (69.7 per cent), compared to conservative students (49.8 per cent).

Incorrect classification (the proportion of mistakes for both categories) shows 30.3 per cent for risk-taking and 50.2 per cent for conservative students.

3.37 Discriminant function analysis: student creativity

Student creativity is defined by student originality attribute, an attribute which shows the largest discrimination in terms of students' responses. Originality is arguably the foremost attribute and a measure of creativity:

> 'The term creativity refers to the ability to generate ideas that are original and novel' (Nairne, 2000, p.404)

Another reason for selecting originality as a benchmark for 'gauging' student creativity is to avoid a possible 'loss' of data that would arise if all the six creative attributes were made a (single) composite variable. Also, a composite variable for the six creative attributes will violate one of the underlying assumptions (sensitivity to extreme values) of discriminant function. The researcher's choice of originality may have been validated when statistical tolerance test in the step-wise statistics (see table 3.37f in appendix H) 'passed' the originality attribute out of the four creative attributes that were entered into the discriminant function. The test objectives are (a) to understand the differences between student groups ('creative students' and 'less creative' students) in relation to their perceptions of their classroom teacher's behaviours and practices, and (b) to identify which variable(s) account for, or explain these differences.

3.38 Underlying assumptions and test for possible violations

As in paragraphs 3.34.

3.39 Extreme outliers

As the boxplots for the eleven predictor variables show (see appendix H, table 3.39, pp.380-393), majority of the boxplots are generally satisfactory with no significant (extreme) outliers – except praises, responsibility and knowledge of the subject, which all violate the assumption on univariate normality. The three variables were therefore removed from the discriminant analysis. Assumptions d and e will be tested in the discriminant analysis (see table 3.40e in appendix H).

3.40 Discriminant Analysis (SPSS output)

Table 3.40a (appendix H, from p.394) provides information about the data - i.e. the number of cases (both valid, as well as missing cases used in the discriminant analysis) in each category of dependent variable.

Table 3.40b (Group Statistics in appendix H) shows the mean, standard deviation as well as the number of valid cases for each independent variable within each level of the grouping variable.

Table 3.40c (appendix H) shows univariate ANOVA. The two groups are significantly different from each other with respect to variable 'makes me think'. All other regressor

variables show no statistically significant differences among group variable means; the regressors also show no discrimination between the group variable means.

Box's M (Table 3.40e in appendix H) is not significant (p = .231) and the underlying assumption of homogeneity of variable-covariance has not been violated.

Table 3.40f (and the following two sub tables in appendix H) provides information about the variables that have entered the analysis. Variables *'makes me think'* and *'asks questions in the class'* record the highest Wilks' Lambda – .956 and .947, respectively. The variables were entered because they minimise the overall Wilks' Lambda at each (and every) step and the associated probability; also because the variables' F to Enter values are bigger than the criterion of 3.84 (see bottom of the table). The rest of the variables were not entered in the analysis.

Table 3.40g (appendix H) shows correlation between the discriminate function and the original variables. The table also gives the percentage of the variance accounted for by the one discriminant function generated, which provides the overall discrimination between the two groups. The canonical correlation is relatively low, because one variable is expressed by the function. Table 3.40h (appendix H) shows the significant of the function – which, in this study, is very highly significant (p = .001).

Table 3.40i (appendix H) shows the variables 'makes me think' and 'asks questions in the class' as having the largest standardised canonical discriminant function coefficients, and thus contribute the most to the prediction of group membership.

The researcher assessed the contribution of each of the nine independent variables to the discriminant function by the use of the Standardised discriminant function. Table 3.40j (appendix H) shows the pooled within groups correlations between the discriminating variables and the function (see also notes on the foot of the table). The table also shows the association between the variables and the discriminant function. The variable that is the most characteristic of student creativity is 'makes me think' – it loads highly on the function.

Table 3.40k (appendix H) shows the function values for the group means. The group centroids are different for the two groups.

Tables 3.40l, 3.40m and 3.40n (appendix H) show classification summary, prior probabilities for groups and results classification, respectively. Table 3.40n shows overall success prediction of membership (classification rate of the original cases) at 76.4 per cent (i.e. it correctly classified over two third of the cases). The table also shows that 'creative' students are most accurately classified (78.5 per cent), compared to 'less creative' students (51.9 per cent). Incorrect classification (the proportion of mistakes for both categories) shows 21.5 per cent for 'creative' and 48.1 per cent for 'less creative' students.

3.41 Conclusion

The foregoing results are discussed in the following paragraphs.

3.42 DISCUSSION

3.43 Student creative attributes

The descriptive and bivariate analyses showed students' self-perceptions of their creative attributes. The students strongly believed that they are creative, but their creative attributes differ significantly across the six measures of originality, flexibility, curiosity, risk-taking, imagination and humour. These attributes have been widely reported as key measures and characteristics of creativity (Guildford, 1962, cited in Davis, 1969; Brown, 1968; Renzulli, *et el*, 1974; Batchfold, 1974; Williams, 1972, cited in Cropely, 2001; Claxton, 1999; DfEE, 1999). The students' most frequently perceived (highest) creative attribute is humour, while the least frequently perceived (lowest) attribute is originality (the latter frequency percent is only marginally higher than the risk-taking attribute). Gender differences in creative attributes were explored. The hypothesis of no-significance difference in gender creative attributes was statistically supported, suggesting that male and female students do not differ significantly in their perceptions of their creative attributes. These results support common beliefs, assumptions, assertions and empirical findings that everybody has a trait of creativity or perceived themselves as being creative (Jones, 1972; Timmerman, 1985; Russell and Evans, 1989; Turner, 1991; Herrmann, 1993; Ward, *et el*, 1995), but that the degree or levels of creativity vary in individuals (Lynch, 1970; Lake and Houghton, 1975; Amabile, 1983; Cropely, 1992; Treffinger *et al*, 1994, cited in Nickerson, 1999; Ekvall, 1997).

A close examination of the frequency analysis and the Friedman test statistic of the six creative attributes provide significant insights about the development of student creative

qualities since the early education. Children in early education have been reported to show a number of creative qualities, which include originality, curiosity and risk-taking (Wason, 1968) which are expected to grow and develop as they progress in their education and job career. Students in the current study exhibited low mean ranks in originality, curiosity and risk-taking (compared to other creative attributes) which suggest that perhaps a gradual, but significant decline of those qualities takes place between children's early education and the time they commence or finish post-16 (further) education. This finding is significant. First, it underlines the peril of limiting current national creativity drives to the school curriculum. Second, it underlines the critical need to nurture and develop creativity of students across the three sectors of English education.

3.44 Students' classroom behaviours and practices

It was hypothesised in this study that certain creative attributes in students and classroom behaviours and practices are significantly related. The results from the analysis supported this hypothesis. Students' perception of their own originality is significantly related to students' ability to experiment or try out new ideas and approaches to problems or to classroom activities and assignments (but results from the descriptive analysis indicate that only 35.3 per cent of students are innovative in their approaches). Students' self-rating of their own curiosity is also found in this study to be significantly related to students' propensity to ask questions in the classroom, but this relationship is complex. First, students believed that they are curious (by a frequency percent of 70.1) but they seldom ask questions in class; second, the descriptive results indicate that the students generally avoid answering teacher's questions for fear of getting the answer wrong. A number of factors might explain the complexity of relationship between students' creative attributes and classroom behaviours and practices. It is possible that the students

might have overrated their creativity. It is also possible that students are either generally shy to ask questions in the classroom or, that their behaviour is conditioned by the classroom teaching environment. Research evidence points to the latter factor (see Wheldall and Merrett, 1997; McCallum, *et el*, 2000).

Two things have emerged from these results: although highly significant relationships are found between student creative qualities and classroom behaviours and practices, there is little evidence to suggest that students reflect these qualities in their classroom discourse. Since the classroom environment plays a significant role in shaping students' learning behaviour (Richardson, 1988; Wheldall and Merrett, 1997), it is plausible that further education students are not expressing their creativity in their classroom discourse because the teaching environment does not encourage or support creativity. There is, therefore, the need to recognise the role of teaching and environment in promoting or impeding student creativity.

3.45 Students' approaches to learning: creative learners Vs non-creative learners

In a large-scale, seminal work that explored students' learning experiences in further education colleges, Bloomer and Hodkinson (1997, 1999) identified 'innovative' and 'conforming' as among the five 'ideal types of studentship' found in further education. The grouping of student learning styles into creative learners and non-creative learners in the current study is broadly consistent with Bloomer and Hodkinson's characterisation of 'innovative' and 'conforming' students. Learning style is defined in this context as 'a coherent whole of activities, study orientations and conceptions of learning, education and cooperation that is characteristic for a certain student at a certain moment in time' (Vermunt and Rijswijk, 1988 quoted in Beishuizen, *et el*, 1994). Creative learning,

according to Mayer (1989, p.206) 'refers to teaching students to use strategies for representing and processing new information in ways that lead to problem solving transfer (and application)'. The categorisation of students in this study into creative learners and non-creative learners is based on the students' self-reported learning styles and approaches, which were coded as 'risk-takers' and 'conservatives' in the SPSS. Risk-takers are those students who described their learning styles as 'try out new and unproven ways of doing things' and conservatives are those students who described their learning styles as 'work within tried and trusted methods and will not experiment'. The results showed a relatively small proportion of students (37.4%) are risk-takers (creative learners), compared to a majority (62.6%) who are conservatives (non-creative learners). The results are consistent with findings from the descriptive analysis of student creative attributes and classroom practices – where students' dispositions for risk-taking and for innovation in tasks and assignments recorded frequency percents of 57.9 and 35.3 respectively. The results are also consistent with the index of variability statistic, which showed some degree of variation among students in terms of their learning styles and approaches.

Subsequent multivariate analysis of the data highlights the creative attribute(s) that differentiate the two groups of creative learners and non-creative learners. The aim of the multivariate analysis is to find out whether the two groups can be differentiated on the basis of their creative attributes, how well and what variables explain that differentiation. Discriminant analysis is used to determine the differentiation, and Wilks Lambda statistic is used to determine the best discriminant function, as well as to 'test the efficacy of the discriminant function in producing significant differences among the target groups' (Kinnear and Gray, 2000, p.355). Another reason for using Wilks is that small Wilks' value suggests minimal overlap between functions (or variables). Chi square statistic is

then used to evaluate the significance of Wilks. It should be noted that four out of the six creative attributes were entered into the function. The two other variables – imagination and risk-taking – showed extreme outliers and were removed from the model.

The results showed that creative learners and non-creative learners differ significantly with respect to their originality attributes (Wilks of .963). The three other regressor variables – curiosity, flexibility and humour – show no statistical significant differences (and this suggests less variance) among the group variable means. Student originality attribute is the sole predictor-variable in the model, and thus explains the differences between the two groups of learners. The models correctly classified a high proportion of creative learners (69.7 per cent) and a (modest) proportion of non-creative learners (50.2 per cent). Overall, over half (57.3 per cent) of original group cases are correctly classified; the result is better than chance and indicates an above average satisfactory level of discrimination.

These findings are highly significant in many ways: by reliably identifying, discriminating and differentiating creative learners from non creative learners, college leaders, curriculum managers and teachers now have a new knowledge to assist them to plan, organise, arrange and deliver curriculum according to students' learning styles and approaches. More significantly, these findings show that fostering creativity in teaching and learning in a further education context is dependent upon developing student originality (creative thinking), a new insight that should help teachers to identify how all students can be encouraged, supported and helped to become creative learners. The findings also provide substantial empirical evidence to support government's current drive to promote thinking skills (such critical thinking skills, problem solving skills, etc.)

in the National Curriculum, as well as underline the critical need to extend the initiative to 16-19 curriculum.

3.46 Group differences in students' learning styles and approaches

3.47 Gender

Gender is strongly related to learning styles and approaches. Findings from the descriptive analysis of gender learning differences showed that female students are less likely to take risk (creative learners) and more likely to be conservative (non creative) learners, but a null hypothesis of no significance difference in gender learning styles cannot be rejected on the basis of this study. Similar findings were reported by Read and Riding (1996), who examined cognitive styles and learning preferences among 15 year olds pupils. Although the schools sector was the context of Read and Riding's study, no significant differences were found in styles and pupil gender; but evidence of differences by gender in learning strategy preferences were found. The findings of the present study indicate that teaching and learning approaches designed to nurture student creativity along the lines of those suggested in the preceding paragraphs will be beneficial to both male and female students since both sexes showed no significant differences in learning styles and approaches.

3.48 Qualifications

A level students are more likely to 'work within tried and trusted methods' and are less likely to take risk (non creative learners), while students on GNVQ/AVCE qualifications are more likely to take risk and less likely to 'work within tried and trusted methods' (creative learners). Students on NVQ are less likely to take risk and more likely to be

conservative, the percent difference between the two NVQ groups of creative and non creative learners is very small (due probably to the uneven representation of NVQ students in the sample). These results are largely predictable. A level qualifications are (arguably) largely academic, content-based and examinations-oriented which on the whole provide little flexibility in curriculum delivery. Vocational qualifications (NVQs) are designed to measure a candidate's 'capacity to carry out a range of work to the performance criteria which have been agreed by industry' (CITB, 1992, p.3). Candidates are judged 'competent' or 'not yet competent' depending on their ability to meet the performance criteria specified by the Industry Lead Body. It is possible that students on NVQ courses will adopt conformist approaches to learning given the thin line that divide assessment grading namely 'competent' from 'not yet competent'. Applied vocational qualifications (GNVQs/AVCEs) are said to promote flexibility in curriculum content and process (Smith, 1997) and on the whole provide opportunities for students to express their creativity in course or project work, which counts towards final assessment. The findings in the current study provide empirical support for the assumption that GNVQ/AVCE qualifications facilitate student self-expression of creativity more than do the A level and NVQ qualifications.

3.49 College

There is no statistical support for a null hypothesis of no-significant difference between learning styles of sixth form college and general further education college students, but sixth form college students are more likely to work within tried and trusted methods (non creative learners) and are least likely to try new unproven ways of doing things (creative learners). The results are not surprising for the reason that the curriculum orientation in sixth from colleges is geared more or less to prepare 16-19 year olds for

examination-oriented academic education. It is worth noting, however, that the introduction of vocational and applied vocational qualifications in the late 1980s and early 1990s, has witnessed a rise in the number of enrolments for these courses in sixth form colleges. The findings in this study on the whole lend empirical credence to a recent decision by the government to locate Centres of Vocational Excellence (CoVE) largely in general further education colleges, as part of a national drive to nurture young people's creativity in non-academic courses (see DfES, 2001).

3.50 Students' perceptions of teachers' classroom behaviours and practices

Classroom learning environment is a function of a number of variables, which include teacher personality (Fisher and Kent, 1998) and students' perceptions of teacher and fellow students (Van der Sijde, 1989). Students' views were elicited in this study to provide some insights into teachers' behaviours and practices in the classroom. The students differ significantly in their perceptions of teachers' classroom behaviours and practices. The most often perceived teachers' behaviour and practice is 'subject knowledge' (mean rank of 8.16/frequency percent of 88.6) and the least often perceived is 'praise' (mean rank of 3.64/frequency percent of 31), followed by 'motivation' (mean rank of 5.06). These results mean that teachers in further education often demonstrate high level of subject knowledge in lessons, but do not often encourage and motivate students to learn the subject. The students' high ratings for teachers' subject knowledge confirmed an age-old students' perception of teachers as a repository of knowledge while low ratings for teachers' use of 'praise' in the classroom discourse is consistent with findings from studies by Schwieso and Hastings (1997) and Duffield, *et el* (2000). These studies found that teachers generally do not encourage or praise students enough in

lessons. Although both studies were carried out in the schools sector, the findings in the current investigation indicate that teachers' approval of students in further education is also low. Also, of significance to note is the consistency found between students' ratings of how often teachers cultivate their thinking skills in lesson and the mean rank for student original thinking quality. If we accept the proposition that students enter or progress in further education with sharply declined original thinking qualities (see paragraph 3.43), it can be argued that minimum or lack of attention given by teachers to cultivating student thinking skills in the classroom discourse may have adversely affected student development in original thinking.

Another aspect of teachers' classroom practices on which the students' views elicited is the frequency with which their teachers relate classroom discourse to real-life experiences. A study by Stevenson (1990, p.339) identified two ways in which students are engaged in learning: either subject matter was 'intrinsically interesting - often because it was related to real world experiences - or by instruction that enabled them to actually participate in thinking and learning.' A high proportion (5.62 mean rank /41 frequency per cent) of students in the current study believed their teachers' teaching practices/approaches are too abstract and do not often relate to real life contexts. A number of reasons might explain this. It is possible that teachers either do not have the pedagogic skills needed to meet the increasingly complex classroom demands or lack the industrial and professional training needed to contextualise learning, or both. But, what is undoubtedly a contributing factor is the 'shortage of significant opportunities' for industrial and professional development of teaching staff in further education, which was recently highlighted by FEFC (1999, p.22; Davies, 2002). The finding in this study lends partial credence to employers' assertions that the curriculum does not equip or prepare students well enough for the challenges of the work place (Morita, 1992). The results will

have implications for curriculum planning and arrangements and delivery in further education.

3.51 Group differences in students' perceptions of teachers' classroom behaviours and practices

3.52 Creative students Vs less creative students

The classification of students into the two groups, creative students and less creative students, preceded discriminant analysis on student creativity and perceptions of teachers' classroom practices. This classification is based on the students' scores on the originality attribute. Originality is a foremost measure and characteristic of creativity and it is privileged over other attributes in creativity definitions (see Dudek, 1974; Milgram, 1990; Ochse, 1990; DfEE, 1999; Naire, 2000). The results showed that creative students and less creative students differ significantly with respect to their perceptions of teachers' classroom behaviours and practices: the variable 'makes me think' showed a highly significant difference between the group means. The variable is also the most characteristic of student creativity with the highest Wilks, as well as contributes solely to the prediction of the group membership. The two groups were also reliably differentiated: 76.4 per cent of original group cases were correctly classified, significantly higher than chance. However, only half of less creative students and under a quarter of creative students were correctly classified, indicating that discriminant function is not very satisfactory. One reason for this contradiction is that three out of eleven variables were removed from the analysis because they showed extreme outliers (see 3.52). These findings are in agreement with theoretical assumptions that creative and less creative students held different views about their teachers' teaching practices/approaches.

3.53 Student learning and college extra/co-curricular programmes

Student participation in college extra curricular programmes (these include work experience/placement, cultural activities, young enterprise, student union, etc.) has been found to have positive impact on their learning, but attendance at enrichment sessions remains low (FEFC, 1996). This study extends the FEFC inspection report and provides empirical evidence of the proportion of students on 16-19 courses who participate in college extracurricular programmes. The results indicate that a minority of students (44 per cent) participates in such programmes – this is consistent with the FEFC (1996) findings. The present results also showed that very little has changed four years after the FEFC report was published. An important insight provided by these findings is that, of the students who participate in college extracurricular programmes, 91 per cent judged their participation as beneficial to their learning. At present, the government through the Learning and Skills Council does not earmark specific funds for extracurricular programmes due possibly to the paucity of empirical evidence to enable the government to evaluate, quantify and link the benefits of these programmes to student learning. The findings from this study will help to fill that gap - by establishing and substantiating the relevance of extracurricular programmes to student learning in a further education context. College leaders and managers can use this knowledge to plan, arrange and integrate 16-19 curriculum with other learning-supporting extracurricular programmes. This knowledge should also assist the Learning and Skills and Councils to allocate resources to colleges which explicitly link extracurricular programmes to student learning.

3.54 Group differences in students' learning styles and approaches and participation in college extra/co-curricular programmes

3.55 Gender

Female students are more likely to participate in college extracurricular programmes (48 per cent) than male students (38 per cent). Female students are also more likely to find their participation beneficial to their learning (95 per cent) than male students (83 per cent). Creative learners are slightly more likely to participate (44.4 per cent) in college extracurricular programmes than non-creative learners (43.7 per cent). The results are broadly consistent with the researcher's expectation, although a slightly higher proportion of creative learners might have been expected given their propensity for curiosity. What is interesting to note, however, is that a much higher proportion of female students than male students participate in extracurricular programmes. The insights provided by these findings can be used to investigate reasons why male students are not participating well enough in extracurricular programmes as female students; then action can be taken to improve participation by all students.

3.56 Other findings: student learning, enjoyment of courses and curriculum arrangements

An examination of student learning, enjoyment of courses and curriculum arrangements produced more results. A significant proportion (81 per cent) of further education students believed that they were learning and a little over half (57.7 per cent) of students said they were enjoying their courses. Similar findings were obtained when the data was analysed according to student gender, qualification and college categories. In terms of gender, 78.8 per cent and 82.4 per cent of male and female students respectively believed they were learning, compared to 57.8 per cent and 58 per cent respectively who said they

were enjoying their courses. In the qualification category, 82.6 per cent, 88.1 per cent, 81.3 per cent and 92.9 per cent of students on A level, GNVQ/AVCE, NVQ and Access to HE respectively, said they were learning, as against 54.9 per cent, 55.6 per cent, 58.6 per cent and 70.5 per cent respectively, who indicated they were enjoying their courses. In the college category, 87.4 per cent and 75.6 per cent of students in sixth form colleges and general further education colleges respectively, believed they were learning, against 62.6 per cent and 54 per cent of sixth form colleges and general further education colleges respectively, who said they were enjoying their courses. It is worth noting, however that, consistent higher frequency percents for Access to HE students in the two variable measures (learning and enjoyment of courses) suggest the suitability and appropriateness of the current curriculum arrangements and delivery to the need of these student cohorts; this should be built upon.

This study has identified a largely unacknowledged problem of students not enjoying their courses even though they might be learning the subject matter, as well as underlined the implications for student motivation, namely student retention and participation in further education. Although a higher proportion of students believed that they are learning, these findings showed that more work still needed to be done to get those 19 per cent who feel they do not often (or not at all) learn as they should and the 42.3 per cent who do not often (or not at all) enjoy their courses. The results also underlined the need to arrange and organise courses (curriculum) around students' preferred subject options and career interests as a means to engage students more in learning and improve motivation. The problem of student motivation, participation and retention in some Learning and Skills Council regions are reportedly caused by poor course/curriculum arrangements (TES FE Focus, 10/8/01) and poor quality of teaching (Tysome, 2002)

which are being investigated by the Learning and Skills Council at the time of writing. This study has underlined the timeliness and the necessity of the LSC's investigation.

3.57 Conclusion

A number of conclusions can be drawn from the foregoing analysis. One is that teachers in further education do not necessarily know or appreciate their students, and their creative qualities and general motivation well enough. This knowledge, according to Heist and Wilson (1970, p.198), is 'fundamental for everyone who wishes to work with students effectively'. The fresh insights provided by this study can be used to inform teacher training and induction programmes in further education colleges and in teacher education curriculum offer in universities. However, the extent to which the findings from the analysis of the student questionnaire are consistent with, or supported and crossed-validated by the analysis from the classroom observation data sets is established in the next chapter – on classroom observations.

CHAPTER FOUR

4.0 RESULTS

4.1 Classroom Observations

4.2 Introduction

The classroom observation grid is a key complementary data collection instrument, designed to validate key aspects of the student questionnaire – e.g. students' classroom behaviours and practices and students' perceptions of teachers' classroom behaviours and practices, discussed in chapter three. The 794 minutes of classroom observations analysed in this chapter represent about half of the total minutes of classroom observations carried out by the researcher; some lessons were left out because teachers used them for tutorial, supported studies, etc. These lessons were excluded in the analysis to maintain consistency and to improve the reliability of the data; more so, including these lessons will distort the balance of teacher/student tally time and the balance of questions to presentations. This chapter presents both the descriptive summaries of the classroom observation grid and the ratio analysis of the features of interaction in the classroom. The ratios are teacher response ratio (TRR), teacher question ratio (TQR),

student initiation ratio (SIR), and content cross ratio (CCR). The chapter ends with a discussion of the results.

4.3 Teacher and student talk

Table 4.3a below provides information about some of the eleven measures of teachers' classroom behaviours and practices which the student questionnaire sought to explore. The table indicates that teacher talk accounts for 80 per cent of lesson time, compared to student talk (17 per cent) and non-event (3 per cent). In terms of the classroom events measured in the observation grid by ten variables – teachers' talk time on lecture accounts for a majority (49 per cent) of lesson time, while creativity-facilitating events such as 'accept feelings', 'praise students,' and reference to real-world, account for 0.1 per cent, 0.1 per cent and 3.1 per cent, respectively.

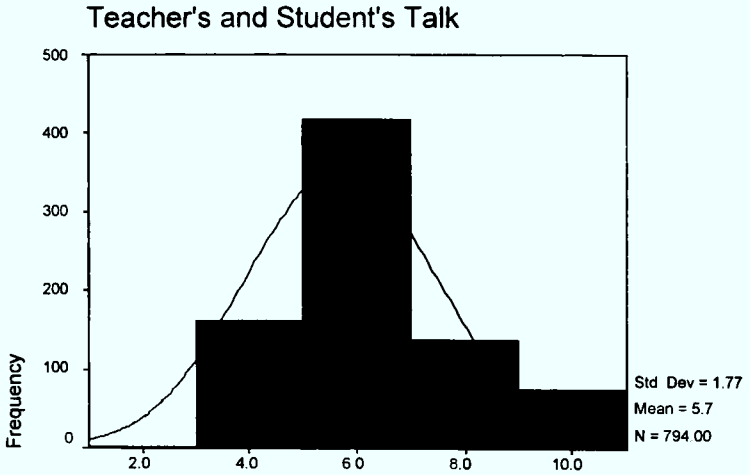
Table 4.3a: Table of frequency distribution

Teacher's and Student's Talk - frequency column shows time in minutes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	accept feelings	1	.1	.1	.1
	praise students	1	.1	.1	.3
	allows students' views/accepts ideas	5	.6	.6	.9
	asks questions	157	19.8	19.8	20.7
	lecture	392	49.4	49.4	70.0
	practical examples/relates learning to real life	25	3.1	3.1	73.2
	solicited	52	6.5	6.5	79.7
	unsolicited	86	10.8	10.8	90.6
	silence or non-event	23	2.9	2.9	93.5
	Others - student's activity, presentation, etc	52	6.5	6.5	100.0
	Total	794	100.0	100.0	

The descriptive statistics results in appendix F (and table 4.3b below) indicate that the measures of central tendency - mean, median and mode - all clustered around the middle of the histogram. This confirms the centrality of lecture in classroom discourse.

Table 4.3b: Histogram of classroom events



Teacher's and Student's Talk frequency column shows time in minutes

4.4 Types of activity

Five types of classroom activity were recorded, as shown in table 4.4a on page 140. Of those activities, lecture accounts for 75 per cent of the time, followed by small group/student feedback to class (14 per cent) and question and answer with teacher (5 per cent).

Table 4.4a: frequency distributions of classroom activities

Types of activity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lecture	592	74.6	74.6	74.6
	Small group/studen feedback to class	112	14.1	14.1	88.7
	Q & A with teacher	42	5.3	5.3	94.0
	Supported studies	18	2.3	2.3	96.2
	Presentation	30	3.8	3.8	100.0
	Total	794	100.0	100.0	

The result is consistent with the students' account of their learning experiences analysed from the student questionnaire (see table 4.4b below and tables 9–16 in SPSS output of frequency distributions on modes of students learning in appendix I).

Table 4.4b: Students' learning experiences (extracts of modes of learning table)

Different ways of learning: lecture

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	66	11.9	12.2	12.2
	Hardly ever	44	7.9	8.1	20.3
	Sometimes	169	30.5	31.1	51.4
	A lot	185	33.3	34.1	85.5
	All the time	79	14.2	14.5	100.0
	Total	543	97.8	100.0	
Missing	System	12	2.2		
Total		555	100.0		

4.5 Group variables

4.6 Curriculum, qualification and college

Classroom observations took place in the following curriculum areas – humanities/social sciences, maths and sciences, information technology, business studies/NVQ administration and 'others' (the latter include hairdressing, health and social care, travel and tourism). Consistent with the results in paragraph 4.3, lecture accounts for a significant proportion of teacher talk – 57.1 per cent, 53.4 percent and 50 per cent in maths and sciences, 'others' and business studies, respectively. Teaching styles/approaches in IT were more hands-on, with lecture accounting for a third (31 per cent) of teachers' talk time. In humanities, lecture accounts for 43 per cent of teachers' talk time, while teachers spent over a quarter (28 per cent) of lessons time on asking students questions. (It will be noted that a lesson observed in humanities featured a questions and answer session, which might explain the high figure.) Compared to other curriculum areas, teachers in maths and science curriculum spent the least time on asking student questions – i.e. 13.6 per cent and 13.3 per cent, respectively (see appendix I).

When analysed according to qualification areas – i.e. academic (A level), applied vocational (GNVQ/AVCE), occupational/vocational (NVQ) and Access to HE – the results point to lecture as the main activity in classroom discourse in each of the four qualification areas. It is particularly instructive to note that NVQ has the highest proportion of lecture activity with 54.7 per cent, followed by A level, GNVQ/AVCE and Access to HE with 52 per cent, 45.5 per cent and 36.7 per cent respectively (see appendix I).

In the college categories, lecture accounts for a higher proportion of teachers' talk time in sixth form colleges (56 per cent), compared with general further education colleges (43 per cent). Also, teachers' talk time on asking student questions is more (23 per cent) in the general further education colleges than in sixth form colleges (17 per cent).

Table 4.6a: frequency distribution of teacher and student talk time according to college

Teacher's and Student's Talk - frequency column shows time in minutes

College Type			Frequency	Percent	Valid Percent	Cumulative Percent
Sixth Form	Valid	allows students' views/accepts ideas	3	.8	.8	.8
		asks questions	67	16.9	16.9	17.7
		lecture	221	55.8	55.8	73.5
		practical examples/relates learning to real life	12	3.0	3.0	76.5
		solicited	23	5.8	5.8	82.3
		unsolicited	43	10.9	10.9	93.2
		silence or non-event	12	3.0	3.0	96.2
		Others - student's activity, presentation, etc	15	3.8	3.8	100.0
		Total	396	100.0	100.0	
General FE	Valid	accept feelings	1	.3	.3	.3
		praise students	1	.3	.3	.5
		allows students' views/accepts ideas	2	.5	.5	1.0
		asks questions	90	22.6	22.6	23.6
		lecture	171	43.0	43.0	66.6
		practical examples/relates learning to real life	13	3.3	3.3	69.8
		solicited	29	7.3	7.3	77.1
		unsolicited	43	10.8	10.8	87.9
		silence or non-event	11	2.8	2.8	90.7
		Others - student's activity, presentation, etc	37	9.3	9.3	100.0
		Total	398	100.0	100.0	

4.7 Comparing the balance of the teacher's response-initiative and the student initiation

Flanders (1970) identified a number of ratios which can be used to obtain more in depth information about the features of classroom interaction – namely teacher initiative, teacher response and student initiative – and to compare the balance between initiation and response, beyond what is obtainable from the descriptive statistics. The following ratios are calculated: teacher response ratio (TRR), teacher question ratio (TQR), student initiation ratio (SIR) and content cross ratio (CCR). The ratios are grouped according to variables such as college, curriculum and qualification each of these is calculated as follows:

4.8 Ratio analysis – all colleges

4.8a Teacher Response Ratio (TRR)

TRR is sums of category frequencies 1, 2, and 3 divided by sums of categories 1, 2, 3 and 6 multiply by 100

$$\frac{(1 + 1 + 5) \times 100}{(1 + 1 + 5 + 25)}$$

TRR = 21.9%

Response rate of teachers to student talk across the colleges was 21.9 %.

4.8b Teacher Question Ratio (TQR)

TQR is derived by dividing category frequency 4 by the sums of category frequencies 4, 5 and 6 multiply by 100

$$\frac{157 \times 100}{(157 + 392 + 25)}$$

TQR = 27.4%

The result indicates that teachers across the colleges asked 'average' number of questions in lessons. (Flanders (1970) suggested a TQR 'average' per cent of 26.)

4.8c Student Initiation Ratio (SIR)

SIR indicates the proportion of student talk 'judged by the observer to be an act of initiation' (Flanders, 1970, p.102). It is derived by multiplying the frequency in category 8 by 100 and dividing by the sums of all student talk.

$$\frac{86 \times 100}{(52 + 86 + 52)}$$

SIR = 45.3%

4.8d Content Cross Ratio (CCR)

CCR is calculated to 'round out the situational characteristics of classroom interaction' (Flanders 1970, p.105). It provides an indication as to the amount of emphasis given to content in classroom discourse and it is derived by adding the frequency percents in categories 4, 5 and 6.

CCR = 19.8% + 49.4% = 69.2%

A high CCR ratio for all colleges indicates that the subject matter was the main focus of discussion in the classroom.

4.9 Ratio analysis – curriculum areas

4.9a Teacher Question Ratio (TQR)

4.9a(i) Humanities/Social Sciences

$$\frac{47 \times 100}{(47 + 72 + 2)}$$

TQR = 38.8%

4.8a(ii) Maths and Sciences

$$\frac{19 \times 100}{(19 + 80 + 9)}$$

TQR = 17.6%

4.9a(iii) Information Technology

$$\frac{8 \times 100}{(8 + 19 + 1)}$$

TQR = 28.6%

4.9a(iv) Business Studies

$$\frac{41 \times 100}{(41 + 97 + 8)}$$

TQR = 28.1%

4.9a(v) Others

$$\frac{42 \times 100}{(42 + 12 + 5)}$$

TQR = 28.6%

4.9b Student Initiation Ratio (SIR)

4.9b(i) Humanities/Social Sciences

$$\frac{12 \times 100}{(17 + 12 + 7)}$$

SIR = 33.3%

4.9b(ii) Maths and Sciences

$$\frac{23 \times 100}{(0 + 23 + 8)}$$

SIR = 74.2%

4.9b(iii) Information Technology

$$\frac{1 \times 100}{(1 + 1 + 30)}$$

SIR = 3.1%

4.9b(iv) Business Studies

$$\frac{16 \times 100}{(17 + 16 + 7)}$$

SIR = 40%

4.9b(v) Others

$$\frac{34 \times 100}{(17 + 34 + 0)}$$

SIR = 66.7%

4.9c Cross Content Ratio (CCR)

4.9c(i) Humanities/Social Sciences

28.3% + 43.4% + 1.2%

= 72.9%

4.9c(ii) Maths and Sciences

13.6 + 57.1 + 6.24

= 77.1%

4.9c(iii) Information Technology

13.3% + 31.7% + 1.7%

= 46.7%

4.8c(iv) Business Studies

20.9% + 49.5% + 4.1%

= 74.5%

4.9c(v) Others

18.1% + 53.4% + 2.2%

= 73.7%

4.10. Ratio analysis – qualifications

4.10a Teacher Question Ratio (TQR)

4.10a(i) Academic (A level)

$$\frac{(68 \times 100}{(68 + 157 + 9)}$$

TQR = 29.1%

4.10a(ii) Applied vocational (GNVQ/AVCE)

$$\frac{43 \times 100}{(43 + 142 + 11)}$$

TQR = 21.9%

4.10a(iii) Occupational/Vocational (NVQ)

$$\frac{33 \times 100}{(33 + 82 + 5)}$$

TQR = 27.5%

4.10a(iv) Access to HE

$$\frac{13 \times 100}{(13 + 11)}$$

TQR = 54.2%

4.10b Student Initiation Ratio (SIR)

4.10b(i) Academic (A level)

$$\frac{(13 \times 100}{(13 + 29 + 14)}$$

SIR = 51.2%

4.10b(ii) Applied vocational (GNVQ/AVCE)

$$\frac{38 \times 100}{(27 + 38 + 38)}$$

SIR = 36.9%

4.10b(iii) Occupational/ Vocational (NVQ)

$$\frac{19 \times 100}{(7 + 19 + 0)}$$

SIR = 73.1%

4.10c Cross Content Ratio (CCR)

4.10c(i) CCR – Academic (A level)

22.5% + 52% + 3%

= 77.5%

4.10c(ii) Applied vocational (GNVQ/AVCE)

13.8% + 45.5% + 3.5%

= 62.8%

4.10c(iii) Occupational/Vocational (NVQ)

13.8% + 45.5% + 3.5%

= 62.8%

4.10c(iv) Access to HE

43.3% + 36.7%

= 62.8%

4.11 Ratio analysis – college

Sixth Form

4.11a Teacher Question Ratio (TQR)

$$\frac{67 \times 100}{(67 + 221 + 12)}$$

TQR = 22.3%

4.11b Student Initiation Ratio

$$\frac{43 \times 100}{(23 + 43 + 15)}$$

TQR = 53.1%

4.11c Cross Content Ratio

16.9% + 55.8% + 3%

= 75.7%

4.12 General Further Education

4.12a Teacher Question Ratio

$$\frac{90 \times 100}{(90 + 171 + 13)}$$

TQR = 32.9%

4.12b Student Initiation Ratio

$$\frac{43 \times 100}{(29 + 43 + 37)}$$

SIR = 39.5%

4.12c CCR – General FE Colleges

22.6% + 43% + 3.3%

= 68.9%

4.13 Conclusion

The foregoing results have provided fresh insights into the features of classroom interaction in further education. The results have also highlighted a number of issues in relation to teacher-student interaction issues such as teacher response rate to student talk, as well as the extent to which emphasis is given to the subject matter in the classroom discussion. The following paragraphs discuss these findings.

4.14 DISCUSSION AND SUMMARY

4.15 Teacher talk

Classroom observation is used as a complementary research instrument, designed to record teacher-student interaction as it occurs and to cross-validate or corroborate students' perceptions of teachers' classroom behaviours and practices analysed from the student questionnaire. The analytical methods of the classroom observation data sets draw on Flanders' (1970) investigation of classroom interaction in the schools sector. The results showed that teacher talk across further education colleges accounts for 80 per cent of the lesson time, student talk is 17.3 per cent, and silence or non event is 2.9 per cent. These results mean that there were very few pauses or non-events in the flow of classroom communication.

The high proportion of teachers' talk time in lessons found in this study is consistent with findings by Wragg (1973) and Delamont (1983), and it shows in particular that very little has changed since Wragg's investigation of classroom interaction in lessons delivered by trainee teachers in English schools. In Wragg's study, teacher talk accounts for between 73 per cent and 81 per cent of lesson time in all subjects that were observed except English and French. The current study, carried out in a post-16 (further) education context, indicates an average teachers' talk time of 80 per cent. This result contradicts a pedagogical assumption that the proportion of teacher talk time in lesson declines with age and levels of pupils' education. This assumption is informed by the fact that students in post-16 (further) education are engaged in "higher" learning, where teaching and learning approaches are arguably student-centred and where students are expected to take more responsibility for their learning.

Close examination of the descriptive summaries of the nine classroom events produced no surprises. The three measures of the central tendency of teachers' talk time – mean, median and mode – all clustered around the middle of the histogram, while a mean of 5.7 and a standard deviation of 1.77 confirmed the stability of lecture as the epicentre of classroom events. This finding is consistent with the students' accounts of their learning experiences, namely the students' rating of lecture as the most often experienced classroom event analysed from the student questionnaire.

4.16 Comparing the balance of the teacher's response-initiative and student initiation

4.17 Across colleges

In an attempt to compare the balance of the teacher's response-initiative and student initiation, the teacher response ratio (TRR) was analysed. Flanders (1970) defined the TRR as 'an index which corresponds to the teacher's tendency to react to the ideas and feelings of the pupils' (p.102). The average TRR of 21.9 per cent in this study revealed a relatively low response rate of teachers' to students' talk. The TRR of 21.9 per cent is far below 42 per cent ('average') suggested by Flanders; this means that across further education colleges teachers do not respond often to students' talk nor give them time to talk in the classroom discourse.

The second ratio – teacher question ratio (TQR) – is calculated to assess the teacher's 'tendency to use questions when guiding the more content oriented part of the class discussion' (Flanders, 1970, p. 102). This ratio takes into account events such as lecture, teachers' questions and the use of practical/real life examples in lessons; Flanders

suggested average TQR of 26 per cent. The TQR of 27.4 per cent in this study indicates that teachers across further education colleges asked 'average' number of questions in the classroom (see paragraph 4.8b). It is worth noting that the classroom observations in Access to HE contributed significantly to the overall TQR ratio (54.2 per cent) and without which the TQR across the sector will have been significantly lower (see paragraph 4.10a). This result is consistent with the descriptive summary of students' views about the frequency of teachers' questions in the classroom analysed from the student questionnaire. The results generally highlight the low frequency of teachers' questions in the classroom discourse.

The third ratio – student initiation ratio (SIR) – is calculated to assess the proportion of student talk identified by the researcher as 'an act of initiation'. The SIR of 53.8 per cent suggests a modest student initiative in the classroom discourse.

The question of how much emphasis teachers placed on content in the classroom discourse was examined, by analysing the content cross ratio (CCR). Across further education colleges, a CCR of 69.2 per cent indicates that the subject matter is the focus of classroom discussion and that teachers take a lead and possibly dominant role in discussion, but barely pay attention to motivation-sustaining events such as praise and students' self-expression. It is worth noting that the low frequency percent reported for 'praise students' in the classroom observations is consistent with the students' rating for teachers' approval and motivation in lessons analysed from the student questionnaire. The results are also in agreement with Schwieso and Hastings (1997) and Duffield, *et el* (2000) finding that teachers in schools do not approve or praise students enough and that approval increases with the age of the student. (Access to HE classes, which

traditionally have older students, scored the highest frequency percent for praise in this study.)

4.18 Curriculum areas

Teacher question ratio (TQR) varies across the curriculum areas observed. It ranges from relatively high 38.8 per cent, 28.6 per cent and 28.1 per cent for humanities/social sciences, ICT and business studies curriculum respectively, to relatively low 24.6 and 17.6 per cent for 'other' and maths and sciences respectively. These results indicate that teachers in two of the six curriculum areas observed asked a below 'average' number of questions in the classroom (Flanders suggested a TQR 'average' percent of 26). The maths and sciences curriculum produced the lowest TQR (17.7 per cent), well below the further education average. This suggests that teachers in maths and sciences classes are least likely to ask questions often in their lessons. Humanities/social science curriculum area contributed significantly to the overall TQR (38.8 per cent); this suggests that teachers in this curriculum area are more likely to use questions more frequently in lessons than do teachers in other curriculum areas (although the nature of the subjects in this curriculum might have played a part in raising the TQR).

Student initiation ratio (SIR) shows markedly contrasting results across the six curriculum areas observed. Both maths and sciences and ICT produced exceptionally high and low SIR of 74.2 per cent and 3.1 per cent respectively. A possible reason for this is that no time was recorded for unsolicited statement or student talk for maths, while a figure of 1 was recorded for both solicited and unsolicited students' talk in ICT classes. A SIR of 66.7 per cent in 'other' curriculum area is also exceptionally high, caused by the fact that

no time was recorded for 'student activities' events. SIR of 33.3 per cent and 40 per cent for humanities/social sciences and business studies curriculum respectively, are fairly representative; these figures are close to 34 per cent 'average' suggested by Flanders. The high SIR in maths and sciences and 'other' curriculum areas indicate that students in these classes showed exceptionally high initiative in introducing their own ideas into the classroom discourse - although it is possible to suggest that the students might be asking questions because they do not understand the content of the discussion. The humanities/social sciences and business studies is close to the expected average; while the ICT students showed exceptionally low initiative in introducing their ideas into the classroom discourse; this suggests that student talk in ICT lessons is determined largely by events such as student activity (e.g. working individually), presentation, etc.

The analysis of content cross ratio (CCR) according to the curriculum areas observed indicates little variation in all but one curriculum area. The content cross ratios of 77.1 per cent, 74.5 per cent, 73.7 per cent and 72.9 per cent in maths and sciences, business studies, 'other' and humanities/social sciences curriculum respectively, are all above the further education average except ICT which produced a SIR of 46.7 per cent. These results mean that teachers in five of the six curriculum areas give significant emphasis to subject matter in classroom discourse and that they are very active and take the lead role in the discussion, but do not give enough attention to motivation (although it is possible that teachers assume they motivate students by talking). The CCR of 46.7 per cent for ICT is well below Flanders' 'mythical' average of 55 percent; nonetheless, the ICT result suggests a more or less balanced mixture of content (teacher activity) and practical (student activity) expected in subjects such as information technology and computing studies.

4.19 Qualification areas

The teacher question ratios (TQRs) in A level, GNVQ/AVCE, NVQ and Access to HE classes are 29.1 per cent, 21.9 per cent, 27.5 per cent and 54.2 per cent respectively. These results suggest that teachers in three of the four qualification areas asked 'average' number of questions in the classroom, the exception being teachers in Access to HE classes, where the number of questions is significantly higher, due partly to the fact that a teacher used part of lesson time for a question and answer session. The results of SIR in three of the four qualification areas - GNVQ/AVCE (of 36.9 per cent), A level (51.2 per cent), NVQ (73.1 per cent) - are above Flanders' average. This means that students show above average initiative in introducing their own ideas into the classroom discourse. However, SIR of 73.1 per cent for NVQ classes shows an exceptionally high student initiative in classroom discussion (caused by high frequency per cent for unsolicited students' talk). SIR for Access to HE classes cannot be calculated due to the unavailability of relevant figures.

The cross content ratios (CCRs) across the four qualification areas are 77.5 per cent, 62.8 per cent, 80 per cent and 80 per cent for A level, GNVQ/AVCE, NVQ and Access to HE respectively. The results indicate that teachers in A level, NVQ and Access to HE classes are active, take lead role and place significant emphasis on subject matter in the classroom discussion, but pay very little attention to motivation-sustaining events such as praise and allowing students' views and ideas. The CCR for NVQ classes is surprisingly high given the fact that the qualification emphasises competence over content (see literature review). In the GNVQ/AVCE classes, a relatively low CCR is not unexpected given that the qualification seeks to promote flexibility in assessment. A critical issue highlighted by these findings is that, except in the GNVQ/ACVE classes, there is no

significant difference in teachers' emphasis on subject matter in the qualification areas despite their having different aims and assessment structures. These results mirror findings in Bloomer and Hodkinson's (1997) investigation of students learning experiences in further education, where students reported no real differences in teachers' practices in GNVQ and A level classes.

4.20 College category

Teacher question ratios are 22.3 per cent and 32.9 per cent in sixth form colleges and general further education colleges respectively. The TQR for general FE colleges is well above Flanders' 'benchmark' average, while 22.3 per cent TQR for SF colleges is below his average. This suggests that teachers in general FE colleges ask more questions in the classroom than teachers in SF colleges. However, the student initiation ratio for SF colleges (53.1 per cent) contrasts sharply with general FE colleges (32.9 per cent); this means that students in SF colleges show more initiative in contributing their own ideas to the classroom discourse than students in general FE colleges. The content cross ratio for SF colleges (75.7 per cent) is higher than general FE colleges (68.9 per cent), which suggests that teachers in SF colleges give more emphasis to subject matter in classroom discussion than do teachers in general FE colleges, but both figures are well above Flanders' benchmark average of 55 per cent.

4.21 Relate learning to real world

Applying classroom knowledge to real life is a means of contextualising learning and is a key to fostering student creativity (Ball, 1995; Parnell, 1997; Seltzer and Bentley, 1999). The total average proportion (sum of frequency percents) of teachers' talk time on citing 'practical examples or on relating learning to the real world' is 3.1 per cent. This result

highlights a virtual absence of this feature in the classroom discourse. In the six curriculum areas observed the results are similar – at the top end are maths and sciences (6.4 per cent) and business studies (4.1 per cent) and at the lower end are 'other' (2.2 per cent), ICT (1.7 per cent), and humanities and social sciences (1.2 per cent). Across the qualification areas teachers' talk time spent on citing 'practical examples or on relating learning the to real world' averaged 3.1 per cent. There is no time recorded for the event in Access to HE classes. In the college category, no (percent) difference was found in the proportion of teacher talk time – teachers in both the sixth form colleges and general further education colleges spent, on average, 3 per cent and 3.3 per cent respectively, on citing 'practical examples or on relating learning to the real world'. The results on the whole are consistent with the students' accounts of how often their teacher relates learning to real life experiences analysed from the student questionnaire.

4.22 Conclusion

Until now research into classroom interaction has focused almost exclusively on the schools sector; the findings in this study provide some insights into the basic features of classroom interaction in 16-19 courses in further education. These findings are broadly consistent with results of the student questionnaire discussed in chapter three. However, the extent to which definitive conclusions are drawn from the foregoing results is dependent on the analysis of the qualitative data (interviews) discussed in the following chapter.

CHAPTER FIVE

5.0 RESULTS

[To recapitulate paragraph 2.20, the analysis of the qualitative data in this chapter is organised around students', teachers', and managers' (including principals') interviews. The structure of the analysis is organised around the (standardised) format of the interview questions. These include the subjects' conceptions of creativity and factors impeding or promoting creativity in teaching and learning. This approach is consistent with options suggested in Patton (2002, p.439) and the method adopted in Arksey and Knight (1999, p.150). Student comments are organised into categories – such as views, beliefs and understanding of creativity and their perspectives of factors promoting creativity in the learning process. Teacher comments are categorised into: teachers' beliefs and understanding of creativity; teachers' criteria of a creative lesson and what they would treat as evidence; and their perceptions of the role of the teacher in facilitating student creativity in a further education context. Manager comments are organised around beliefs about creativity, factors impeding or promoting creativity in the further education curriculum; and institutional factors that impact upon student creativity. From these categories, emerging themes of patterns, key words, associations and relationships were identified and analysed (see Seidman, 1998; Day, 1993). Where quotes were used, the primary aims were to 'bring the reader into the reality of the situation study' (Coolican, 1994, p.386), as well as to project to the reader representative or balanced views, comments, opinions, thoughts and ideas expressed by the subjects. Unless otherwise started, quotes used in the following paragraphs were representative of particular views, comments and opinions expressed by the subjects as individuals or as members of the group (as in the case of student interviews) and, therefore, of the group.]

5.1 Student Interviews

5.2 Introduction

The interviews were carried out to complement the student questionnaire (see chapter four). The aims of the interviews were to check the students' understanding of creativity and to ascertain consistency in students' responses vis-à-vis a sample of variables in the student questionnaire. The interviews would, among other things, gain insights into the students' conceptions of creativity and identify factors that promote or hinder creativity from the perspective of students.

5.3 Student learning experience

Variable	Extracts of key words/phrases
Student learning experience	Quite a lot; pretty good; quite well. Students believed they were not enjoying their courses

The overwhelming response of the students interviewed was that they were learning, but not particularly enjoying their course. The findings were consistent with students' responses to similar questions in the student questionnaire. The students contrasted their college experience with school, with respect to the process of learning and the learning environment:

> *I feel that I have learnt a lot. I didn't really know anything before I came here. I am doing quite well. I prefer the atmosphere here, much more relaxed. You can do things in your own way; you have the independence. (Natalie, NVQ Administration, SF College 1, SE England.)*

Andrew, A level Media Studies, FE College 2, Northeast England, enthused:

> *It's been pretty good. I have learn quite a lot, especially things that I didn't know until I came to this college – I now know how to use a camera.*

The students appear particularly to cherish both the independence and the sense of freedom that a college learning environment affords them:

> *I like the college because they give you more freedom; they let you do what you need to do. It is better than school. I feel that I'm learning. (Semina, A level History, FE College 2.)*

But generally, the students were not enjoying their entire course:

> *Yes, generally I feel that I am learning especially in two other subjects – History and French – but not much in Science. (Daniel, A level History, SF College 1.)*

due suggestively to teacher's classroom practices:

> *Not in all my subjects – I do three subjects. In one subject I am enjoying the experience and I'm learning well. Not the other two subjects. I want a teacher who is passionate about what he does and almost fanatical about his subject(s). (Abdul, A level Business Studies, FE College 4.)*

Sandra, GNVQ Travel and Tourism, FE College 3:

> *I do enjoy it, but I feel like I get bored in some lessons.*

Obruse, GNVQ Business (Marketing), FE College 4:

> *I am not really enjoying it. They (teachers) just give you one or two points and say go and do your research. They don't give full details.*

5.4 Students' perceptions of creativity

Variables	Extracts of key words/phrases
Students' perceptions of creativity	Imagination; interesting; socialising; being original; being different; way of self-expression; bring out new ideas.

The students' characterisation of creativity is consistent with well-established themes in the literature on creativity, which include product, process and personality. Also, the students' definitions of creativity were diverse, multifaceted and they include new terms. Their views on creativity appear to converge around the process and personality themes of creativity (see literature review in chapter one).

Creativity as a product and a process

In terms of the product and process, the students' definitions of creativity include the following: 'use of new, novel ideas and imagination'; 'expression of new, novel ideas and imagination (through research, assignments, class work and discussions)'. Others include: 'doing thing differently', 'doing challenging things'; 'solving problems differently'; and 'bringing up opinions, views and experience to bear into your classroom work', 'to make a product':

> *Creativity means to use your own ideas in creating a letter or memo. (Emma, NVQ Administration, SF College 1.)*

Ross, A level Media Studies, FE College 2:

I think creativity means using your own imagination when tackling classroom questions and activities.

Moyo, A level Business Studies, FE College 4, Greater London:

Creativity means the ability to interpret something that is taught to you in your own way, to give examples in your own way, in your own words – not to repeat what the teacher said when you were asked a question.

Tanya, GNVQ Travel and Tourism, FE College 3, Northeast England:

It is like taking something and make something out of it; putting something that is boring across and make it interesting.

Byron, A level English SF College 1:

Creativity allows you to actually go deeper in your work, being able to back up your argument.

Caroline, A level Biology, SF College 5, Southeast London:

Creativity is like working on your own, projecting ideas that you yourself can bring out.

Creativity as a personality

The students' definitions of creativity also emphasised the personality theme, which included 'being different', 'being open-minded'; 'adding a personal touch to your work', and thinking divergently:

Creativity means being different I suppose, different from what everyone is doing. (Darren, A level Sociology, SF College 6, Southeast England.)

Ella, A-level Biology, SF College 1:

> *It is the way you express yourself, what you are; a situation where there is no right or wrong answer.*

Helen, A level History, FE College 2:

> *Creativity means where there is no right or wrong answer and when they (teachers) encourage you to put your own views into your work – even though you first have to state the facts in Sociology.*

Stephen, A level Media Studies, FE College 2:

> *Creativity means bringing your experience into classroom, bringing a personal touch to classroom activities.*

Some students linked creativity to intuition:

> *You kind of grow your ideas, your own way of doing things. Creativity is more like from within rather than something you can get. (Emma, NVQ Administration, SF College 1.)*

Natalie, A level English SF College 1:

> *Using your mind, your own expression. [Example] Like in English, where there is no right or wrong answer.*

Originality is probably the foremost creative element and the students in the survey reflected this in their definitions:

> *Creativity means being able to do things that nobody else can do, or something which no one has done before. (Deen, A level History, FE College 2.)*

Becky, A level Sociology, SF College 6:

Creativity means being original, doing your own thing and putting something out into the world.

Catherine, GNVQ Travel and Tourism, FE College 3:

Being original in the way you teach.

Charles, ACVE ICT, FE College 9, Eastern region:

Creativity means being original in your thinking.

Nephi, A level Business Studies, SF College 1:

Being original in your work.

Originality, in a student's view, is intertwined with creative expression:

It means expressing yourself and being original. You express yourself the way you answer to questions, especially when the teacher says there is no one way to the answer. You express yourself in your assignments. (Hellen, A level History, FE College 2.)

Flexibility is another key element of creativity and this came across in the students' definitions:

Creativity means being able to design different hairstyles. (Dinna, NVQ Hairdressing, FE College 3.)

Lydia, NVQ Hair and Beauty, FE College 4:

Creativity is something that you imagine in your mind, using different styles on customers' hair.

Arts as an expression of creativity is a traditional view, which was encapsulated by one student:

> *I think of when I was in school, when you use paper to make so many things – as in arts. (Nikki, HEFC Science, FE College 3.)*

Among new terms for creativity offered by the students are: communication, inspiration, excitement, enjoyment, interesting, and difference and friendship, among others:

> *Like socialising with other students, getting to know other students, sharing experiences together, helping each other. (Karen, A level History, FE College 4.)*

Becky, GNVQ Health and Social Care, SF College 5:

> *Creativity means to enjoy the stuff you are doing.*

Three students admitted that they have never heard the term (creativity) used before:

> *Creativity? I don't know actually. Never heard of the term before! (Iqbal, GNVQ Advanced Business (Marketing), FE College 4.)*

5.5 Students' expression of creativity

This question is as much about bringing out the students' views on how they learn best, as it is about gauging their views on how they think teachers can facilitate their creativity. Expectedly, the students' learning styles and preferences are a little diverse, but clustered around traditional student learning styles such as group work and group discussions, question and answer with teacher, practical sessions, work placements, trips, and guided independent learning. Many students said that they learn better in group work or group discussions, followed by individual (one-to-one) discussions and then by a whole-class

feedback. Other students would prefer to explore things independently, especially through research:

> *My preference is to be able to find out things for myself and to be able to ask questions on those things and then discuss problems in class. Copying things from the board doesn't help me to learn, but to be able to find out things for myself (prior) to classroom discussions. (Hellen, A level History, FE College 2.)*

Caroline, A level Sociology , SF College 5:

> *I like the opportunity or chance to do things in my own way and show it to teachers to correct or to evaluate.*

Rose, GNVQ Advanced Business (Marketing), FE College 4:

> *I like to do research for classroom work or assignments, because you get the chance to use your creativity.*

Some students said an unspecified variety of teaching techniques would suit them so long as such techniques made lessons 'interesting':

> *What I like is different (teaching) techniques, which will make it (the lesson) more interesting. As you can see (in your classroom observation), the lesson was boring. All you do is copying things from the OHP. It turns you off. When the teacher asks me a question, to make sure that I understand it; to use examples, to make it interesting; to test our understanding. To use different techniques, not just copying notes from the OHP. (Patrick, A level Business Studies, FE College 2.)*

Irene, Access to HE Science, FE College 3, emphasised her preference for a variety of techniques underpinned by a 'conducive' learning environment:

> *Creating environment which you feel comfortable in the classroom. Then breaking up the subject into simpler terms to help understanding, to put a lot humour into it.*

My teacher actually makes humorous links and that actually helps you to remember what you have learn.

A number of students said they learn better in a structured lesson:

I learn more in the structured teaching methods – specifically, in terms of demonstration. I like to see things that I learn. (Daniel, A level Biology, SF College 1.)

Student-teacher interaction was strongly stressed by Ella, A level Biology, SF College 1, as a means to engage her in learning:

I like more interactions between the student and the teacher. I think there has to be chemistry between the teacher and myself to draw out what is inside you – even though I haven't met such teachers yet!

A number of students stressed the importance of gaining deeper insight into the subject matter, before being asked to work independently:

I would need more than knowing just the basics before being asked to research and do the assignment. We need deeper insight and knowledge of the subject or the topic before being asked to research. (Lilian, GNVQ Advanced Business (Marketing), FE College 4.)

Martin, A level Mathematics, SF College 6, Eastern region:

I prefer when they (teachers) work through with you how they get something (their answer), I don't like when they tell you 'there is a formula now you do those questions'. You need to know how they got the formula and then you understand it and you can then go on and do your own question. And if I still don't understand it you can go back and talk to your teacher about it.

Four students cited the teacher's personal touch as a means to facilitate their creativity:

Genuine care and concern about your work would really help. (Livan, GNVQ Advanced Business (Marketing), FE College 4.)

Vicki, A level Business Studies, FE College 4:

Teacher should be more influential, to care about the students. I know I come late sometimes, but I want to feel that teachers do care about why I come late. To show a bit of compassion, I think.

Becky, GNVQ Health and Social Care, SF College, 5:

I would like the teacher to find out from students how to connect to them, because some students here like to keep themselves to themselves, because they are scared of answering the questions just in case they get it wrong.

Becky, A level Sociology, SF College 6:

I think the only way that the teacher can really help in that is to discover how you really learn, asking you how you learn best and then maybe presenting the information in that way. I learn best by myself. I generally take in pictures and drawings quite well.

Sarah, A level Biology, SF College 1:

Teachers should encourage you to be yourself and encourage you to come out of your shell, encourage you to express yourself instead of sitting there while the teacher babbles along.

The students' other preferences include: 'bringing down lessons to the students' level'; question-based lessons; structured lessons and demonstrations; 'opportunity to develop own ideas and own understanding'; presenting work; project work; one-to-one with teacher 'because people are never the same'; praise; 'deeper' explanation of the subject; practical sessions and 'link learning to real-life to illustrate theory'. Other preferences

include work placements, field work, trips; 'inviting experts from outside to give different views and perspectives on the subject.'

5.6 Constraints to facilitating creativity, as identified by the students

Variables	Extracts of key words/phrases
Students' perceptions of constraints to creativity	Time, due to curriculum structure; syllabus requirements; 'inadequate' learning resources, problems of basic skills.

The constraints include workload, 'Like you get too much course work that makes you not want to come back'; basic skills, syllabus requirements, time, learning resources; curriculum arrangements of certain (academic) courses:

> *The way the whole thing (curriculum) is structured at the moment is that you can only be taught in certain ways because there is no time for things like projects, going out to fieldwork. We use the modular system and you've got to learn things in that module in that term, there is no time for fanciful methods of teaching. But, ideally, I would like to have more project work, group work, more sharing of ideas, and less textbook, less lecturing. (Sarah, A level Biology, SF College 1.)*

A group of students said their enthusiasm for creative expression is often tempered by syllabus requirements:

> *If you used your creativity in your opinion (in the exams) and the examiner doesn't hold the same opinion, there is a chance that you'll be marked down than if you put forward the popular view. (Deen, A level History, FE College 2.)*

Another constraint is learning resources – such as the computer network, which the students claimed sometimes worked sporadically:

> *We tend to have problems with the computer. Sometimes it doesn't work. If you ask the people downstairs (in the LRC) they will tell you to go upstairs and tell the technicians. Are students supposed to do that? This affects the time you hand in your assignment and the lecturers may not want to know. (Rose, GNVQ Advanced Business, Marketing, FE College 4.)*

5.7 Students' participation in college wider activities and its impact on their learning

Three quarters of the students in the questionnaire said they were not currently involved in college extra curricular activities aside from sports – due either to lack of time or lack of interest, or ignorance of such activities. Those who were aware of college extra curricular activities appeared to be ill informed about the benefits to their learning. However, notwithstanding the constraints of time the students suggested that they would consider participating if extra curricular activities had academic content:

> *I am not involved in any college activities. I just want to study for my A level. I know there are sports, but I'm not aware of anything else. Maybe if I am told of the link between the activities and the course, I might get involved. (Beth, A level Business Studies, SF College 1.)*

Caroline, A level Sociology, SF College 5:

> *I know the college has special days allocated to arts and sports. I think if they do a range of activities that everyone can get involved in, I think that might help.*

Students who take part in college extra curricular activities cited opportunity for hands-on experience and practical work, subject extension (mentioned by four students in one

college) as helpful. Other desirable learning-supporting activities suggested by the students include one-to-one with teacher; supported studies; upgrading computer software, 'current books and journals', participating in workshops, in debating and in competitions (like hair and beauty competitions)'.

5.8 Teacher Interviews

5.9 Introduction

The interviews were aimed among other things to identify factors that promote or hinder creativity in further education classrooms from the perspectives of teachers. The interviews sought to bring out the teachers' conceptions of creativity; their criteria for a creative lesson and what they would treat as evidence; their perceptions of the role of teachers in facilitating student creativity; their views about constraints to facilitating creativity in further education classroom context. The interviews would also provide insights into teachers' own personal development in creativity.

5.10 Teachers' perceptions of creativity

Variables	Extracts of key words/phrases
Teachers' perceptions of creativity	Original; imagination; interesting; coming up with new ideas; using different learning styles; approaching problems in different ways; encouraging student thinking; ability to be individual; freedom to express; problem solving; doing something inspirational; fun learning.

The teachers in the survey showed a familiarity with the term creativity and they were all willing to define it without hesitation. The teachers' characterisation of creativity, like that of the students in the questionnaire, follows the traditional themes of creativity - namely product, process, personality and environment. The teachers offered a variety of creativity definitions largely from the teaching standpoints, a number of which were underpinned by the need to foster student thinking skills.

Creativity as a process and a product: definitions from the standpoint of teaching

Within the context of teaching creativity can be defined as:

> *Coming up with ideas to deal with a particular issue I suppose. At the bottom of it is generally something that you might present the students with - a kind of area - and then ask them to think about it. And that thinking itself is creative. It is an imaginative activity. (Teacher of A-level Media Studies, FE College 2.)*

Creativity in teaching also means:

> *To allow students to develop their level within the learning of the subject, to develop attitudes towards it and to be able to explore things from different levels. (Teacher of A-level History, FE College 2.)*

Creativity was defined as a teacher's ability to use prior experience to vary teaching styles and techniques to meet individual student needs:

> *Creativity is developing situations to fit with whatever the students need. It means using different styles. It is something you develop over the years, you just respond to what the students need, bringing in different situations (teaching styles) to try and make (subjects) easier for them to understand. (Teacher of GNVQ Travel and Tourism, FE College 3.)*

Creative teaching therefore means approaching student problems and needs in a variety of ways and finding solutions to such problems:

> *Creativity might mean thinking of different ways of approaching students who have problems. I suppose what I look for is solutions to problems and if the student doesn't understand something I'll try and find another way of approaching it. I'll try and find different ways of putting some of the principles of what I am teaching. (Teacher of A level mathematics, SF College 6.)*

also:

> *Creativity might be using the subject matter and the information or exercises and adapting those to present a different viewpoint. It is like re-arranging to try and give a more imaginative view to the subject you are studying; to approach it in a more imaginative way. (Teacher of A level Business Studies, SF College 1.)*

Another definition of creativity is a teacher's ability to teach to the students' level:

> *Creativity as far as a teacher is concerned would be, when delivering a topic to a student, to be able to think of the level of student that you are delivering it to and in your approach using ways and means that you know they would be able to grasp the concept. (Teacher of NVQ Business Administration, SF College 1.)*

It was also defined as a teacher's ability to take a new, imaginative look at teaching practices and behaviour:

> *My perception of creativity is when I am able to take a new look at things, to be imaginative and have a different approach to things. (Teacher of AVCE Business, FE College 9.)*

Creativity means looking at teaching from a multiplicity of aspects and finding a way to engage students in learning:

> *It (creativity) means looking at things in a multifaceted ways. So, I have to look at what I have to do to sustain the students' attention and make the lesson memorable and then re-apply it to a new situation so it could be transferred. I suppose that is quite a creative process because it involves more complex stuff. (Teacher of A level Business Studies, FE College 9.)*

Similarly, divergent thinking as a means to engage students in learning was underlined in this teacher's definition of creativity:

I will define creativity as being able to apply imagination and, I suppose, divergent ways of teaching in looking at knowledge; to try to find different ways of demonstrating knowledge and understanding. (Teacher of A level Sociology, SF College 10.)

Creativity was also likened to a teacher's ability to use mental powers to advance teaching; the outcome may not necessarily be unique, but creative:

My understanding of it (creativity) is that it is more than simply repetition. It is more than imitation; that you are using what you know in some shape or form. What you do might not necessarily be unique, it might not be original (in the universal sense of the word), but as far as you are concerned it is original. You are using your mental powers to take things forward. (Teacher of A-level History, FE College 4.)

Teachers' presentation of learning information to students was conceptualised as an act of creativity:

If I am looking at creativity as a teacher, it is looking at ways of getting messages over to students in a way that would be interesting and stimulating - therefore thinking about new ways of doing it, clear way of doing it. (Teacher of A VCE Health and Social Care, SF College 6.)

Making the subject lively, exciting and interesting while, simultaneously, fostering student thinking, was equally characterised as an act of creativity:

Creativity is trying to make things a bit different from the norm, trying to make things more exciting, a bit more appealing to students. Because I teach finance, which is usually quite a dry subject, to make it creative – I would add a bit of realism into it, a bit of things that make students think. Creativity involves

encouraging students to think for themselves and proving different stimulus to be able to do it. (Teacher of A VCE Business Finance, FE College 7.)

Creativity as a personality

Encouraging students' freedom of expression was characterised as creativity:

> *Life would be so boring if we didn't create anything! It is the ability to be individual and to be given the freedom to express what your students have to say in order to meet the performance criteria (syllabus specifications) in your own way. (Teacher of GNVQ IT, FE College 2.)*

As well as encouraging students' self-expression in learning output (e.g. work presentation):

> *I will see creativity as letting students express things in the way they want or in the way they best do. Teaching Business Studies does involve theory and does involve number and I am quite happy for them to present the theory to me in any form they want - in the form of tables or bar charts, they can do that. (Teacher of A VCE Business, SF College 10.)*

Also, encouraging student independence of thoughts and ideas (a form of creative thinking) is another characterisation of creativity:

> *It is giving the students the opportunity to work independently and develop their own ideas. That is what I call being creative - think about what they have got to do, problem solving and creative reasoning. (Teacher of A VCE Health and Social Care, SF College 10.)*

Creativity as a condition of the environment

Creativity was defined as a condition of the learning environment:

> *In teaching, creativity to me is to create environment where students enjoy learning and want to learn and they are keen to learn. (Teacher of GNVQ Health and Social Care, SF College 5.)*

Connecting classroom-teaching practices to the real world (environment) was see by one teacher as an important part of creativity:

> *My perception of creativity is trying to push out the boundaries of what you are doing, trying to build links with real world examples, current thinking and development. Trying to bring the practical elements into it, I would say, is part of the creative process. (Teacher of A level Business, SF College 10.)*

New definitions of creativity

Three teachers in the survey offered new terms to define creativity. The teachers' new definitions include improving teacher-student communication:

> *In the context of teaching, I think creativity is to try and improve communication with the students. Clearly the objective in teaching is to communicate information, to achieve various objectives, in terms of the curriculum, in terms of student achievement. Creativity, I would say is a way of achieving that with students. (Teacher of GNVQ Leisure and Tourism, FE College 7.)*

Inspiration is another term a teacher used to define creativity:

> *In the teaching context, creativity is perhaps doing something which may be inspirational for the people you are teaching. (Teacher of History (Access), FC College 7.)*

Additionally, creativity can be defined as information discovery and fun learning:

> *I would call creativity fun learning. You have to make learning fun otherwise it doesn't work. (Teacher of A VCE ICT, FE College 8.)*

Teachers' creativity definitions from the standpoint of students

Creativity has been defined as the ability of students to come up with their own ideas about things; students' flexibility in manipulating ideas; in developing their ideas in their assignments and in the work they do – and ultimately, being able to apply the knowledge to the real-life situation:

> *Creativity from the student point of view is being able to apply knowledge to the world in which they are living and to be able see the world in a different way; to be critical. Creativity is anything that will let students run with ideas (Teacher of Sociology and head of faculty of Social Sciences, SF College 5)*

Teacher of AVCE Science, FE College of College 7:

> *My idea of creativity is to do with students using their own knowledge, using their own perceptions. Perceptions, initially, can be wrong. They (students) are thinking for themselves, giving something back.*

Teacher of A level Business, FE College 9:

> *From the students' point of view, creativity will be so that students are using their knowledge in different ways which will help memory – such as using images, etc.*

Teacher of AVCE Business SF College 6:

> *I think it (creativity) is also about a student making a connection between theory and practical application.*

Creativity was characterised in terms of student learning styles, engendered through research and analysis:

> *I suppose creativity comes in terms of them (students) researching further of relevant books, to analyse and give feedback on their reading and research. (Teacher of GNVQ Business, FE College 3.)*

And satisfaction might be a subsidiary outcome of student research work, as suggested in this definition:

> *It (creativity) is a sort of way of delivering (from the teaching standpoint) the subject and, may be, also students themselves (from the learning standpoint) taking a particular aspect of the subject, doing their own research and having the satisfaction of bringing the piece of work to conclusion. (Teacher of A level History, SF College 10.)*

Critical thinking skill (geared questionably towards scoring high grades) in the subject matter is a key characteristic of creativity:

> *Creativity for students is to understand, to criticise and to synthesise views, and to learn to think as historians. (Teacher of A level History, FE College 9.)*

5.11 Can teachers facilitate creativity in students?

The teachers were asked if they think creativity can be facilitated in students. All but one of the teachers interviewed were emphatic in their response that creativity can be developed or facilitated in students. One teacher gave a qualified answer – he was not sure as to how creativity can be facilitated given external prescriptions that colleges have had to respond to in the recent years (see constraints in paragraph 5.16). The teachers

who answered 'yes' to the question were forthright in arguing a case for encouraging creativity in the learning process:

> *Yes is the answer. I think it is actually quite important to allow students to be creative in a way they actually express themselves. And, it (creativity) is something that you can use through your life really. (Teacher of NVQ Child Care, FC College 8.)*

The degree to which a teacher can facilitate creativity will depend on individual students' level of creativity:

> *I think creativity can be facilitated in every student to a greater or lesser extent. I think some students have a bigger distance to travel to become creative than others. Yes, it can be facilitated in students. (Teacher of A VCE Business, FE College 9.)*

Similarly, where students were not aware of their creativity, teachers might be able to unlock it:

> *Yes, it can be facilitated. I think a lot of students have untapped creativity and until you give them confidence to believe in themselves and to know that they got have it (creativity) and that they can be creative then it might go unnoticed. (Teacher of A VCE IT, FE College 9.)*

The teacher who gave a qualified answer to the question cited constraints to creativity to buttress his argument. The teacher was of the view that promoting creativity should begin from school and that two years of college education is not enough for students to make up for the 'loss' of creativity in school education:

> *In early schooling there is great emphasis on creativity. Little ones take to it and do it. By the time I get students aged 16 and 17, too many good students are the ones who just want*

to sit there and take notes. I don't know where all the pre-school creativity disappears. I don't know. (Teacher, A Level History, FE College 4.)

The teacher nonetheless believed that the teacher has a role in facilitating student creativity and he confessed to making use of creative practices in his lesson (see below).

5.12 Further education teachers' perceptions of their role (and their teaching approaches) in facilitating student creativity

Variable	Extracts of key words/phrases
Role of teachers in facilitating student creativity	Promote students' thinking; raise motivation and self-confidence; encourage self-evaluation; provide basic skills/knowledge; have high expectations.

Expectedly, the teachers' perceptions of the role of the teacher in facilitating creativity are variable and diverse, and a little challenging to analyse. Essentially, their views clustered around teaching and learning. From the teaching point of view, a teacher's role is to foster students' curiosity by leaving tasks and activities open-ended:

You pose the question rather than emphasise the answers. In terms of encouraging that independence of creativity, you are dangling carrots in front of them, you are asking questions you feel they have got the information to come up with some sort of answer to. You try to leave things open; you try to leave possibilities for them. You've also got responsibility to try and tie things up reasonably and neatly for them. (Teacher of A level History, FE College 4.)

'Dangling carrots in front of students' would seek to foster student divergent thinking, as underlined in this observation:

Giving them work where sometimes there is no right or wrong answer and I think that is quite important for (their) creativity. Sometimes you put questions to them

where they don't have to produce yes or no answers, right or wrong answers. (Teacher of A level Biology, SF College 5.)

Additionally, the teachers see themselves as 'encouragers': encouraging students' enjoyment and motivation in the teaching and learning process; encouraging self-directed learning; encouraging students to explore or find information through research; encouraging students to use their imagination and original thoughts to promote their own ideas; encouraging students to take greater responsibility for their learning and encouraging students to imbibe the 'right attitudes right from day one on the course'.

A teacher's role is to try encouraging them (students) to decide for themselves what they need to do. Students' evaluation of their work can provide you with a little bit of evidence of their original thought. Encouraging student self-evaluation will demonstrate how they play with different ideas during the course of writing up their assignment might be a good way to facilitate their creativity. (Teacher of GNVQ IT, FE College 2.)

The importance of basic skills as a prerequisite for facilitating the creativity of students was given as central to a teacher's role:

I'll give them (students) the basic skills first; give them an understanding of material, of manufacturing, of science. After that, once they got those basic skills, then give them some project work. It could be to design basic and specialist tools or improve basic tools; once they got the background and the knowledge, they can encourage that creativity. I think too often we try and encourage that creativity before people (students) have got the skills. (Teacher GNVQ and NVQ Engineering and Programme Leader, FE College 3.)

Another teacher underlined the importance of giving students basic knowledge in characterising the role of teacher:

I think a teacher's role is sort of providing the basic knowledge and skills and information and students developing from there themselves, but guided by you. Once you have done that you can get the students to engage in the ideas that they are interested in and develop that, rather than you being prescriptive with what they should do in terms of assignment. I think the best you can do is to give them project work, self-directed type, guided by you. (Teacher of GNVQ Marketing, FE College 4.)

An important role of the teacher is to aid student knowledge application and knowledge transformation by putting students' prior knowledge into context and by connecting learning to student real-world experience:

A teacher's role is to try and give them some basics and get them to develop their own idea around that. Also try to open up their experience outside the classroom via appropriate real-life activities and work experience. (Teacher of A level Media Studies, FE College 2.)

Acknowledging the problem of low expectations of students from certain social, ethnic and cultural backgrounds, a teacher asserted that teachers have a role to play in terms of raising student confidence and learning expectation, as a prelude to engaging these students in learning:

We should take on board the fact that we are training these people for work, especially in the area like this where you find that majority of the students (on this course) are single mothers, etc and when they come to the college they come from the lowest level they could possible be at. So, our responsibility as teachers is to put their achievement to a standard. Give them high expectations, because it is by having high expectations that they tend to take their education slightly higher. If you keep their expectations to the minimum, they will be unlikely to excel. In my lesson, I tend to set the level very high. The evidence would be (a) they have got more

professional sense and pride in themselves, compared to when they first joined the course in September 1999, their aspirations are far more higher now (April 2000) than what it was when they came here. When they came here in September all they wanted to do was to learn hairdressing, to work in local corner shops, now they want to go far higher. I get this from their feedback. (Teacher of NVQ Hairdressing, FE College 4.)

In terms of students' learning practices and behaviour, a teacher's role is to provide the right learning environment (i.e. a secure framework) and the confidence to take risks:

A lot of students feel that they can never go off the mark when they first start (the course). I think they have to be very confident and feel very safe. I think they can also learn creatively when they don't mind making a mistake. They have to feel very safe to do that. And I think that would foster it (creativity). I also think the more problems you give them to solve the better they get thinking laterally and bringing a range of techniques to solving the problems. (Teacher of A level Biology, SF College 5.)

Teacher of A level History, FE College 9:

You have got to give them confidence, the confidence to be able to venture an opinion when they know nothing so that they don't get upset. By and large, once they know you, hopefully they will contribute. My own technique is to get the students involved. They have got to know the basics first. Once they have got the structure, you can work through - say well, how did this happen? How does this lead to that? If they have got their structure they've got the confidence, they know the facts, then you can move on to creative interaction.

An approach to facilitating creativity in a learning environment is put students 'at the centre' of classroom learning activities:

> *In doing that (facilitating student creativity) you are stepping back and being very student-centred - in which students will have to dictate what is going to go on, and they have the option to get it wrong and you have to have that to build into your structure. You would allow them to do things that were wrong, that wouldn't give the answer as long as they are safe and secure. (Teacher of A level Chemistry, SF College 6.)*

Another teacher emphasised the importance of a secure framework in building student confidence:

> *The main way we do it (facilitating student creativity) is to first give them a very secure framework, they know the starting point then they got the confidence to explore it and use it and expand it. But you can not just expect that to happen, you've got to give them a solid framework, you've got to present them with theoretical view point, get them to react and then set them off. The way we try to enable the students to be creative is that we do a lot of group work, discussion work and in that sort of group work, each group will be given a different view point - it doesn't matter if they agree or disagree with it, they've got to represent that view point - and they will feed back to the main group. And the big emphasis is that we are not here to argue, we are here to discuss and the way to discuss is to support your points with evidence. (Teacher of A level Sociology, SF College 6.)*

Teacher of AVCE Business, FE College 7:

> *With students, first, they need to be givien a content to work with. Sometimes you need to just give the dry stuff, the basics to work with. You need to facilitate really, and allow them the opportunities to play with things, to try different things out. And they get things wrong. That is not necessarily a bad thing - you just encourage them to try a different way.*

Also, in terms of student learning practices and classroom behaviour, one teacher's approach is to conduct initial observations on individual students in order to get acquainted with their learning styles and preferences:

> *When I am looking at the students I do observe how they learn best. So, I suppose I observe each of them over the first few months of teaching them and see the way they do learn best and how they understand things being presented to them or whether they prefer to work (maths) out for themselves. (Teacher of A level Mathematics, SF College 6.)*

In facilitating student creativity the teachers emphasised also the importance of classroom instructional techniques, as part of wider classroom practices. Such techniques include using different ways to teach and new ways to get students to learn; using different teaching methods to respond to different new situations; challenging students' perceptions of the way they work and encouraging them to think more about their approach to work.

Where specific subjects demand, teachers have a role to play in terms of encouraging students to think critically and divergently:

> *Personally, I think, in terms of the subject that I teach and the role that I play, I try to do it through getting students to think in a critical way about the world - not to accept things at face value and to constantly be asking questions. (Teacher of A level Sociology, SF College 10.)*

5.13 FE Teachers' criteria for a creative lesson and what they would treat as evidence

According to the FEU (1987), a creative further education curriculum or lesson should not only be about transmission of information, it should also enable 'students to take the initiative for their own self-development and acquire the skills, understanding and flexibility to handle new situations with confidence' (p.6). Not surprisingly, teachers in the current study anchored their criteria for a creative lesson to student involvement and classroom practices. For the majority of the teachers, the focus of a creative lesson will be students' involvement in class activities and how they are engaged in a lesson. In these teachers' views, a creative lesson should enable learners to gain insights into the issues they need to explore and should encourage learners to communicate these insights. In general, a creative lesson should be multifaceted and all encompassing:

> *A creative lesson to me would be one where students are allowed to think for themselves, where students' prior knowledge somehow is assessed, where students interact together, where they produce their own work, their own thoughts, where it is validated and accepted and it is cherished, where students have some control over the learning experience, so that it is not a one-way, but a two-way process. (Teacher of Health and Social Care, SF College 5.)*

A creative lesson should also provide opportunity for group work:

> *I think a good mixed lesson where you've got some sort of things like imparting of information, subject learning; a lot of questioning going on, a lot of activities. If you get the right balance in the classroom then the students will automatically respond to it. (Teacher of GNVQ Leisure and Tourism, FE College 3.)*

For a group of teachers in vocational courses and one in academic courses, a creative lesson should emphasise the application of knowledge but students should first be provided with prerequisite (basic) skills, knowledge, and information that should enable them to work independently or in a group:

> *I suppose where students have the opportunity to apply theory and knowledge to situation and the opportunity to apply feedback and discussion of point of their views on the theory. (Teacher of GNVQ Business, FE College 3.)*

Where it is appropriate, a creative lesson should contextualise learning, where classroom learning draws on students' own experience and interests:

> *In the context of business studies, I think it is to try and draw on student experience and to try to get them to think about what is being got across to them in the classroom and relate it to their experience and now they can see the relationship between the two. (Teacher of AVCE Business, FE College 9.)*

A teacher cited opportunity for 'simulation' as an important criterion for a creative lesson:

> *Do you use examples by bringing in real-life situation? If you have boring things like filing, how do you stimulate students to become interested in filing (a requirement in NVQ 2 Administration course specification)? You have to have lots of filing cabinets in the classroom and stimulate them to be able to understand it and to enjoy doing it. (Teacher of NVQ Administration, SF College 1.)*

More generally, a creative lesson will promote high student input and less teaching structure; it will be interactive, cognitively challenging, thought provoking, developmental and engaging:

I don't think it matters what the students are engaged in, as long as they are fully engaged. (Teacher of A level Sociology, SF College 6.)

However, one teacher (who also doubled as faculty head) saw the need for creativity in a lesson as secondary to his main priority i.e. the requirements of the awarding bodies (see constraints to creativity below):

The criteria set by the awarding bodies is crucial to us. The main determining factor is who pays and what do they pay for? If there is time after all that, then you look at things like work experience, competitions, all the things that are over and above the contact of the syllabuses. (Teacher of Hairdressing and programme leader, FE College 3.)

5.14 Evidence of a creative lesson

Evidence of a creative lesson can be checked through classroom observations; by looking at teaching and learning methods; by inspecting students' coursework, and (the wording of) assignments and handouts; by evaluating students' self-reports, student presentations, displays and exhibitions; and by interviewing the students. More so, the teachers would check whether a lesson encourages students to think 'imaginatively' and whether students are 'involved' in classroom discussions, thinking, brainstorming and whether students are enjoying the topic under discussion:

I would look at written outcomes to assess how far students have engaged from tasks, the volume of the discussion that has been going on. I would also make a judgement from the expression on students' faces. (Teacher of A level English Language, SF College 1.)

Another teacher underlined classroom observations as an important source of evidence for a creative lesson:

> *I would expect to see (in a creative lesson) a problem clearly identified, the resources are there, different groups doing different things, and then looking at the way they produce their results - so that you can see the way they are working forward. Maybe, also, a little bit of lateral thinking will be quite interesting where the obvious route is not followed and you actually are looking for something where somebody is used a bit of imagination. (Teacher of A level Chemistry, SF College 6.)*

Classroom observations will show, first hand, originality in a creative lesson:

> *I would look at classroom engagement. To find the originality you've got to structure the task well. Give the students relatively easy tasks and be very open-ended. Take the case of IT, which I also teach. IT lends itself to unstructured learning. I have seen a girl (in a colleague's class) who used her IT skills to create her own holiday brochure. The tasks should be simple, open-ended. (Teacher of A VCE Business (Human Resources) FE College 8.)*

One important source of evidence of a creative lesson is student feedback, which according to a teacher, can be mutually beneficial to both the students and the teachers:

> *The worst lessons to me are the ones where you hadn't have any ideas from the students, because when you hear other people's ideas you challenge yours and that in itself is creativity. (Teacher of A level Media Studies, FE College 2.)*

Evidence of a creative lesson, according the teachers in the survey, can be gleaned also from teachers' self-evaluation forms and reports; as well as by 'accessing information on what students do with the knowledge they have acquired' post further education.

5.15 Teaching approaches and teachers' conceptions of creativity

Even though the teachers had earlier spoken approvingly and enthusiastically about the need for creativity in the learning process, when asked the extent to which their classroom teaching techniques or instructional strategies were driven by their perceptions of creativity, surprisingly, only one teacher said her teaching was always driven by her perception of creativity:

> *It is always driven by it. It is the reinforcing of that. Each lesson will be different and I go round, measuring up – asking myself 'is this really working with this group?' – to make sure that everybody is involved. (Teacher of A level Sociology, SF College 6.)*

All other teachers interviewed said their teaching techniques were, in most situations, not driven by their perceptions of creativity – they offered a variety of reasons. Such reasons included the nature of the subject and the topic to be taught, the nature or aims of the session, the type of class or student group, as well as the type of classroom environment.

> *It depends on what we intend to do in a particular session or lesson. The information giving part of it is a different delivery from the activity. (Teacher of NVQ Administration, SF College 5.)*

Teacher of GNVQ Marketing, FE College 4:

> *It does depend on the subject area you are looking at. If you are teaching subjects like quantitative techniques and so on, there is a limit to the amount of creativity you can apply in that situation. You are learning something that is given. It really depends on the subject area.*

Teacher of Health and Social Care, SF College 6:

> *When I am not teaching to the test. The next unit that we shall be doing is a portfolio-based unit and they (students) get to investigate a local organisation and that gives the students opportunity to use their creative skills. The brief that I will give them will be open-ended.*

However, a teacher said her classroom creative practice is driven by the need to relate learning to real-life situation:

> *What is for me really is I keep it (lesson) real, and I keep it as close to what is expected in the industry as possible and I think what gives me the edge to that is because during the time that I have been in the industry I know what the requirements were and I know what my requirements were when I was employing people to work in my salon. (Teacher of NVQ Hairdressing, FE College 4.)*

Another consideration, time permitting, is the need to get students into the study mode and to keep them interested in learning once they are enrolled on a course:

> *We try to give them a quick burst of lateral thinking (open-ended tasks and activities) at the beginning of the course – in their induction module. During the year, we could do an extended investigation, problem solving. But I have to admit it is very sporadic. (Teacher of A level Biology, SF College 5.)*

Examination requirements, time, and personal limitations (see blocks to creativity below) are other reasons cited by teachers why their classroom practices might not always be driven by their perceptions of creativity:

> *Sadly, increasingly I am driven by examinations. When I started out teaching in sociology, there was more of passion in sociology and getting the students to just love it. However, because of the examinations, my thinking and worries are on the need to prepare them for the examinations. (Teacher of Sociology, SF College 5.)*

Similarly, a Business Studies teacher said her attempts to inject creativity into assignments and learning were often constrained by time:

> *When I am writing assignments I do try particularly to get the students to do something that allows them to think of their own ways of presenting material. But it is very difficult, both from my imaginative point of view and having the time to sit and think 'what can I ask them to do?' and gather information materials to put in the assignment. (Teacher of AVCE Business and head of Business faculty, SF College10.)*

Another teacher acknowledged personal capacity as a reason why her lessons might not be driven by her perception of creativity:

> *I don't think my teaching is really driven by my understanding of creativity. I think it can be driven by my lack of creativity! (Teacher of A VCE Business, FE College 9.)*

5.16 FE teachers' perceptions of blocks or constraints to creativity in teaching

Variable	Constraints
Teachers' perceptions of constraints to creativity	'Inadequate' contact time; students' problems of basic skills; curriculum requirements; and student resistance to material outside course specification; physical resources (accommodation); 'inadequate' time to prepare lessons; 'poor' curriculum planning on the part of college management.

The teachers interviewed pointed to one constraint or another in the quest for creativity in lesson planning and delivery. But, such blocks to creativity apply in almost equal proportion to both the teachers and the students:

With the students as well as with the teachers the time constraints have become so stringent. The idea that you can go and do research on things does not really exist in the college sector nowadays unless the student is particularly interested in the subject and highly motivated, in the end it becomes something that you just have to get through. (Teacher of A level Business Studies, SF College 1.)

Teachers' perceived student constraints

There is a strong agreement among the teachers that a significant constraint to student creativity is the limited knowledge that many students bring into further education. According to the teachers, students are generally not well grounded in the basic skills upon which creativity can be anchored (see literature review in chapter one; Weisberg, 1999; Seltzer and Bentley, 1999 and Boden, 2001, for discussions on knowledge/skill and creativity). The problems of basic skills, according to the teachers, are more profound among students on vocational courses many of whom appear to lack the confidence to do tasks such as research and writing up assignments:

It is what they come to us with – the skills they have when they come here from school. Some of the skills aren't good; the maths (numeracy) skill is hopeless. (Teacher of A VCE Science, FE College 8.)

Student deficiency in generic skills such as thinking skills was particular singled out by a teacher as impediment to facilitating creativity:

I think schools and GCSE knock creativity – they do not encourage students to think. And when we get those students they are expected to think much more for themselves and we have very little time to develop their creativity and thinking skills. (Teacher of A VCE Science, SF College 10.)

A teacher of GNVQ Marketing, FE College 4, also highlighted the paucity of student prior knowledge:

> *I don't think you can just walk in and ask students to indulge in creative activities without a knowledge-base.*

Also, students – especially those on academic courses – generally do not have enough time aside from targeting an exam, usually after 3 terms, 4 terms, and 6 terms. 'And that is what they (students) are interested in really,' lamented a teacher of A level Chemistry, SF College 6. Another aspect of time constraint on students cited by half of the teachers is the 'systematic reduction' in contact time over the years:

> *When I came into FE 15 years ago, students were doing up to 27 hours a week. Nowadays, the full time hour is only 15, so students have more to do in class time and with the new curriculum (which came into effect in England from September 2000) it is more stringent. (Teacher of Engineering and programme leader, FE College 3.)*

Student open resistance and hostility to materials that are not in the syllabus, was cited by four teachers as a constraint to creativity:

> *You've got students who will ask 'why do we have to do this?' 'This takes us so much time, why do we have to do it?' (Teacher of A level Sociology, SF College 6.)*

Teacher of A level History, FE College 9:

> *You can have students' resistance 'I don't want this, I am not interested'.*

Students' awareness of exams requirements might not be unconnected with their reasons for resistance:

Students often say, 'I have to pass an exam and you are only going to teach me what is going to make me pass my exam and you are not going to teach me anything else'. They will always question why you are doing an activity. (Teacher of AVCE Business, FE College 7.)

Moreover, students' preference for simple tasks and exercises, was identified by a teacher as a block to student creativity:

Students don't always want to enter into the learning process, due to a number of reasons. One of them is inertia where students would prefer to be doing something mundane and straightforward rather than doing anything active. You could relate creativity with being active and students don't often want to be active. (Teacher of GNVQ Leisure and Tourism, FE College 7.)

Another teacher identified students' 'unfavourable disposition' to taking responsibility for learning, as a block to their creativity:

If the students are not interested in something they say so 'I am not interested in that therefore I can't do it'. They have lost the idea of just sitting and thinking 'well how can we do this, what use can we make of this?' 'Where can we get the information?' The fact is that students don't like being given responsibility. Some of them will come to terms with it, some of them won't. At the end of the day they came round and say 'we want direction, we want you to tell us what it is we've got to do.' Whether they have been like that since they were tiny or whether it is something that is been schooled into them, it is difficult to say. We don't have contact with them long enough to overcome those barriers. (Teacher of AVCE Business, SF College 10.)

A teacher cited college accommodation problems as constraints to creativity:

> *Physical space – students not having a room for discussion or to do their work, aside from the library, where you really cannot engage in discussion. (Teacher of A level Business Studies, SF College 10.)*

Also, the 'disproportional' amount of time many students spend on (largely) non-relevant part-time jobs, according to the teachers, impinges on their creativity. In odd cases, the teachers suggested that student attitude, motivation, peer pressure, insecurity and low-self confidence coupled with 'fear of being told off' and 'prescriptive' academic syllabuses might explain the reasons why some students who show evidence of creativity in their written work sometimes go apologetic for their originality':

> *I think the main block to creativity tends to be people (students) are usually embarrassed to try and see what their ideas are. I have seen students with great ideas, but they tend to be embarrassed to come up with what they feel and what they really think. (Teacher of NVQ Child Care, FE College 8.)*

Two teachers explained how students might be constrained by both the learning process and the learning environment:

> *I think the process in which students learn is a constraint particularly in GNVQ and AVCE type of work. The students have just come from school, they are used to didactic teaching. They are quite shocked that they are not told what to do. Some of the students find it difficult to cope within the two to three months (on the course). It begins to change after one assignment has been turned in. (Teacher of AVCE Health and Social Care, SF College 10.)*

Teacher of GNVQ Health and Social Care, SF College 5:

> *From the student point of view, I think they can limit themselves when you have an environment where people don't respect each other. I think you have to give them a space in the lesson where it is legitimate for them to talk and discuss views and share ideas.*

Inadequate or non existent transition arrangements from school to college was given as a constraint to student creativity:

> *There is problem of transition. A lot of students coming on the first year here do have quite a hard time adjusting to the difference between school and college and it takes a long time for a teacher to be able to encourage them to have confidence, to come out of their shell a bit more and realise that somebody is actually going to listen to them. (Teacher of AVCE ICT, FE College 8.)*

Teacher constraints

Time is the prime factor in the teachers' listing of constraints to their creativity. The manner in which they are held back by time includes: limited contact hours with students, 'inadequate' time to plan, prepare, and collect resources for lessons and 'not much' time to build creative exercises into lesson; limited 'time to relax' in between lessons (one of the teachers with whom the researcher had an interview actually had just 15 minutes between two lessons):

> *I must admit I feel a great deal of pressure getting through the syllabuses, because the areas are huge, the amount of teaching we have to do each week as well as other duties (mostly paper work and meetings). You sometimes feel like you are trying to get through this and you are not allowed to be that creative yourself, because there are some things, some of the materials you would like to use in lessons. (Teacher of A level Media Studies, FE College 2.)*

Time constraints were said to be eroding the teachers' ability to develop their own creativity:

> *My creativity is limited by the amount of time I devote to it. Every hour of the day that I am in this college students come to me because I have a role as the deputy head of the faculty, course director and as a Biology tutor. I have responsibility for the Year 12 key skills so students come in all the time. I simply do not have time to reflect on teaching. (Teacher of A level Chemistry, SF College 1.)*

The nature of the qualification - e.g. academic, vocational and applied vocational - poses different constraints upon the teachers. The teachers asserted that applied vocational courses such as AVCE and GNVQ lend themselves to creativity, compared to academic courses such as the A levels:

> *The very heavy content base of the A levels limits room for creativity. I think the GNVQ and the (new) AVCE are more creative, because the specifications allow students to work in groups, bounce ideas off each other. A level is very much about you go up against the examiner; at the very end you are on your own and you have to face the examiner. And, as a teacher, you have to prepare the students for that. And while I would really want learning to be fun and would like to look back on it with affection, I would rather not look back on poor grades on their A levels. (Teacher of A level Biology, SF College 5.)*

Another science teacher lamented the severity of limitations posed by certain academic syllabuses:

> *At this (Advanced) level you are teaching the same thing basically forever! It will always be taught because it is written in stone. So it is hard to bring in new fresh ideas or ways of looking at materials that have been checked and re-checked over centuries. (Teacher of A level Biology, FE College 8.)*

The teachers also identified internal management constraints such as 'poor' curriculum planning and arrangements, as well as external factors such as 'poor' course design and 'prescriptive' syllabus requirements set down by the awarding bodies:

> *The people who designed the courses have lost touch with what goes one in the industry - particularly in the hairdressing industry. When I did hairdressing it was a three-year course, which included science subjects. Now they (students) no longer do science, they no longer do arts and design, it is just basic hairdressing and they are expected to be qualified within one year. That is fine. But I think you need to watch the level (quality) of the hairdressers you are sending out there. When you look at the criteria set down by the awarding bodies, I found them wanting as a professional, because it doesn't match the real-life requirements. And that (mismatch) impacts on student creativity. (Teacher of Hairdressing, FE College 4.)*

A small number of teachers (four in all) cited external factors such as government educational goals and priorities, and 'voluminous' changes in the further education sector that often informed college internal priorities:

> *I hear words like retention, I hear words like achievement from the college managers (but), I don't remember hearing anyone mentioning creativity! (Teacher of A level English Language, SF College 1.)*

Limited learning resources (e.g. 'insufficient' number of computers), teaching aids and teaching materials (Overhead Projectors and acetates, to mention but a few) that might or might not be in working condition or that might not always available; arrangements for and the administration of colleges' reprographic facilities, are all blocks to creativity. In one lesson that this researcher observed a teacher was not able to use the Overhead Projector because of a mechanical problem she was unaware of. The teacher later explained that teaching staff in the college are not always able to use copier machines

without giving a prior notice to the reprographic personnel and that there are no photocopiers located outside the reprographic room for urgent use.

Other constraints include timetabling, class size (mentioned by three teachers) which makes differentiated learning difficult and the 'difficulty in keeping an eye on students who might be drifting off'; pressure to get through the syllabus; 'mental tiredness'; 'voluminous' paperwork; and 'unproductive' curriculum meetings all of which the teachers said constitute a 'drain' on them, as well as on their ability to deliver lessons creatively.

One teacher, however, disagreed that all of the above, aside from time, constitute real constraints to creativity:

> *I don't think there are too many government constraints to be honest. They say (to students) if you want to get 3 A S level you've got to meet these criteria and I believe there is plenty of room for creativity within that. It is just whether the time scale involved is enough. A lot of teachers will disagree with me on this; I don't think it is lack of resources either. One thing about creativity is that you create what you have and if you don't have access to a computer at a particular time you find another way. (Teacher of A level IT, SF College 6.)*

5.17 Teachers' personal development in creativity

There is need for teachers' own nourishment and development in creativity, without which they cannot facilitate it in students. Personal development, Craft (1998) found, is crucial if teachers are to support learners' creativity. The teachers in the survey cited networking with colleagues outside college as an important source of their creativity. More so, teachers with vocational backgrounds cited their professional contacts in the

industry as nourishing agents of their creativity. General staff development programmes such as in-house training and outside courses, conferences, seminars, lectures, talks and classroom observations; inviting outside experts to give talks or to demonstrate new learning aids and equipment, were all said to aid their creativity:

> *Each year I find a top scientist from the local university and he comes and (literally) takes the laboratory over for a whole day. He brings all the modern equipment and loads the whole thing, ready to go. He is at the forefront on the subject and I want more of that to watch him in the lab, to learn from him. (Teacher of A level Biology, SF College 1.)*

Another important source of creativity nourishment for teachers is the classroom – via feeding on students' ideas:

> *The worst lessons to me are the ones where you hadn't have any idea from the students, because when you hear other people's ideas you challenge yours and that in itself is creativity (a creative exercise). (Teacher of A level Media Studies, FE College 2.)*

Another teacher underlined how student feedback has encouraged the teaching staff to take risks (risk-taking is a creative attribute):

> *It is feedback from lessons, really. We feedback all the time and we are not afraid to take risks. The feedback encourages us (the teachers) to take risks. (Teacher of A level Sociology, SF College 6.)*

Personal interests and hobbies – such as going to theatre, museums, watching documentaries on television – and leisure-time research, as part of lesson planning and preparation, were cited as nourishing agents of their creativity:

On the Sunday evening I go to bed with all the papers and I research articles in the papers that I know will be relevant to my different teaching. One student said to me 'Oh Miss, you have a sad life!' (Teacher of NVQ Administration, SF College 5.)

Despite an earlier reference to 'frequent' policy changes in the further education sector as a constraint to student creativity, a teacher said she found stimulus in such changes:

Because everything changes every couple of years or so, that gets you to do new things and face new challenges (even though it can be tiring sometimes). So, you know things never get stale. (Teacher of A level Biology, SF College 5.)

The teachers' personal development in creativity includes 'surfing' the Internet for ideas and feeding off lesson ideas from colleagues; maintaining a positive mind and approach to work, risk taking, good relationships with students; interest in subject specialism, writing assignments; regular self-evaluation and review of teaching methods and practices:

Nourishing creativity is one thing, to keep it working is another thing. I have always found that once you have actually done an activity you can say that has worked. I tend to ask myself what can I do to make it even better. I probably try again in a slight different format in different class. Each time you do it, you build on it, and each time you try and evaluate after each time – always trying to improve it and make it better. (Teacher of A VCE ICT, FE College 8.)

Only two teachers said they do not have the time to nourish their creativity, possibly due to extra management/administrative responsibility on top of their teaching load:

My biggest problem is the time. I have lots of good ideas, but I just don't have the time – time of preparation, time of implementation. (Teacher of A level Mathematics and Student Services Manager, SF College 6.)

5.18 Curriculum Manager Interviews

5.19 Introduction

A key aim of the interviews was to identify factors that promote or inhibit creativity in the curriculum in a further education context. The interviews also aimed to highlight curriculum managers' views of curriculum goals in further education; their perceptions of creativity; their criteria for a creative curriculum and what they would treat as evidence; their perceptions of the role of the curriculum in facilitating student creativity; and their perceptions of constraints to creativity in the curriculum in a further education context. The interviews would also gain insight into their own personal development in creativity.

5.20 Main aims of the further education curriculum

Variable	Extracts of keywords/phrases
Main aims of the FE curriculum	Current focus is on the outcomes/ qualification goals

The overriding aim of the curriculum in further education, according to the curriculum managers, is to enable students to achieve their qualification aim – everything supports or complements that aim. This is due, primarily, to the (now defunct) Further Education Funding Council funding methodology, which placed a premium on the curriculum provision that leads to a qualification:

> *Students come to the college to achieve qualifications. Without qualifications youngsters will find it hard to progress. So that is a key aspect of the college curriculum – to help students to achieve their qualification goals. In other words, the central core of our curriculum is to enable young people to gain the qualifications*

they need to proceed in their career. (Deputy Principal (Curriculum) of SF College 1.)

Intertwined with the core curriculum goal is provision of 'quality teaching and learning to students measured in quantifiable outcomes such as achievement'. To this end, teachers' classroom behaviour and practices are deemed crucial in so far as teachers are expected to respond flexibly to the individual needs of students by varying teaching styles and techniques:

The most important part (of the curriculum) for me is to get individual teachers to appreciate the importance of matching their teaching styles with the preferred learning styles of the students – so teaching and learning and classroom practices and activities are fundamentally important and I want teachers to make positive choices about the teaching styles they choose. (Director of Teaching and Learning of FE College 7.)

Provision of a broad-curriculum (so long as it is financially viable) was identified as another aim of the curriculum. One curriculum manager put widening participation at the top of his college curriculum goals, possibly to reflect a particular need of the community it serves:

The (main) aim of our curriculum is to involved people who are always involve and people who have not been involved. I think that is why a substantial proportion of the college curriculum is at level 1 or below level 1. (Curriculum and Quality Manager of FE College 4.)

5.21 Curriculum managers' perceptions of creativity

Variable	Extracts of keywords/phrases
Curriculum managers' perceptions of creativity	Imaginative; flexibility; new ideas; application/use of knowledge; more freedom for students.

The curriculum managers' views about creativity vary, but accord significantly with the characterisation of creativity in the literature – namely creativity as a process, a product, a personality and as a condition of the environment. More importantly, the curriculum managers, like the teachers, showed good understanding of the term creativity as well as its application and manifestation in teaching and learning.

Creativity within the curriculum context involves encouraging greater teaching flexibility in terms of teachers' instructional strategies and in lesson delivery to meet a student's particular needs:

> *Creativity is about new ideas, bright ideas within the curriculum context. In our area (hair and beauty, for instance) it is giving the tutors the flexibility in their role to achieve or go for new ideas within the teaching, using different material within the teaching. In the hairdressing we do quite a lot of flexible learning-type packages for our mature students, because some of them aren't quite as good academically as some of the others (younger ones) in the college. It is finding how they react better to different situations – and they always learn better if you are doing a practical thing along side theory. I would say creativity is giving students freedom and to vary the way in which the classes are delivered and be aware of the learning styles that need to be developed vis-à-vis student groups (a collated view from group interview of three Heads of School/Curriculum directors of FE College 2.)*

Curriculum managers, in conceptualising creativity, commonly used phrases such as 'doing things differently', 'being able to think thing differently', and the ability to use

skills, knowledge and experience 'to address and resolve new problems'; 'producing something that is new', and 'putting together or making something that is original':

> *I think it is a spark that allows a different ways of doing something. So there may be a standard way of laying bricks (for instance), but the creative person will lay bricks in a different way. I would hope it is reflected in imaginative things that our students do. (Director of Curriculum of FE College 3.)*

A curriculum manager conceptualised creativity in terms of knowledge application and transformation, a view of creativity that is currently gaining popularity in the literature (see Seltzer and Bentley, 1999 and Boden, 2001):

> *When we use the term creativity in the college curriculum arrangements, what I mean is people who are able to work in a particular subject area, work within a particular discipline or sphere of knowledge and to take that knowledge and to synthesise it into new ways to use it themselves. It is being able to use that knowledge creatively. I think too often we focus on knowledge and it is – as long as somebody knows something that is all that matters. It doesn't matter whether they happen to be able to use that knowledge for different purpose or to be able to relate to scenarios unthought-of at the time. (Director of Teaching and Learning of FE College 7.)*

In terms of product and process, one curriculum manager offered a new expression to define creativity:

> *I suppose (creativity is) an ability to view the world through a non-practical way, to be able to look at events and situations and create something new out of it rather than just reflect or observe. It is an ability to interest the world in the sort of new way – that you are looking at a life in a proactive, new way, that you are not just accepting things. (Deputy Principal (curriculum) of SF College 1.)*

5.22 Can creativity be facilitated in the curriculum?

All the curriculum managers interviewed, in response to this question, answered in the affirmative.

5.23 Curriculum managers' criteria for a creative curriculum

The curriculum managers set out a number of differing and diverse criteria for a creative college curriculum, but the common theme is curriculum content that allows or encourages flexibility and innovation in teaching and learning:

> *That the curriculum is not a straightjacket; that it allows people (students, teachers and managers) to do odd things; that it allows the teacher who has a bright idea to develop that; that it allows students who have a bright idea to offer that; that it allows staff and students to do things in a non-routine way. That it taps into that part of learning that makes the difference between routine and special, and I think without it you don't get excellence. (Director of Curriculum of FE College 3.)*

Another curriculum manager underlined the need for greater flexibility in a creative curriculum:

> *A creative curriculum mustn't be too narrowly defined. It must allow different students to pursue the work in different ways in order to explore and demonstrate their own creativity. (Director of Curriculum of FE College 9.)*

A creative curriculum, in the view of the curriculum managers, should be cognitively challenging and motivating to students:

A curriculum that would make provision for analysing, problem solving, promoting new ideas, innovative thought, receptiveness of new ideas and non-rigid. (Deputy Principal (Curriculum) of FE College 1).

A creative curriculum should also emphasise application of knowledge; it should promote independent learning; it should offer a wide range learning-enrichment opportunities; and should tailor learning materials to meet students' individual needs:

Curriculum material should address the concerns of the students. In this college, we make use of a wide range of stimulating material – Internet, TV, Radio, arts, and so on. Also, a creative curriculum should seek to match the material with individual learning style – presentation, writing, etc. We use a lot of on-line materials, and we use teachers' creativity in the writing of assignments, etc. (Director of Curriculum of FE College 8.)

Expectedly, teachers are the linchpins of a creative curriculum:

I think it is impossible to be an excellent teacher without having some creative spark and the best teachers that we have and the best teachers that I have seen are the ones I tried to model my own work on – and they all have the spark. It is the teacher who doesn't just say this is what we are going to do because it is the way we have always done it – but actually allows or entertain new ideas; that has freaky ways of doing things, odd ways of doing things; imaginative ways of doing things; non-routine ways of doing things, and that must make whatever happen richer for both the teacher and the learner. (Director of Curriculum of FE College3.)

5.24 Evidence of a creative curriculum

Curriculum managers identified a number of evidence indicators for a creative curriculum – key ones are, inspection of the curriculum to ascertain whether it

emphasises application of knowledge; classroom observations, and reviewing assessment methods:

> *I think that the assessment, which the students were doing, could be evidence. You can tell from looking at the assessment (assignments) whether or not creativity is being encouraged. (Curriculum and Quality Manager of FE College 4.)*

5.25 Role of the curriculum in facilitating student creativity

Variable	Extracts of keywords/phrases
Role of the curriculum in facilitating student creativity	Curriculum arrangements currently are not geared to facilitating creativity; curriculum can provide a range of experiences to students; curriculum gives students the flexibility to pick and mix subjects.

Every one of the 12 curriculum managers in the survey agreed that there is a role for the curriculum in facilitating student creativity. The curriculum leaders, however, pointed out that promoting creativity in the curriculum can only occur within a broad framework of the curriculum outcome – i.e. delivering of qualifications:

> *The broad framework has to be there because we have to meet the demands of validating bodies and so on. But the delivery part should allow for creativity; there should be lots and lots of opportunities for both the learner and the teacher – probably both of them working together on something to actually develop things that are producing in each of them responses that produce sparks and more creativity. So, you have got to have the framework – because, otherwise, bedlam! But you do have to present the curriculum in such a way that as many people as possible can do things to suit their learning styles, their own need; things they bring to the college from their own lives, etc. (Director of Curriculum of FE College 3.)*

Another curriculum manager noted:

I suppose the curriculum is the vehicle, which helps us to deliver the qualification outcome, and it is got to be something that certainly meets the end goal of the qualification. And so, we do unapologetically focus on outcome, but also it is important that process is enjoyable as well. (Director of Curriculum of FE College 8.)

An important role of the curriculum is to equip individual (students) with the skills, knowledge and learning experiences needed to express their creativity:

I think teaching creativity is hard (but), what you have got to do is to provide a range of experiences where people are able to be creative. If we can give people confidence to try things out, to dare to do something (that might be considered) wild (at the time), to play around with things, it will build their confidence. (Director of Teaching and Learning of FE College 7.)

5.26 Creativity and further education curriculum arrangements

Variable	Extracts of keywords/phrases
Constraints to creativity in the curriculum	Syllabus/examination/assessment requirements; resources; teaching time; little time to reflect on practice; student resistance to material outside syllabus.

This appears to be the crux of the researcher's discussions with the curriculum managers. Two-thirds of the curriculum managers gave a qualified answer to this question, saying the current arrangements of their colleges' curriculum partially or indirectly encourage student creativity. Managers cited particular requirements of the awarding bodies and the qualification type as blocks to creativity in the curriculum (see constraints to creativity below):

Our vocational programmes allow students to demonstrate creativity and I am not sure if our academic programmes emphasise as much – there is certainly a much

greater emphasis on the knowledge-base in the academic curriculum than the vocational curriculum. (Curriculum and Quality Manager of FE College 4.)

In one explanation a curriculum manager offered, his college curriculum arrangements couldn't be said to aid student creativity in its entirety until September 2000 when he saw a ray of hope in Curriculum 2000 that was then introduced in further education and in school sixth forms:

Not so will be my initial answer to that question (to the question as to whether present curriculum arrangements facilitate creativity). However, with the Curriculum 2000, students are encouraged to do a broader range of subjects and also to mix subjects from different disciplines. And the net effect of that is that we get students who are doing a business studies course with, say, AS arts or photography. So, the new curriculum makes it possible for students to mix and match and therefore to produce a more creative and well-rounded student. (Director of Curriculum of FE College 9.)

Another curriculum manager pointed out that despite a certain constraint (see below), arrangements of the curriculum in her college aids student creativity through 'practical activities' and work placements:

In general terms, the college offers a curriculum that enables creativity to be developed in all our students, the restraints on that are students' own choice and we never dictate to students what they must do. In all subjects there are opportunities for practical activities. I am not aware of any course that does not include those. Many courses have work placement as an integral part of the course. Most students do have their own job [which may or may not be related to what they are doing in college]. (Deputy Principal (Curriculum) of SF College 1.)

5.27 Blocks to creativity in the further education curriculum

The curriculum managers identified two types of constraints: they are external constraints such as the requirements of the awarding bodies vis-à-vis the need to prepare students for external exams; and internal constraints such as resources, specifically, finance and teaching time. From the student point of view, curriculum managers cited time constraints as well as students' generally 'unfavourable disposition' towards extra-curricular activities, as constraints to facilitating creativity in the curriculum. The curriculum managers differed in their views about constraints to creativity in the curriculum – some see the internal blocks as the main issues, while others see the problems solely in terms of external prescriptions. However, there is a convergence of views on time as a major impediment to creativity in the further education curriculum.

External prescriptions such as assessment requirements were generally seen as a major constraint:

> *Traditionally, the biggest constraint has been the excessive level of assessment of vocational and applied vocational programmes which includes the introduction of external tests. So, the students will spend all their time to put together portfolios of material. On the other hand, we considered sending A-level students on work experience but because of the pressure of the examinations, we decided against it – the pressure of the examinations will make the exercise quite likely to be counter productive. (Curriculum and Quality Manager of FE College 4.)*

But the curriculum manager was quick to add that the introduction of the new post-16 curriculum in September 2000 would help to reduce the volume of assessments and thus reduce the workload on both the students and the teachers. Ironically, however, a

curriculum manager said his college regards such external prescriptions as a stimulant for creativity:

> *The constraints are things like the exams; we have to teach to the test. That is the bottom line. That is a constraint, but it also forces us to be creative because we have to deliver to a brief and within that we can be very creative and we have to be. If we know what the external constraints are we also know what freedom goes within those constraints. So, we shouldn't see it as a stumbling block to creativity; we should see it as ability to deliver a creative, credible curriculum. (Director of Curriculum of FE College 8.)*

One of the key internal blocks to creativity in the curriculum cited by the managers was the paucity of teachers' continuing professional and personal development, occasioned by time constraints. Indeed, a curriculum manager highlighted the difficulty caused by time constraints on the part of those who are expected to manage and deliver the curriculum – the teachers and the managers:

> *Time is really a factor; time for people to reflect and to consider some of those issues that may affect their classroom practice. Year on year we always take on new things, which we will introduce. You never have the time to reflect on the practice. I think it is a shame because there is so much good practice that can be shared across subject areas. Staff have a lot of things to deliver within the short time they have to deliver it. So, I feel that staff are overloaded. (Vice Principal (Curriculum) of SF College 5.)*

Another manager demonstrated graphically how the paucity of teachers' continuing professional and personal development impacts on creativity of the teaching staff, except the reason this time is not unconnected with the teachers' own beliefs and values:

> *The internal factors are our own teachers. I don't say they are necessarily barriers because perhaps we (the college) have not been explicit enough of what we are asking*

them to do. But I think some are traditional and their experience of learning has been about knowledge. They still see themselves as subject teachers in terms of imparting knowledge and I think we have got to liberate some of those teachers. (Director of Teaching and Learning of FE College 7.)

Curriculum managers cited also the paucity of students' interest in extra curricular, learning-enriching activities as a block to facilitating creativity in the curriculum:

I think it is very difficult for students to accept what is not on their syllabuses. They simply wouldn't attend the lesson for that reason. (Heads of School and Curriculum managers of FE College 2.)

Small, but important blocks to creativity cited by one manager are college physical resources – e.g. classroom layout, seat arrangement and other teaching accommodation facilities:

A barrier to creativity would be a classroom with desks set in rows; an encourager of creativity will be a classroom set with a round table so people sit around to it. A barrier would be a small classroom and an encourager would be big workshop. (Director of Curriculum of FE College 9.)

5.28 Curriculum managers' personal development in creativity

The curriculum managers have varied ways of nurturing their creativity – which are mostly based on outside interests, hobbies and networking. A majority of the managers interviewed claimed that they find creative inspiration from outside their college:

My personal creativity enrichment doesn't take place in the college. I find nourishment in my hobbies, like going to the theatres. (Deputy Principal (Curriculum) of SF College 1.)

Professional background is also an important influence on how the curriculum managers nourish their creativity:

> *I did say my background is English, so it is to do with the stimulus that I find in creative things, finding creative solutions to problems (Vice Principal (Curriculum) of SF College 10.)*

Another manager with a background in English literature offered:

> *I am interested in arts and so I go to art galleries. I read on arts and collect arts. I also read literature for pleasure and am very interested in contemporary fiction. My degree is in English. I like to go to the cinema with a couple of my children and they (my children) are a source of inspiration to me. (Director of Curriculum of FE College 8.)*

Another curriculum manager confirmed the popularity of arts as an important creativity-nourishing agent:

> *I am a culture vulture! I go to the art galleries. I am into performance arts. I am into music. The world of creativity is what keeps me sane! (Director of the Curriculum of FE College 9.)*

A manager found it difficult to put a finger on that which nourishes her creativity, a reason that might not be unconnected with the stimulus she gets from pressure of work:

> *I think it is something within you. You have to have huge amount of energy. You have a bad day, you have a bad week, you have a bad month (but), something inside you keeps you going; gives you the energy to rise above the problems. (Vice Principal (Curriculum) of SF College 6.)*

Networking within and outside college is also a veritable nourishment for creativity:

> *It is not always easy I have to say. The way I do it is to seek out people in this institution who think like me, who are creative. I talk to people outside. I talk to other friends in other institutions. I go to conferences. (Director of Teaching and Learning of FE College 7.)*

A manager attributed her personal development in creativity to her continuing professional development:

> *It is a very good question! I am actually studying for my doctorate at the moment, so I find that useful because it helps me to conceptualise what I do and to reflect on what I do. (Vice Principal (Curriculum) of SF College 5.)*

She also mentioned family support as key to her personal development in creativity, which in turn has helped her to motivate the college staff:

> *I also get the support from my family. I don't think you can do it (the job) for over a period of time at this (breath taking) pace and do it well. But, my job is to support and motivate the staff – that is what I am employed to do.*

5.29 Leader Interviews

5.30 Introduction

The aim of the interviews is to identify factors that promote or hinder student creativity in a further education context, from the perspectives of college leaders, and to bring out their views about creativity; their criteria for a creative college and what they would treat as evidence; their perceptions of the role of the college in facilitating student creativity; their views about constraints to creativity in a further education setting. The interviews also focused on the college institutional variables and how they impact upon creativity; the interviews would gain insights into the leaders' personal development in creativity.

5.31 College leaders' understanding of creativity

Variable	Extracts of keywords/phrases
Leaders' perceptions of creativity	Attacking problems in different ways; doing things differently; interpreting 'new things'; develop own ideas; think up new ways of doing things.

College leaders demonstrated a degree of familiarity with the term creativity and the ways the leaders characterised creativity accords with the literature classification of forms of creativity – namely combinational, exploratory and transformation (Boden, 2001). Even though the leaders were asked an open-ended question about their understanding of creativity, half of the principals 'located' their definitions within the context of teaching and learning, while an equal proportion gave more general definitions. In terms of the more general definitions of creativity, phrases such as 'idea generation', 'imaginative

ideas'; 'to do things differently'; 'to make connections or new links'; 'to combine or to permutate ideas'; and 'to put ideas together in a way that is new'. (Three principals out of the ten interviewed conceptualised creativity in this way.)

Two other principals conceptualised creativity as a process, which includes an individual ability to use prior skills, knowledge and experience to solve problems:

> *Creativity is a process for which you develop an individual to allow them possibly to attack a problem in several different ways or to think up new ways of solving or dealing with an issue which might be quite specific to that particular issue. So in circumstances where every method you have used before does not apply to this situation, you are in a position where you could think up a new way of doing it. In that way you have been creative and innovative and you are finding ways you can move forward something which may not apply before. So you are drawing on a range of skills and experiences. (Vice Principal of FE College 8.)*

Risk taking is a well-acknowledged creative attribute which was emphasised in two leaders' definitions of creativity:

> *I think my understanding of creativity is to do things differently (to innovate), to modify things, to try different things, test things out, see if they work; if they don't do it again. (Principal of FE College 3.)*

Five more college leaders defined creativity primarily within the context of teaching and learning. From the learning point of view, creativity involves allowing and encouraging student freedom of self-expression and opportunity to vary presentation styles in class work and assignments, within certain parameters:

Creativity is about trying and encouraging the students to develop their own ideas, to express themselves (but) bearing in mind that it is not a completely free-flow form of expression. (Principal of SF College 1.)

A principal who did not give a direct definition conceptualised her understanding of creativity in terms of teaching and learning opportunities her college offers to students in an attempt to ensure that they have a 'balanced' learning experience:

I think that my expectation is that the opportunities are there but the learning within each individual subject or within each individual part of the student course is also dynamic. For instance, if they (the students) are studying Geography there will be an opportunity for them to do research, there will an opportunity for them to watch something either on the video or TV, there will be an opportunity for them to access information from the Internet, to present their findings in a written format; part of it is giving a presentation, part of it might be working in pairs or in a group, part of it might be working individually. (Principal of SF College 5.)

Encouraging students to take risks in terms of subject combination; and encouraging students to 'take a subject they have not done before' were also emphasised in the leaders' definitions of creativity. A leader relates his understanding of creativity to a teacher's flexibility, and his/her ability to solve or to respond to problems presented by individual students within and outside of the classroom:

Part of the response to that requires a great deal of creativity I think.
(Acting Principal of FE College 4.)

One leader conceptualised creativity in terms of teachers' interactions with students in the classroom and the ways in which the college supports and emphasises certain values about creativity; while another principal offered new terms to define creativity – terms

consistent with the literature characterisation of creativity – namely as a process, product and as a condition of the environment:

> *I think creativity is interpreting a new thing (experience) for yourself – your experience of the world and then interpreting that for yourself and for other people and expressing in a way that is unique and satisfactory to you. Creativity, also, is an expression of what you see around you and giving meaning to your experience of the world and wanting to share it with somebody else in a particular way. (Principal of FE College 7.)*

5.32 Can college facilitate creativity in students?

All ten leaders in the survey answered in the affirmative and eight of them gave a resounding 'yes' to the question:

> *Yes is the answer, because it is a question of opening their (students') minds to how a start could be used in different directions. (Assistant Principal of FE College 8.)*

Another leader believes that student creativity can be facilitated so long as the college acknowledges that individuals have different levels of creativity:

> *To certain extent a lot of people have a natural talent for it (creativity), but with other people you have to work at it. (Principal of SF College 5.)*

5.33 Role of college in facilitating student creativity

There is a unanimous view among the principals that further education colleges have a role to play in facilitating student creativity, and that such a role will be productive if the institution places a premium on creative values:

The first prerequisite is that creativity in all its expression should be valued; the college must value it, and value the diversity of creativity and not to say that any one form of creativity is any more important that another. (Citing an example, she went on:) Music is obviously one form of creativity, but it will be wrong for the college to say music is more an important expression of creativity than arts or is Information Technology, because creativity can be brought to bear on any situation. I think the college has a role in terms of valuing and nurturing that creativity. (Principal of FE College 7.)

The duality of college role in facilitating student creativity was strongly emphasised by the leaders in the survey. At the micro level – i.e. at the classroom level – leaders believed that students are often lost on their reasons for being in college and that a college role should be to change or broaden students' perceptions of why they are in college as well as to encourage them to get involved in college-wide activities:

A college role is not only to prepare students for their exams, but also to be well rounded. Because there is a natural tendency that passing exams takes priority and everything becomes an exam factory. The role of the college is to open up more. (Principal of SF College 1.)

Another role that college can play to facilitate student creativity is by 'smoothing' students' transition in college – this is more important for students who come to college straight from school – and by allowing students time to experiment, adjust and to respond to the college learning environment and other (new) college orientation:

Because the majority of our students come from school they would have the learning experience at school which is prescriptive because of the nature of the National Curriculum. Some of these youngsters who come straight from school generally don't have experience of (workshop) learning (to cite but one example) and when they are

dropped into workshops when they arrive here, they don't know how to respond to this (new learning environment). (Principal of FE College 2.)

Three leaders identified strong interactions at the micro level between the teachers and the students, as a 'vessel' for developing creativity – something which the college should seek to emphasise:

At the micro level, you are dealing with the teachers and teachers' interaction with students in the classroom and the college can support that by emphasising certain values and being positive about creativity. (Assistant Principal of SF College 8.)

Similarly, one leader posited that a college role in facilitating creativity at the classroom level should focus on the teachers' classroom practices; for instance, by encouraging teachers to continually vary teaching styles and techniques to meet different learning situations:

So you are not stuck in one mode, you are stuck in a variety of modes. You are asking people to engage in learning in a variety of standpoints, and also, to intellectually engage with them. (Vice Principal of FE College 8.)

Also at the classroom level, there is a need for the college to encourage students to take risks (within the framework of the curriculum – see constraints below):

There is a need to give the students the opportunity to do things differently, to try things out, to have open ended assignments (for example), to give them the wherewithal to become creative – give them access to learning resources, work placements – all the things which impact on them to be able to express what creativity they have. (Principal of FE College 3.)

At the heart of the micro level support for creativity is the need to encourage creative thinking in further education students by giving students the opportunity to develop their

own ways of thinking. Another leader believed strongly that developing flexibility in students and their ability to respond to changing situations should be uppermost in the college scheme of things:

> *If you don't have any creative element in the way that you are working, in the way that you are thinking, you are going to find it very difficult to respond to changes. Being able to actually operate in different arenas, apply information and knowledge you have from other arenas to make it work there and down to interaction of people as well. (Acting Principal of FE College 4.)*

At the macro level, a number of principals located the college role in terms of its course provision, the diversity and the arrangements of the curriculum:

> *I think the college should have a broad-based curriculum which facilitates creativity. I think the sort of teaching and learning students do should be creative and should allow creativity. I think that the college should take into account all the other things that students do – working in Tescos (supermarket) on Saturday may be a pretty mundane job, but they do learn from it. But I think the college is presenting all these opportunities – sports, arts, etc. – to the students. (Principal of SF College 5.)*

5.34 Creative college

The leaders set their criteria for a creative college in three areas of college provision – teaching and learning, course/curriculum provision, student educational experience – and staffing. Four leaders set their criteria within the context of teaching and learning practices which focus on students' active involvement in learning process – albeit it is

debatable whether the process of engaging students in learning itself is necessarily creative:

> *I think the college is being successful at stimulating creativity among students, you see a culture whereby students were attending, were contributing, were completing assignments in one form or another. (Principal of College 1.)*

Teachers' behaviour and classroom practices; subject knowledge; the strengths of teachers' interactions with individual students were among the criteria identified by the leaders:

> *If you are going into classroom and looking at teaching in a college, then I expect creative teaching to be teaching that is well thought-out, delivered by somebody who clearly loves their subject and is in control of the knowledge on the topic and was thinking of various different ways of engaging a mixed ability group of the students in taking part in learning. (Principal of College 7.)*

In the leaders' view, course provision and curriculum arrangements should be flexible and innovative and should offer a range of opportunities to both the students and the community in which a college operates:

> *The criteria are to do with a flexible curriculum and a lively college, not to stifle innovation. As an institution you need to be flexible and respond to the needs of the community you are serving, and at the same time you want a kind of buzz, excitement and engagement and free up people to develop and express themselves within the college. (Acting Principal of FE College 4.)*

Principal of FE College 3:

> *I think the criteria should emanate from the mission statement of the college, about going out there and delivering quality teaching to the people (in our immediate community) and beyond – and beyond are very important to us. It is not just a geographical beyond; it is also a philosophical beyond. For instance, we do a lot of work in Europe and we provide students with a work placement in Europe, which gives the students the opportunity to go a little bit further and come out rounded people, if you like. (Principal of FE College 3.)*

A leader, in setting out her criteria, attempted to distinguish between an 'exams oriented curriculum' and a 'complete curriculum'. A complete college curriculum should in equal proportion emphasis examination and course enrichment (such as extra curricular activities):

> *A creative college would be a college in which, for instance, guided learning hours were few, rather than greater. There should be time to allow people (students and teachers) to engage in creative development aspects outside the classroom. Secondly, it should have to recognise things like college games, etc. There has got to be a blend and of improving that and encouraging students to be involved in them. In terms of the academic programme of the college, I think continuous assessment and modularisation is a large part. (Principal of FE College 2.)*

Two leaders set out their criteria for a creative college in terms of the availability of teaching, learning and physical resources and how students maximise the use of teaching and learning resources:

> *A large variety of different resources. Lots of resources which encourage and draw the learner into extending themselves or searching out. So when students look at something they are encouraged to go off and explore more about it, broaden their*

horizon. I think you are also looking for an accommodation management - open accommodation system that allows free movement, as well as a conducive place for learning. (Vice Principal of FE College 8.)

A principal who experienced an unusually high staff turnover around the time the researcher visited his college was emphatic in setting out his criteria around the staffing issues:

We need to have the right kind of staff and we need to have them engaged in the college in such a way that includes working in college so that you really enjoy being in it. (Principal of FE College 9.)

Another leader suggested the criteria for a creative college should not all be about the process of the students' experiences, but should also include the 'long-term effects that college learning may have on their lives.'

5.35 Evidence of a creative college

After setting out their criteria for a creative college, the leaders were also asked to offer what they would treat as evidence of a creative college. The leaders' views clustered heavily on the following indicators: physical inspection of teaching and learning practices, curriculum arrangements and the learning resources, for example:

I look for a broad-based curriculum, with lots of opportunities for students to learn. I look for evidence of students being engaged in their learning, and I will look for that in the classroom. If I go to the LRC (Learning Resources Centre) I will look for students being involved in their learning there. I look for seeing students' work

around the building. I will look for students enjoying their learning and being happy for being here. I will look for tangible evidence. (Principal of SF College 5.)

Surprisingly, only one leader (who declared a personal interest in creativity) was willing to look beyond the teaching and learning and include in her evidence the middle managers (with responsibility for curriculum) and the leaderships' (the senior management) general approach to problem solving:

If I was looking at managers, I will be looking at how creatively those managers solved or identified problems and whether or not they are able to look at management issues in new and instructive ways. If I was looking for creative leadership, then I will be looking at teachers and managers, the governor and the way that leadership manifests itself in the college by willingness to be open to change, the genuine interest in learning. I will seek evidence that the leader was interested in learning and seek evidence that managers try to solve problems creatively. (Principal of FE College 7.)

5.36 Blocks to facilitating creativity in college

Variable	Constraints
Leaders' perceptions of constraints to facilitating creativity a further education context	External: examination/syllabus requirements/ curriculum content; comparability of standards and government policy prescriptions. Internal: physical resources (accommodation); staff morale and low turnover; teaching approaches.

As above, constraints to facilitating creativity in college students can be classified broadly into internal and external factors. Externally, the most common constraints (inherent arguably in the system) cited by half of the principals (three of whom were sixth form principals) are examination requirements and syllabus specifications, set down by the awarding bodies and the Qualifications and Curriculum Authority (QCA):

One of the major difficulties I found as a teacher in a Sixth Form College is where every group you teach is an exam group, in that you have at the back of your mind all the time you are working towards the completion of the syllabuses and sitting the public exams and the real professional challenge is how do you square that into being a lively learning experience for youngsters of the age they are when some of their other experience is outside of the classroom, and in fact, more exciting than that you can provide in the classroom. (Principal of SF College 1.)

Principal of SF College 5:

It [constraint] has to be things like we have the syllabus to follow; we have to prepare students for examinations. It will be wonderful to go on a field trip to the Sahara Desert, but if the Desert isn't part of the syllabus, you have to think about that.

Assistant Principal of SF College 10:

Some of the exam board specifications are overloaded. It is an area where no matter how creative you are you will be doing the students a disservice if you do not cover them as required in the specifications. Also, the content of the curriculum is a big constraint which is outside our control.

The constraints are by no means peculiar to the sixth form college as highlighted above by the three leaders. The prescriptive nature of the learning objectives and the content of the curriculum to be covered were also cited as constraints by the leaders of the general further education colleges. For instance, one FE leader cited examination and the difficulty of 'accepting subjectivity in assessment' as a constraint to facilitating student creativity.

Other external constraints to facilitating student creativity in the college identified by (two) leaders – even as they acknowledged the cyclical nature of the constraints – were the bane of policy instability and the frequency of policy changes in the college. Consequently, it has resulted in 'low morale' in the sector since incorporation in 1993:

> *I think probably it is about morale. We work in (the FE) sector and we understand that there are going to be constraints in certain processes, as a general rule. The question is: how difficult that becomes. I think it has become so difficult. (Principal of FE College 9.)*

Principal of FE College 7:

> *The issue of comparability of standards inhibits innovation and risk-taking – the very thing the business world tell us we need to equip ourselves for in the 21st century to be successful. So there is a deep irony there.*

Other external constraints, according to the leaders, include the Further Education Funding Council (now LSC) monitoring of student attendance and retention:

> *My concern has been that, because we got such an emphasis on attendance [and retention] putting a break on some areas of outside activities (that should enhance student experience), and because we only operate for 192 days in any one year and I haven't found a solution to that yet. (Principal of SF College 1.)*

The internal constraints that were identified by the college leaders are, to a large extent, peculiar to their individual institutions – in other words, there is no convergence of views on the internal factors. Surprisingly however, the issue of money did not feature prominently in the leaders' perceptions of constraints to facilitating student creativity –

albeit two leaders cited purchase costs of physical resources and teaching and learning aids in the context of their college extra curricular activities:

> *Obviously, it is not just the money issues but resources generally. Here in this college we have an accommodation problem and we have a very creative plan for new accommodation. For example, we have major plans to enhanced sports facilities, enhanced arts facilities. So money is big problem that will unlock all of it. (Vice Principal of SF College 6.)*

Principal of SF College 5:

> *It will be wonderful for all the students to be able to engage in video conferencing with fellow students from other parts of the world. But there are constraints around the money.*

Another resource constraint to facilitating student creativity was time and the problems associated with staffing arrangements. For example, a leader lamented his inability to strike the right balance between sending students on a trip accompanied by a teacher and providing cover for the absent teacher. 'While students themselves may have a good experience in their subject area that impoverishes the experience of other students that they left behind on that day,' he said.

Two leaders described internal capacity, such as mental blocks, as a significant constraint to college capacity to facilitate creativity in students:

> *It is the demands (from outside) and the pressure of work, if anything limits creativity. I don't think it is necessarily limited by the exam structure and I don't think it is necessarily limited – not here anyway – by the resource structure. It is*

time and the mental capacity when you have so many things going on. (Acting Principal of FE College 4.)

Two principals cited teachers' expectation of students, because 'we teach for conformity' and teachers' perceptions of 'what a teacher was like,' as an impediment to student creativity.

A constraint cited by a leader (which is peculiar to his college), was low staff turnover in that low staff turnover prevents new people with fresh ideas from coming in:

Another constraint could be low staff turnover (in our college). This year (2000/2001) we have a large staff turnover which, until now has been almost ridiculously low, due partly to changes in the college structure. Some of the staff had to go because they feel they are not going to respond to change. (Principal of FE College 9.)

A college leader identified students' 'passive approach' to learning to as an impediment to creativity:

Some learners have outmoded ideas – adult learners, in particular – still think about their school experiences. They think they are here (in the college) for the teachers to tell them everything rather then for them to find out what it is about. (Vice Principal of FE College 8.)

Perhaps the biggest constraint to facilitating creativity in college comes from inside the individual (be it a student, a teacher or a manager):

Internally, I think every student, every teacher, every manager, puts their own internal barrier to creativity by negative thinking – 'I can't do this', 'I am afraid of doing this', 'I don't really want to learn anymore of this so I won't open myself to

it'. So, there is a whole range of psychological internal barriers ranging from 'I can't do this' to 'I am afraid to'. (Principal of FE College 7.)

Remarkably, there is a consensus among the college leaders that some of the constraints to facilitating student creativity, such as external prescriptions, are cyclical and that what is required is creativity in the management of change process:

I think the block (constraint) is the demands of what has to be done and how you maintain the capacity to have a creative response to things when you are actually overloaded with many, many responsibilities. I think it has always been like that and it will always be like that for the sector as whole and not just in this college. (But) we are committed to try and use innovation as a way of moving forward, because of the technological changes it can be difficult to know which way to be going. We quite consciously and deliberately use project work as a way of doing research and development as an institution to explore new ways of doing things. (Acting Principal of FE College 4.)

5.37 Creativity and college institutional factors

Two types of organisational structure have emerged in further education since incorporation in 1993 – formal (flat) structure and hierarchical structure. Six college leaders described their organisational structure as flat and de-layered while four leaders described their structures as hierarchical. Both types of structures were common in both sixth forms and general FE colleges. What is significant to note is that, whether a college's organisational structure is hierarchical or flat, the hub of the activities is usually the curriculum, with the senior manager responsible for curriculum, teaching and learning, having a disproportional share of the management responsibilities. Quality

control, finance, IT and resources, were other aspects of college organisational structures:

> *The college structure focuses on functional delivery of teaching and learning, quality control and finance and resources – vertically organised, but with a great deal of horizontal linking at senior and middle management level. (Principal of FE College 7.)*

Another common attribute of flat and hierarchical structures is that the senior management team (SMT) are made up of a minimum of three and a maximum of eight – but not necessarily according to the size of the college.

When the leaders were asked to list the strengths and weaknesses of their college organisational structures, flexibility to meet the needs of the learners and the need to improve internal communication were generally cited as benefits of the structures:

> *I would certainly say it (the flat organisation structure) is supportive in terms of allowing teaching staff to find the most appropriate, best ways of doing things and providing training and support which enables them to do that. It is effective at communicating the objectives of the organisation. It certainly doesn't communicate or prescribe or require the ways in which things should be done. (Principal of FE College 2.)*

Another leader believes the strength of his organisational structure lies in its capacity to 'group people together' and strengthens faculties as well as its capacity to get the 'chain of command close to the students':

> *The benefit is that there is a closer link between the SMT (senior management team) and middle managers; there is so much more direct accountability or a direct link from between middle managers and senior management – there is not layers after layers. (Principal of SF College 5.)*

One principal acknowledged that his college structure, like many college structures, is data driven and bureaucratic; another leader said his college current structure sometimes makes internal cohesion a little difficult to foster:

> *The main weakness is that it doesn't make it easy to share between faculties as much as they would wish. (Vice Principal of SF College 10.)*

5.38 Key determinants of college organisational structure

First, the leaders were asked if they engineered their current organisational structures. 7 leaders answered in the affirmative; 2 leaders said their structures were partly engineered and partly inherited; 1 leader who has been on the job for less than 2 two years said that she inherited the structure.

There are five main factors that informed the current organisational structures in further education according to the leaders in the survey. They are: the need to improve the management, administration, and arrangements of the curriculum, teaching and learning; the need to improve communication, and to establish a clear line of management; the need to strengthen the executive capacity in the college; the need to improve resource allocation (financial reasons); the need to respond to external prescriptions and requirements such as the Further Education Funding Council/Learning and Skills Council-demand target setting and accountability.

By far the most important factor that informed the college existing structure - rated first by five leaders and mentioned by 2 others as a complementary factor is the need to improve the management and administration of the curriculum:

My answer to you is, the essential consideration is about the best pattern to develop an appropriate curriculum, because that is what empowers the people (students) who have come to us. They might come here because they like here, they might come here because it is nice experience, but none of that means anything if at the end of the day, they don't achieve their learning targets. (Principal of FE College 2.)

Three leaders cited finance as the main driver of their college organisational restructuring exercise:

Finance is number one reason. (For instance) the college as whole has made an efficiency saving of 35 per cent – in real terms – in the last 7 years. (Principal of FE College 9.)

A leader said her college's financial situation was so severe that, after a management restructuring, members of the SMT agreed to take a pay cut 'for the college to survive'. The only leader (Principal of SF College 5) who wholly inherited her college organisational structure hazarded the reasons that might have informed her predecessor's restructuring:

I would have thought one of the big driving factors is cost. So I would have thought that in many (ways) what drives the restructuring is the need to save money. (Principal of SF College 5.)

She however went on to say that if she had engineered the structure, curriculum delivery would have been her top consideration:

If I had been here in 1998 (when the structure was put in place), the driver for looking at the structures might have been a series of things – one would have been cost (obviously), but before that I would have put higher up my list 'is the structure right in terms of curriculum delivery?' etc.

The need to improve or streamline channels of communication, foster cohesion in the polity and the need to improve the organisation's efficiency, are other common drivers of college restructuring exercises:

> *It was a case of tiny cells that hardly talked to each other; it was about trying to open it up. There is now openness of view in the structure we have in place. (Principal of FE College 3.)*

Vice Principal of SF College 6:

> *The other reason (aside from finance) was to improve management and to improve communication and to make management more efficient – to try to streamline the management to become more efficient.*

One principal cited the need to strengthen the executive capacity of the senior management team as a consideration, aside from finance, for engineering the current structure. The college now has eight people on the SMT:

> *I think what we wanted was to achieve the structure of a reasonable number of people that will be effective and give them the maximum opportunity to do the job. (Principal of FE College 9.)*

5.39 Impacts of college structure on creativity

The leaders' response to this question was mixed and evenly spread. Generally, leaders believe that the impacts of the structure on student creativity are hidden or, at best, indirect (which is ironic given the leaders' earlier claim that curriculum delivery was at the

centre of their colleges' restructuring exercises). The leaders were, however, quick to point out that creativity was not a reason for their colleges' restructuring, neither was restructuring carried out in terms of facilitating student creativity. Only two leaders made direct or explicit links between their organisational structures and student creativity, as measured by growth in student enrolment, achievement and qualification success:

> *It is an interesting change here. Because we have been so successful people have enjoyed success. We have actually seen the number of students rise and we have seen the number of qualifications and pass rates rise. And so, people have realised that the approach that we have is quite successful and that motivates people to actually input more and more of this creative and innovative approach [an open learning system is at the heart of the new college orientation]. So, we have seen a gradually eroding of traditional ways of teaching – traditional, outmoded, didactic ways of teaching. We have seen much more introduction of creative ways of teaching, because people have recognised that it is been successful and those people get rewarded. (Vice Principal of FE College 8.)*

The other leader pointed out that his college existing structure had, amongst its objectives, facilitating creativity in the learning process, and he cited specific examples of how the structure had achieved this aim:

> *To the extent to which it encourages variety in terms of learning styles, in terms of the assessment of teaching is one in which we have set out to involve and consult the college staff. We certainly have set out to do that. (Principal of FE College 2.)*

Since the main purpose of the organisational structure is to ensure that a college provides 'the best possible learning opportunities for students', three principals predicted that in time their college structures would aid student creativity:

> *I think that the structure and the people working within that structure, if they are enabled themselves to feel more valued and that they are more valued, that they are*

trusted as they can be and as open as they can be, their differences can be challenged; the creativity is important. I think that in some way is transmitted to the students. (Principal of FE College 7.)

A leader admitted that his organisational structure has been neutral in terms of facilitating student creativity, while another leader gave a categorical 'no' to the question; he explained that his college has been preoccupied with other issues. He was, however, quick to add that that some elements of creativity might be taking place in the classroom:

I think the simple answer is no. I would like the structure to facilitate student creativity, but I think everybody is being so caught up with having to work through what we have to work through with – coping with expansion, coping with efficiency saving side-by-side with expansion; we are losing staff. The issue of creative delivery and nurturing in a broad sense is not occurring, but in the classroom, the element of that will be occurring on a daily basis. (Principal of SF College 1.)

The leader, however, admitted that the researcher's question was timely and that it has prompted his thoughts about the need to review the structure in the context of creativity in the learning process:

I have to say that if you hadn't come here I would not have thought about it (the need to review the structure). We have run the current structure for 4/5 years (and), it's time to re-consider whether it needs review and what would be the components of the review. One of the difficulties we face is that the last five years have been characterised by efficiency saving and we haven't stabilised yet. Maybe I'm asking for too much, but I wouldn't mind an element of (a) flexibility (b) better resourcing, which will then allow us to do more organic gardening rather than bailing out. The structure we have does not immediately lend itself to creativity, but I can see it's important.

One leader acknowledged the need to ensure that a college structure supports student creativity, but he was uncertain as to whether his college's existing structure is achieving such goals.

5.40 Creativity and college culture and ethos

What has emerged from the college leaders' perceptions of their college culture is that cultures in further education are many, variable and diverse – with different elements and different sub-elements, often with differing orientations:

> *I would say confident, sociable. I wouldn't say it (the culture) was permissive. I think it's open. I think it's aspirational. There are elements of tribalism in it in the sense that we have vocationalists and we have academics. We have business and we have social care and of course they don't always see the world in exactly the same way. [But] I think there is a strong collegiality in it. (Principal of FE College 2.)*

One leader in describing her college culture and ethos freely used words like democratic, participative, caring, supportive, committed. At the heart of college culture are the students who, aside from their academic pursuits, were encouraged to get involved in the wider college community:

> *The culture and ethos is about the students and the college working together in developing the college. Most people (visitors and inspectors) who come from different parts of the world, the impression they get is: first of all there is a very kind of busy friendly environment on the campuses. Secondly, if they speak to students about how involved the students are and how articulate they are in terms of their learning experience, they tend to be impressed at students' involvement. We have encouraged that kind of student involvement over the years and we still want to make it central to their college experience. (Acting Principal of FE College 4.)*

Where restructuring has been carried out or where the principal was relatively new, culture is said to be 'unsettling' or at best, changing. There is also a general recognition of the difficulties that may arise when trying to effect changes in college culture:

> *I think the culture is going through a period of change. I think when you get a change of leadership it takes some time for an old culture to adapt and to grow and to change. Although culture – old being prior to me taking over as leader – which is still very much there and which will probably always be there. Culturally and socially, the college's culture can't operate outside the college environment (located in a middle class region in Eastern England). There are huge tensions I think – class tensions, colour, gender issues as well – and a certain arrogance and complacency that permeates or derives from that kind of background. My leadership drives the culture in the college that I have been trying to create and our set of values is very firmly one which seeks to challenge some of the inevitable tensions that arise from that description that I have given you. The way we have chosen to try and do it is to have an explicit statement of value which places at the heart of the culture of the college, transparency, a willingness to challenge, diversity, valuing of difference and challenge where it does not occur and at the same time a willingness to strive for excellence and high quality in a non-elitist sense. The culture is, in a sense, on a journey towards greater openness, greater challenge, less complacency, greater trust and more genuine valuing of differences. It is a bit of an island in a fairly well ingrown sea of class prejudice. (Principal of FE College 7.)*

5.41 Leaders' personal development in creativity

As the college leaders are expected to foster student creativity, they were asked how they nurtured their own creativity. This question was as much about getting insight into the leaders' belief in creativity as about identifying nourishing agents of their own personal development in creativity. There were four ways in which the college leaders in the

survey nourished their creativity: through the stimulus they get from pressure of work; through leisure activities and outside interests; through engaging in creative activities such as problem-solving; and through reading (as many people do) to 'get new ideas'. What has emerged clearly from the interviews is that college leaders generally do not have enough time to nourish their creativity at work. It is also clear that the pressure of work (which is complemented by the inspiration they draw from colleagues on the senior management team) provides some nourishment for their creativity:

> *There is not very much time at all to nourish my creativity. But, of course one great power you do have as a principal is that you appoint senior staff. So you have to try and make sure that when you are looking for people you look for people who have a spark for creativity about the job. We have a number of people in the senior management positions like that in the college. (Principal of FE College 2.)*

Acting Principal of FE College 4:

> *We get a huge amount of stimulation from the pressing issues that we have to deal with and we do draw in people to help develop the college.*

Values and personal beliefs, such as spirituality, outside interests and hobbies are other sources of creative nourishment for a third of the leaders:

> *What a wonderful question to ask! I love my job, but it is not the most wonderful thing in my life and it is certainly not the only thing in my life. I feel I deprive myself if I don't have access to a whole range of activities that I consider to be creative and those range from enjoying my hobbies - music and going to the theatre, traditional kinds of creative expression - through to my own spiritual life. I am quite a deeply religious person and I am very much renewed spiritually, which is a form of creativity. So, I am renewed in my home life and in my leisure time. In my*

work time, I don't do enough sometimes to develop that creativity. (Principal of FE College 7.)

Principal of SF College 5:

It is very difficult to have the time on the job to nourish your creativity. When you become a principal and before that when you become a vice principal, you are really married to the job. It is a 24-hour job. I think if you don't get the stimulus from the job, you have to feed on that stimulus, because you haven't a lot of spare time outside it. Out of my normal year, I can honestly say that I probably have about five weeks holiday when I can say this is holiday. The rest of the time I may not be here but I am sitting somewhere working. What I try and do (in those five weeks) is to try finding a pleasure in other things - for me that is my garden. So, I have my stimulus, my creativity by growing plants and thinking about other plants that I might grow. I do need to have a break in order to hit the ground running again.

Also, traditional hobbies such as reading; new ones such as 'surfing' the Internet 'to get ideas', as well as natural curiosity 'to explore new ways of doing things' were cited by one leader as key nourishing agents of his creativity:

I constantly read. I always look for new ideas. I read a lot of books. I am always looking for new things - I look on the Internet, for instance. I look for smarter ways to work. Can we do what we did last year smarter and quicker? Can we help other people to work more efficiently, etc? For instance, I am currently looking at ways to free up teachers' time to be more creative. (Vice Principal of FE College 8.)

Another leader underlined the importance of curiosity to his development in creativity:

> *I am a person who wants to know why things are what they are. I am inclined not to stop asking that question until I get an explanation that satisfies me - that may not be necessarily creative, but in the process you come up with new avenue to answer the question. It (creativity) is an ability to make links which haven't been made before - as to where that ability comes from I don't know. Part of it might be training. (Principal of FE College 9.)*

The leaders in the study also find problem-solving a source of personal creative development.

Finally, it is clear from the interview findings that the college leaders were not particularly convinced of the benefits of attending outside courses and seminars as a means to develop their creativity:

> *We tend not to attend many outside courses, training, seminars, etc. because we find them (sometimes) not to be very relevant to what we need. We are very often disappointed. (Acting Principal of FE College 4.)*

But then, a customised training programme for leaders and the proposed Leadership and Management College for further education senior managers (DfES, 2002b) should go a long way to address concerns about the inadequacies in training and development programmes for executives in further education.

5.42 Conclusion

The foregoing interviews have provided insights into the leaders', managers', teachers' and students' conceptions of creativity and the role of college, curriculum and teachers in facilitating creativity in a further education context. Yet the interviews have also highlighted a number of issues, most notably constraints to facilitating creativity in post 16 (further) education. The following paragraphs discuss these issues.

5.43 DISCUSSION

5.44 Perceptions of creativity

The interview method is used in this study to supplement both the questionnaire and the classroom observation methods; it is also designed to elicit and explore answers to key research questions such as, What are leaders', managers', teachers' and students' perceptions of creativity? What are the roles of college, curriculum and teachers in facilitating student creativity? What factors promote or impede creativity in a further education context? The findings from this study are consistent with the researcher's expectation that interviewees will have some understanding of creativity. The leaders, the managers, the teachers and the students interviewed not only showed familiarity with the concept of creativity, their characterisation of creativity into the largely overlapping themes of product, process, personality and the environment accord significantly with the well established literature themes of creativity (see literature review; Heene, 1980 cited in Slabbert, 1994; Ogunleye, 2000; Cropley, 2001). The results also highlight a discourse (characterisation) of creativity, offered largely by the students but also their teachers. Among the terms are 'communication', 'excitement', 'enjoyment', 'interesting', 'friendship' and 'being individual' and 'fun learning'. The students' and the teachers' conceptions of creativity highlighted in this study accord significantly with those offered by primary pupils in Hammer (2000) and Woods and Jeffrey (2000) and by trainee schoolteachers in Diakidoy and Kanari (1999) and by trained schoolteachers in Fryer and Collings (1991). An insight provided by these results is that students and teachers in both schools and further education colleges have a clear understanding of the word creativity and that their conceptions of creativity are significantly similar.

5.45 College institutional variables and the extent to which they are guided or not guided by conceptions of creativity

The extent to which college institutional variables such as organisational/ management structure, culture, curriculum arrangements and teaching approaches are guided or not guided by the interviewees' [excluding the students'] conceptions of creativity were explored. By the leaders' account, organisational/management structures, albeit engineered by them, are not established with a view to fostering creativity in teaching and learning, but driven by certain internal and external exigencies. The curriculum managers, like the leaders, acknowledged the paucity of creativity-facilitating variables such as practical-based work in most programmes offered to students, but some claimed that an indirect link exists between the curriculum and student creativity. Despite placing their conceptions of creativity in the context of teaching and learning, the teachers admitted that their classroom teaching techniques/approaches are not driven by their views about creativity – due to a variety of reasons. These include the nature of the subject and the topic to be taught, the nature or aims of the session, the class or student group and the classroom environment. Other reasons include time, examination requirements and teacher's personal capacity. One teacher claimed that her teaching was always driven by her perception of creativity, but she did not explain her classroom practices/teaching approaches. In sum, what has emerged from the interviews is that institutional variables such as organisational/management structure and curriculum arrangements and teaching approaches are not driven by the interviewees' conceptions of creativity due to some perceived constraints. These findings will have implications for the government's rolling commitment to nurture creativity of young people in post-16 (further) education as set out in its recent white paper (see DCMS, 2001).

5.46 Role of college, curriculum and teachers in facilitating student creativity

Studies have shown that the college, curriculum and teachers play a pivotal role in facilitating creativity of students (Brown, 1968; Heist and Wilson, 1970; Jones, 1972; Ochse, 1990). The interviewees (leaders, managers and teachers) in this study all agreed that the institution, the curriculum and the teacher all have a role to play in developing student creativity. At the macro level, the leaders argued that student creative qualities could be nurtured and developed if colleges value creativity which is demonstrated by emphasising creative values in the mission or value statements with which all stakeholders in the college can positively identify. Following on from that, there will be a need for a college-wide policy that emphasises the development of creative thinking skills in classroom discourse. Creative thinking skills will enable students to respond to both familiar and unfamiliar situations in the classroom and beyond. At the micro level, the leaders believed that creativity could be encouraged if college policy (on classroom observations, for instance, as part of teacher professional development) emphasises strong student-teacher interaction. The leaders also recognised the need to 'smooth' students' transition in the college. Most students on 16-19 courses often come to college straight from school where teaching and learning techniques arguably encourage a dependency culture among pupils. Colleges therefore have a role to play in helping students to adjust and respond to a new teaching and learning environment that encourages independent learning and greater student responsibility.

There is a strong agreement among the curriculum managers interviewed in this study that the curriculum can act as a catalyst for promoting student creativity, but only within the broad framework of the qualification outcome. In other words, creativity can be

facilitated in the further education curriculum to the extent that the qualification framework allowed it. Given this limitation, therefore, it is contended that efforts to foster student creativity are best focused on the delivery of the curriculum, namely teachers' classroom behaviours and practices.

The teachers' acknowledgement of their role in facilitating student creativity is prefaced by a strong assertion that creativity is contingent on basic skills and knowledge, an assertion that accords with both theoretical and empirical conceptions on creativity (see Alamshah, 1972; Gardner, 1997; Weisberg, 1999; Nickerson, 1999; Boden, 2001). The teachers on the whole see their role as an 'encourager': encouraging students' enjoyment and motivation in the teaching and learning process; encouraging self-directed and independent learning; encouraging students to use original thoughts to promote their own ideas; encouraging students to take greater responsibility for their learning, and encouraging them to think more about their approach to work and to challenge their perceptions of the way they work. Other roles include imbuing students with right attitudes and raising their confidence; fostering students' curiosity and (divergent) thinking skills by leaving tasks and activities open-ended; and aiding knowledge application and transformation by putting learning into context and by connecting learning to real-world experience.

5.47 Criteria and evidence for a creative college, a creative curriculum and a creative lesson

The interviewees (excluding the students) offered a number of criteria by which a creative college, a creative curriculum and a creative lesson can be judged. The leaders' criteria for a creative college are diverse, but are all clustered around teaching and

learning, curriculum provision, student experiences, staff motivation and resources. These criteria are not new; they can, indeed, be used as criteria for any good college although the way in which these criteria will apply in a good and creative college (as defined by outcomes, inspection reports, reputation, etc.) will differ significantly from practices in a good, but non-creative college. The leaders' criteria in teaching and learning will include teachers' classroom behaviours and practices, namely mastering of subject matter, depth of teacher-student interaction and the extent to which teaching approaches encourage active involvement of students in classroom discourse.

The leaders will also examine curriculum provision and the extent to which it promotes flexibility and encourages innovation and the range of opportunities it offers to students. In their view, a creative college would offer a 'complete curriculum' where equal emphasis is given to curricular and extracurricular programmes, designed to produce 'well-rounded' students. Other criteria will require a college to have the 'right staff with the right attitude' and adequate teaching, learning and physical resources. More significantly, a creative college would look beyond students' current experiences and consider the 'long-term effects that college learning may have had on their lives' (vice principal of SF College 10). The checklists for evidencing a creative college, in the leaders' views, should include inspection of teaching and learning practices, curriculum arrangements, learning resources, as well as evaluation of key personnel such as the senior management team, to assess their general approach to problem solving.

A creative curriculum according to the FEU (1987, p.7) 'is not only concerned with transmission of accumulated knowledge, but also with generation which enables students to take initiative for their own self-development and acquire the skills, understanding and flexibility to handle new situations with confidence.' Expectedly, the

curriculum managers interviewed in this study rest their criteria for a creative curriculum on course content that allows or encourages flexibility and innovation in teaching and learning; a curriculum that is cognitively challenging and motivating to students; that is tailored to meet students' individual needs; that promotes independent learning; that emphasises application and transformation of knowledge; that offers a wide range of extra curricular programmes; and, above all, that has teachers as its linchpin. In the managers' views, checklists for evidencing a creative curriculum should include curriculum area inspections to check whether curriculum emphasises application of knowledge; classroom observations to ascertain the strength and depth of student-teacher interaction; and review of assessment methods to establish the extent to which students are given opportunity to express their creativity in coursework.

The teachers' criteria for a creative lesson focused on teachers' classroom behaviours and practices. In the teachers' views, a creative lesson should enable learners to gain insights into the issue which they need to explore and should encourage learners to communicate those insights. In general, teachers' criteria for a creative lesson are consistent with those of the curriculum managers - that lessons should provide opportunity for group work; and that lessons should emphasise knowledge application and transformation. A creative lesson can be evidenced by classroom observation; by reviewing teaching and learning methods; by reviewing students' coursework and assignments, and by interviewing students. Other checklists should include teachers' self-evaluation and reports, as well as what students do with the knowledge they have acquired post-16 (further) education.

5.48 Factors impeding creativity in a further education context

Constraints to facilitating student creativity in further education, as perceived by the interviewees - leaders, managers and teachers - are numerous, but can be divided into internal and external blocks. Internal blocks to creativity are more or less peculiar to the individual colleges while external blocks are universal and often cyclical in nature. The biggest external block to student creativity identified by the leaders – and cited by managers, teachers and students – are examination requirements and course specifications set down by the awarding bodies on behalf of the Qualifications and Curriculum Authority and the overriding need to prepare students for these examinations. Course specifications, especially in A level subject areas, are said to be too prescriptive, although there is a recognition that the new AS and A2 in Curriculum 2000 are more broad and thus offer room for flexibility in assessment. The leaders, managers and teachers interviewed broadly agreed that applied vocational qualifications (GNVQs/AVCEs) offer greater opportunity to students to express their creativity in coursework than do academic A level courses. This view is supported in Smith (1997) study of students' experiences on a GNVQ advanced business programme.

The leaders identified policy instability and sporadic reforms in further education since incorporation in 1993 as having adverse effects on their efforts to plan ahead and to innovate. They claimed that successive governments do not allow reforms of post-16 (further) education curriculum to bed down before new reforms are introduced. There is some validity in this claim. Significant shifts in policy emphasis in recent years include government targets on widening participation, student retention and achievement - all of which have implications for funding of further education colleges. There is a degree of

recognition among the leaders interviewed that these external prescriptions or constraints are cyclical and that what is required is creativity in the management of change process.

There are no strong convergent views on internal constraints to student creativity among the leaders, the curriculum managers and the teachers interviewed. Internal constraints cited by the interviewees are more or less peculiar to their individual institutions. This suggests that constraints such as low staff morale/turnover which prevents 'new people with fresh ideas from coming in', staffing arrangements, executive capacity, teaching and learning resources and sporadic teacher continuing professional and personal development can be action-planned and overcome in time. However, all the interviewees strongly agreed that lack of time constitutes a significant block to creativity in teaching and learning, but the way in which time affects their individual colleges differs significantly (see below).

At the micro level, there is not a single teacher who did not mention obstacles in their quest to be creative in lesson planning and delivery. But, blocks to creativity, from the point of view of the teachers, apply almost in equal proportion to both the teacher and the student and are best classified as teacher-constraints and student-constraints. The biggest student constraint, in the teachers' view, is the problem of basic skills and lack of prior appropriate knowledge, an issue raised by the Audit Commission (Audit Commission/Ofsted, 1993). There is a strong agreement among the teachers that a significant constraint to student creativity is the limited knowledge that many students bring into further education. In the teachers' view, students are generally not well grounded in basic skills (and generic skills such as thinking skills) upon which creativity can be developed. These problems, according to the teachers (which the students acknowledged in separate interviews with the researcher), are more profound among

students on vocational courses, many of whom are said to lack the confidence to do tasks such as research and writing assignments. (See Weisberg, 1999 and Boden, 2001, for discussions on knowledge and creativity.)

Time, from the teachers' point of view (which the students also confirmed), is a significant constraint to student creativity – examinations are usually held after 3 terms, 4 terms, and 6 terms – and this makes it difficult for students to have time for any other activity aside from targeting examinations. The implication is that students developed open resistance to materials that are not in the syllabus and most often refused to learn what they think might not be examined. Another aspect of the time constraint cited by the teachers is the systematic reduction in contact time over the years in further education. In some colleges an average A level or GNVQ student will probably have no more than 15-17 hours of direct contact per week with his/her tutor (teacher), even though many teachers are required to teach up to 24 hours per week. Although it is not clear from the teachers' comments how a reduced contact time impedes or promotes creativity of students, a study by Morse *et el* (2001) found that to some extent, time allowed for a given task will influence certain creative attributes such as originality and flexibility.

Inertia and proclivity for simple tasks and certain students' behaviours and practices such as 'reluctance' to take responsibility for learning as well as a 'nonchalant attitude' towards extracurricular programmes (this is cited by curriculum managers and confirmed by the students) are impediments to developing student creativity. In some cases, the teachers posited that student attitude, motivation, peer pressure, insecurity and low-self confidence coupled with 'fear of being told off' and 'prescriptive' academic syllabuses often explain why some students who expressed their creativity in written work

sometimes 'go apologetic for their originality' as one teacher said. The perception that students would apologise for their creative endeavours appears to be common and not peculiar to further education. A study by Freeman (1983) cited in Nikerson (1999) found similar dispositions among students in the schools sector in the United States.

Other sundry and largely solvable constraints to student creativity include inadequate or non-existent transition arrangements from school to college; the 'disproportional' amount of time many students spend on (largely) non-relevant part-time jobs; college accommodation problems (not having a room to engage in discussion or to do their work, aside from the library). Remarkably, the students' views of constraints to developing their creativity accord significantly with those of their teachers, managers and leaders. Among the constraints cited by the students are syllabus requirements, 'too much coursework that makes you not want to come back', learning resources and curriculum arrangements of certain academic courses.

Time is also a universal teacher constraint found in this study (as it is found in studies carried out in the schools sector by Woods, 1990; Campbell, 1992; Campbell, *et el,* 1993 cited in Cockburn, 1994; Hargreaves, 1994). The way in which teachers are held back by lack of time include: 'inadequate' time to plan, prepare, and organise resources for lessons; 'not much' time to build creative exercises into lessons; limited 'time to relax' in between lessons; and 'inadequate' time to develop their own creativity. But, the amount of time they would consider adequate to plan and deliver lessons creatively it is not discernible from the teachers' observation. (Gore and Dowd (1999) have shown that the twin-problem of time and paperwork may be ameliorated if teachers are more better organised.)

The nature of the qualifications – e.g. academic, vocational and applied vocational – poses different constraints to the teachers. The teachers asserted that applied vocational courses such as AVCE and GNVQ lend themselves to creativity, compared to academic courses such as A levels (although the students are less confident and able to exercise it). This view is consistent with findings from the classroom observations discussed in the last section and in Smith (1997) study of students' experiences on GNVQ advanced business programme.

Limited learning resources (e.g. 'insufficient' number of computers), teaching aids and teaching materials (e.g. Overhead Projector and acetates) that might or might not be in working condition or that might not always be available; and the arrangements and administration of colleges' reprographic facilities, are all perceived as blocks to creativity. Other constraints include 'poor' curriculum planning and arrangements, time tabling, large class sizes which makes differentiated learning difficult and the added 'difficulty in keeping an eye on the students who might be drifting off'. Mental tiredness, 'voluminous' paperwork, and 'unproductive' curriculum meetings are all said to constitute a 'drain' on teachers, as well as impact their ability to deliver lessons creatively. A teacher, however, disagreed that any of the above, aside from time, constitute real constraints to his creativity. He argued that some elements of constraints in a setting like further education are inherent and can provide stimulants to creativity.

5.49 Creativity and college institutional variables

College institutional variables such as management/organisational structure, culture and ethos and the extent to which these variables support or impede student creativity were

explored with the leaders. The leaders were emphatic in their comments that their colleges' management/organisational structures are not set up or restructured primarily to foster creativity in teaching and learning. They were set up instead to improve the management and administration of the curriculum and to respond to external prescriptions such as the Learning and Skills Council's funding targets and the new Labour government's widening participation agenda. The leaders, therefore, were not able to fathom the relationships between creativity and their colleges' organisational structures. What also emerged from their interviews are the post-incorporation management/organisational structures. The two types of structures are flat structure and hierarchical structure. Each of these structures is divided into a number of key functions, depending on the size of the college and other factors, which include Curriculum, Quality Control, Human Resources and Administration, Finance, IT and Student Services. Expectedly, Curriculum and the management staff responsible share a greater responsibility in the new (post-incorporation) dispensation. Nine of the ten leaders interviewed fully engineered or partly engineered their organisational structures and one inherited hers. This study on the whole has highlighted arguably a general paucity of institutional appetite for creativity in teaching and learning in further education (although evidence exists of some commitment to creativity principles).

What has also emerged from the current study is that other variables such as culture and ethos in further education are diverse and multifarious, often with differing orientations. The leaders acknowledged that, due largely to the rolling reforms in the sector and the leadership style, college cultures are changing, and, although it has a role to play in fostering creativity of students, the extent to which the culture impacts on creativity is difficult to quantify.

5.50 Leaders', curriculum managers' and teachers' nourishment and personal development in creativity

Finally, the interviews provided contrasting insights into how the college leaders, managers and the teachers nourish their creativity. What has emerged is that the leaders appear to draw creative inspiration from the stimulus of work, while the managers and the teachers find creative inspiration largely from outside the college. The leaders claimed they nourish their creativity through the stimulus they get from pressure of work and by engaging in creative activities such as problem solving. Even though the leaders were not asked to rate these activities in order of importance, it is clear that the pressure of work and the process of managing change provide the greatest stimulants for their creativity. Traditional hobbies and interests such as reading and gardening, spirituality, and new interests such as 'surfing' the Internet 'to get ideas' featured in the leaders' list of creativity-nourishing agents.

The leaders' creativity-nourishing agents contrast sharply with those of the curriculum managers, whose outside interests and hobbies provide the greater stimulants for creativity. Arts is confirmed as a popular creativity-nourishing agent for a number of the curriculum managers, followed closely by professional networking outside the college.

The teachers interviewed shared creativity-nourishing agents with the curriculum managers, which include networking and professional contacts with colleagues outside the college, general staff development programmes such as classroom observations, in-house training and outside courses, conferences, seminars, lectures and talks. Other teachers' creativity-nourishing agents include 'surfing' the Internet for ideas and feeding off lesson ideas from colleagues, maintaining a positive mental attitude and approach to

work, interest in subject specialism, writing assignments, self-evaluation and reviews of teaching methods and practices. Others are feeding on students' ideas in the classroom, and maintaining outside interests and hobbies. Two teachers said they do not have the time to nourish their creativity, due to extra management responsibility on top of their teaching load. This has highlighted the need to balance teaching load and curriculum duty of managers in further education.

5.51 Conclusion

The foregoing discussion has highlighted, among other things, beliefs about creativity among a number of stakeholders (students, teachers, managers and leaders) in further education and factors impeding creativity in curriculum contents and processes. The next chapter presents two North American case studies institutions where creativity is promoted in curriculum content and processes in a context similar to further education in England.

CHAPTER SIX

6.0 RESULTS

6.1 Case Studies

6.2 Introduction

Two of the three aims of this study are to investigate curriculum arrangements conducive to fostering creativity in post-16 (further) education institutions and classrooms and to offer/develop models of good practice for nurturing creativity in a further education context (see, also, chapter eight). In a further attempt to achieve pursue aims, this chapter presents the results of the case studies carried out in North America in spring 2000. The two case studies are descriptive (see Yin, 1993) and the criteria for their selection are based on those suggested by Yin (1993, p.34), namely the relevance of the cases to the research aims, the relevance of topic, and the issues of feasibility and access (see methodological framework, paragraph 2.18, in chapter two).

This report followed one week of intensive and rigorous data collection from the staff and the administrators of the Reynolds High School and the Mt. Hood Community College, in USA, in May 2000. Students, teachers and administrators were interviewed,

and a number of classrooms were observed. The two case studies are neither *the* model of good practice nor presented as *the* means to foster creativity in teaching and learning. The two systems investigated are among a number of models of curriculum arrangements and delivery that have been introduced more or less successfully across the United States (see, for instance, Parnell, 1997). Each of these two models has its weaknesses. For instance, the Reynolds High School (RHS) curriculum structure is said to 'force' students to make career choices 'too early' in their course (Stern, 2001), and there are issues regarding the 'pressure to maintain innovation' on the staff and the administrators alike. More so, the RHS model is still in its infancy (set up five years ago) and it needs to be comprehensively researched in order to provide a definite evaluation of its success. Nonetheless, an appraisal of schools published annually by the Oregon Department of Education (Schools Report Card, 2002) gave Reynolds an overall 'satisfactory' rating out of five possible categories, namely 'exceptional', 'strong', 'satisfactory', 'low', and 'unacceptable'. This rating is based on student performance, student behaviour and school characteristics. Reynolds received a 'strong' rating in student behaviour (attendance and dropout) and 'exceptional' rating in school characteristics (percent of students taking state tests). Mt. Hood Community College as an institution is self-critical and has accepted recommendations in a recent report by the Commission on Colleges of the Northwest Association of Schools and Colleges (MHCC Accreditation focus report, 1999). The Commission found evidence of inconsistency and unevenness in educational programme assessments, staff evaluation programme, and inconsistency of mission statement and strategic plans. Also, culture at the MHCC in the recent years can be described as transitional, due to a high staff turnover (MHCC Accreditation focus report, 1999). Although this increase in MHCC staff turnover was caused largely by a programme of incentive for early retirement offered to public

employees by the State of Oregon in the late 1990s, its implications in terms of organisational culture and ethos are palpable.

The curriculum models (arrangements and delivery) of the two schools that are presented below are offered as examples of good practice, as well as models that have potential practical application in schools sixth form, sixth form colleges and general further education colleges in England vis-a-vis the government's new policy agenda on 14-19 provision (DfES, 2002).

6.3 Case Study I - Mt. Hood Community College, Gresham, OR

> *I think the idea of creativity becomes probably a way of making students feel that they have contributed something to the understanding of mathematics, contributed to the understanding of social sciences, etc. I do think that it is very important to make sure that students understand practical application of knowledge (Teacher of Creative Arts, MHCC)*

6.4 Brief background history

6.5 *Values and vision rooted in nurturing student creativity*

Community colleges in the United States share a number of characteristics with further education colleges in the United kingdom (DES, 1990). Founded in 1966, Mt. Hood Community College (MHCC) is a comprehensive two-year community college with a national reputation for academic excellence. The college is also highly rated by the local community (MHCC, 2002). Located in Gresham, in the State of Oregon, MHCC is the fourth largest community college in the state in terms of student FTE, enrolling about 27,000 students a year; indeed, the college experienced its highest enrolment ever in fall

term of 2001, recording a 7.2 per cent increase over fall of 2000 (MHCC, 2002). It has an annual budget of $90 million sourced from local property tax (19 per cent), state reimbursement (55 per cent) and student tuition fees (26 per cent). MHCC is accredited by the Northwest Association of Schools and Colleges and serves as an approved training centre for a number of institutions and professional bodies. The college has a vision to be a teaching and learning community where students will, among other things, be 'asked to think creatively, communicate effectively, and master the skills they will need to be successful in a changing world' (MHCC Catalogue, 1999-2000, p.3). The college core values acronym is IRIS, integrity, respect, innovation and service. With respect to innovation, the college seeks to 'promote creativity and flexibility in all aspects of the MHCC experience' (MHCC 2010 Institutional Master Plan, 2000, p.14). The college, which is named after a major local landmark, Mount Hood, serves a district population of over 216,000. The college employs over 1,300 teachers, administrators and support staff and is headed by a president, who is assisted by four vice presidents. The college recently proposed a $68.4 million bond levy - to be voted upon by the local community in May 2002 as part of a developmental effort to upgrade, improve and build new facilities. (The MHCC bond measure was defeated in the May 2002 (local) elections and the college has since announced plans to press ahead with its development efforts.)

6.6 Curriculum provision and structure

The college offers three associate degrees in Arts (AAS), General Studies (AGS) and Oregon Transfer (AA-OT); the last award shares a number of similarities with the newly introduced foundation degrees in further and higher education in the UK. Students can choose from over 120 curriculum programmes, which include over 60 two-year professional technical career courses and over 60 courses that will enable students to

transfer to a four-year college (university), after completing a two-year associate degree programme. MHCC curriculum emphases link between classroom learning and real world application, through internship, work placement and cooperative work. The college also maintains an extensive collaborative work with local businesses and other organisations; and it has, over the years, developed curriculum that meets the needs of its business partners:

> *We have developed at least six industry-specific curricular where we have a unique curriculum for the microchip industry, we have a unique curriculum for local machinist, we have a unique curriculum for a printing company, and we have a unique curriculum for a local emergency corporation (an ambulance service). In addition, we provide training for all the DaimlerChrysler Corporation and Ford Motors mechanics in about three states. In many ways, we are responding to direct demands from the private sector and that is how we make certain that what is being taught is in direct response to what the industry is looking for (President, MHCC.)*

One of MHCC new collaborative efforts, at the time of writing, resulted in the launch of a 'University Centre' on its site, where students on certain courses may stay on for a further two years to complete a four-year degree without having to change college and without having to go through admission formalities. The partner institution in the venture is the University of Oregon.

6.7 Student success

Student achievement at MHCC was underlined in November 2000 when the entire class of the 2000 nursing programme passed the nationwide licensing examination for nurses. A recent survey of MHCC graduates showed 70 per cent of professional technical graduates are employed or continuing their education in fields relevant to their training

(MHCC Institutional Effectiveness Report, 1999) and courses such as Allied Health and Business and computer enjoy post-programme employment rates of 88 per cent and 82 per cent respectively, compared to pre-programme rates of 68 per cent and 57 per cent respectively (RMC Research, 1999a). Also, 90 per cent of transfer students to the Oregon University System achieved a required minimum of 2.00 points. A survey of student opinion of the college indicated an overall satisfaction rating of "excellent/good" (Institutional Effectiveness Report, 1999).

6.8 College role in facilitating student creativity

6.8a Creativity in teaching and learning

The college prides itself as a first-class institution and an educational leader and creativity is promoted in both the way the teachers deliver the product (course content) and in students' learning experiences. The college president explained:

> *Here we are using what in the old days were referred to as team teaching and cooperative learning experiences, whereby you and I may collaborate to teach, you teach composition class and I would teach a history class and we combine course contents and work with students as a group and so they glean your expertise and my expertise on our respective subject matters. And within the class we also have learning communities where a group of 5/6 students may get together and develop a thesis or topic as part of that course delivery. With our web courses – for those that have been developed – we are finding that the teachers are playing more and more the role of a facilitator to encourage and enhance student learning. So that students learn through these learning communities and by communicating with each other over the Internet where a student may pose the question and then he may receive 5/6 responses from the fellow students and that exchange between students is also facilitating the learning experience and learning opportunities.*

On many professional courses, where opportunities exist for cooperative internship, students are expected to 'take the theories that are presented in the classroom and then

begin to apply some of that theory in the workplace with their fellow worker and they bring that experience back into the classroom,' said the president.

Eight teachers, including two deans interviewed, (five of whose classes were observed), gave insights into how, individually, they nurture student creativity in the teaching process. The common theme of their responses is that students are more likely to be motivated and engaged in learning, and more so, express their creativity if lessons are made real and geared towards practical application; and if students see the value of what they are doing and see some success at some point of their learning. In other words, students will 'connect' to learning if lessons are tied with 'tangibles (real life situations), not abstracts':

> *When I was teaching K12 music, I would set aside time to talk to students on how it is like to be real musicians in certain situations, we found that students really turned on to that. And then we made a conscious effort to put (classroom) learning into practice – we did things like rehearsal. So there is relevance and the students can see relevancy in what they are doing and seek to express their creativity in their work. (Dean, Communication, Performing, Visual and Arts.)*

Teacher of English Composition:

> *If I want students to think well and write well I've got to give them something worthy to write about and something worthy to think about. If it is something that they have a personal interest or stake in or something that is controversial enough that they can get excited about it, that seems to get them moving in the direction where they will examine the issues very, very carefully and then write much better about it.*

Teacher and theatre director:

> *I try to invite outside experts to come in after covering a unit and they (students) would do a mock audition for these directors from theatre scene and then get the feedback from them*

and hopefully the feedback they get supports what I have been telling them and then encourage them the next time to take what I told them in class to act and try a different approach (possibly in different context). I really have tried in theatre to give them as many authentic real-life experiences as possible. It is not just talking about theatre, but living and doing the theatre.

Teacher of Creative Arts:

Because I teach students who are not arts majors, I have to teach a couple of things first – and that is to let go and to play without a concern for the result (that is, to focus on creative process, initially) and that is probably the most interesting things from students who are not used to studying art, is to learn how to feel safe without rules. And being safe without rules meant that you have to have a certain kind of self-discipline.

Teacher of Intercultural Communication:

One of the things that I do is to give them real-world problems that they can apply their creativity to. It might be an assignment that you (the researcher) saw in your lesson observation, where students were presented with the roles of two great Black leaders and were expected to pick up the best of both, rather than say 'he is bad, he is good'. And they did. And I demanded that they had to be creative; they had facts I supplied them with it and which they have to apply to explore real-life scenarios, which is where creativity really comes in.

Teacher of Science (Physiology and Anatomy):

I think you have to help students to see where they are not applying what they can do – you have to somehow model to them what they could be doing differently. So, I try to do study sessions, open lab sessions, I try to get them to my office and do test diagnosis sessions. Say, for instance, if they don't do well as they should in their test, they come to my office with their notes and I try to make them see where they missed on the question.

Students interviewed during the researcher's visit to MHCC agreed with the teachers about what engages them in learning. More so, a recent survey on student satisfaction

relative to the college environmental factors gave highest ratings (1 for excellent and 5 for very poor) to the quality of instruction in their subject major – a mean rating of 1.72. Other variables such as the attitude of teachers towards students; the college in general and the challenge of programme of study, received mean ratings of 1.82, 1.82 and 1.96, respectively (RMC Research, 1999b)

6.8b Teachers' professional development in creativity

The college reputation for academic excellence is underpinned by the staff commitment to continuing professional development and teaching excellence, which is facilitated by the Teaching and Learning Cooperative (TLC). The TLC is an innovative scheme established in 1995 to promote student success 'by fostering teaching excellence.' Set up and directed by teachers (but supported by the managers), TLC main goals are to 'encourage innovative instructional strategies in the classroom' as well as to 'stimulate the development of and use of active teaching techniques that incorporate adult learning strategies, integrated instruction, cooperative learning, critical thinking and learning-to-learn principles' (TLC Grant Document, 1999). The centre also facilitates sharing of good practice among teachers, as the TLC co-ordinator explained:

> *We do things like (award) Innovation in Teaching grants, we sponsor various kinds of presentations, we write-up various topics in a newsletter, we send teachers to local conferences – various things to support their efforts. Some of these teachers are actually applying for grants to enhance their individual college class. We especially try to award grants on things that have application across the campus, because there is a body of money that is already available for conferences and subject matter. So we are trying to improve teaching process.*

The TLC co-ordinator suggested that the Centre is not in any way constrained by financial resources:

I think we have enough money really. We can always do with more, but I don't think that (money) is (currently) a limiting factor. I think it is more of changing the way the evaluation system works that more people are actively pursuing improvement in their teaching practices/approaches.

The TLC Innovation in Teaching grants attract cash awards that range from $500 to $1,000 and are open to any full-time teacher or any part-time teacher who partners with a full-time colleague. A key requirement is that a grant recipient undertakes to share the research outcome (good practice) with the college community through staff training, focus group or through one-to-one consultation. The centre also extends its expertise to local colleges and high schools, by inviting their teachers to attend sessions designed to foster interactions between their institutions. The TLC has recently designed a new system to evaluate teachers' work as part of an effort to standardise evaluation procedures across the college. The new system is being piloted at the time of writing in Spring through Winter 2001.

One thing you may have got from talking to faculty members (teachers) is that there is a deep commitment here for teaching and learning. As a manager (a vice president), I found opportunities, I found money to send them (teachers) to workshop, I help them to get money to get the TLC going, I help them to locate the equipment, etc. I can't teach creativity; all I can do is to allow conditions so that creativity can happen. (Vice President, Instruction.)

6.9 Student Organisations and creative extra/co-curricular activities

MHCC students can hardly get bored on college campus! The college has a very active and vibrant student body – Associated Student Government (ASG), which manages $0.4 million in student fee budget and provides opportunity for students to build/hone their leadership skills. Additionally, there are over 30 (arguably) active special interest organisations/clubs affiliated to the ASG. Student organisations include Student Activity

Board (SAB), which takes responsibility for college events such as new student orientation and health – the latter involves assisting in blood drives, education and preventive activities on alcohol and drug abuse. Another student organisation is MHCC Cooperation Club, which joins students together – via mutual encouragement, activities and open discussion – in a common search for success. To encourage wider participation, SAB students can earn up to two social science credits in return for their efforts; students can also earn 'wellness bucks' for participating in a personal health programme and at various campus activities (The Inside Track, 2000). A visit to the Wellness Bucks Auction can earn a student up to 20 'bucks', which can be redeemed by working out, yoga, quitting smoking, watching a favourite movie, or by 'just relaxing on the couch and eating some fat free popcorn' (The Inside Track, 2000, p.1). The student body also publishes a range of publications including the fiercely independent, award-winning weekly tabloid – *The Advocate*; *Venture*, a periodic literary magazine, and *Perceptions*, which specialises in poetry and visual arts. These publications give student writers hands-on experience in every aspect of newspaper/magazine production and publishing. Students can also get involved in 24-hour-a-day college licensed and operated radio station, KMHD 89.1, a highly rated jazz station, with a listening audience of 79,000 people; and KD0X-X58 student radio. MCTV, a non-profit community television station also operates from the college campus. Indeed, the college 212-acre main campus was a beehive of activities during the researcher's visit:

> *There is always something going on here – there are arts shows, there is music, there is sport; there is a radio and a television station. We are host to annual community festivals and a renowned international festival of jazz. We have a beauty salon – you can get a haircut and shave; we have a gym where you can work out. We have a day care centre where people (staff, students and others) drop off their kids and go about their business; if you die you can leave your body for science. It is like a little village around here, and I think that is one exciting thing about the college. (Vice President, Instruction.)*

6.10 Institutional Research

Like many further education colleges in England and Wales, MHCC is data driven and institutional research is a key aspect of the college activities. The college research effort is centralised and oversees by a specialist office – Research and Planning – headed by a research director, an MHCC veteran with 25 years of postdoctoral experience:

> *A big reason for the development of such offices is state and federal (governments) data reporting requirement. Over time, however, R&P Offices have taken on additional functions in the area of student outcomes, assessment, (research and programme reviews), etc. So, much of the work in the Research and Planning office is in response to the needs of the President for information to support decision making, budget allocations, planning decisions, etc. R&P Office also carry out research into teaching and learning improvement at the college in the form of student outcomes, assessment and programme review. (Director, Research and Planning, MHCC.)*

The R & P Office eliminates the problems of institutional research capacity, something of an issue in further education in England. It also ensures that policies are based on research evidence. The R & P Office budget is under 1 per cent of the college total budget, and the research director reports to the President.

6.11 Case Study II -Reynolds High School, Oregon, USA

We do not personalise programmes; we personalise each student's learning experience
Principal, Reynolds High School.

6.12 Brief background history

Reynolds High School is a comprehensive school, which offers curriculum provision for 14-18 year-olds, similar to curriculum provision in Year 10, Year 11, Year 12 and Year 13 in English schools and Year 12 and 13 in sixth form colleges and general further education colleges. Located in Troutdale, in the State of Oregon, it is the only high school in the Reynolds School District, which include 3 middle and 10 elementary schools. Reynolds serves all the 13 schools and currently has a student population of 2,300 – an increase of 13 percent since the current school organisational structure was introduced in 1996. Reynolds is today the largest (most populated) high school in Oregon. In 2000, the school was awarded 'New American High School' by the US Department of Education. 'New American High Schools' are schools where all the students are expected to meet both challenging academic standards and acquire life skills in communication, problem-solving (a key element of creativity), information technology and technical skills. Reynolds is one of only three high schools in Oregon to have won the award. The school, which includes a specialist Natural Resources Academy, has 106 teachers, 57 per cent of whom hold a master's degree or higher on top of teaching qualification, and is headed by a principal who is supported by four assistant principals. Approximately 42 per cent of the students are eligible for free or reduced price lunch.

6.13 Curriculum provision and structure

Reynolds' curriculum structure, known as the career pathway system, was introduced in 1996 following a reform of the curriculum provision and house organisation in the school. The career pathway system is designed to get every student on a career path after high school. The main thrust of the new curriculum system is a 'contextual learning model' which is designed to structure learning around careers and students' interests, as well as to link classroom learning to students' real life experience (Parnell, 1997; Olczak and Sessler, 2000). An important aim of the curriculum reform is to raise students' academic standards, achievement and expectations. At the base of such expectations is student creativity:

> *I expect every student to bring their interest, attitude and their creativity and to share that with the school so we can find the best way to teach them the skills they need (Principal, Reynolds High School.)*

The curriculum offers three career pathways for students – they are: Business and Management Systems, Arts, Communication, Health and Human Resource Systems, and Industrial, Engineering and Natural Resource Systems. The school offers 44 career majors and 46 courses for grades 9 to 12 (Years 10 to 13 in England). A career pathway has a twin objective – to meet students' academic goals and as well as their career interest and expectations. Reynolds' curriculum structure rests partly on the premise that students learn best or that they are more likely to engage in learning if learning is made relevant to their lives. The career pathways, therefore, form the bedrock of the student's learning

experience at the school. Every student, upon enrolment at age 14, will develop an academic career plan that will cover his or her four-year in the high school.

Students will take a 'focus' class where they learn how to research career and other post-high school opportunities. The school has over 1200 job placements in its database, which enable students to 'experiment,' to inform and to avail themselves opportunities in different career fields and professions before they consider or decide on a post-high school education, training, or career. Students can choose from a list of 44 pathway majors that the school offers:

> *One of the foundations of our programmes is that students need to see a variety of experiences before they can pick one or move to one or gravitate towards one. So we are trying to build those foundations for them. (Principal, Reynolds High School.)*

The curriculum is also flexible to enable students to change their mind on a particular career choice – since every student is assigned a counsellor with whom s/he meets regularly to discuss and review progress. Academic and career plans can be fine-tuned or refined, if both the learner and the counsellor so agree. An important source of documentation for student achievement – and a prerequisite for certain programmes – is a career folder, which every student will develop and maintain. Students will build up a portfolio over their period of study in the school. At the end of the high school they will have a senior portfolio that documents and expresses all that they have accomplished – it will include documentations of students' academic skills and samples of student work and career skills; letters of references from some of the work they have done; and documentations on where they plan to go.

6.14 Tutorial structure and student grouping

Reynolds' learning environment is structured and organised around four learning 'houses', named after the surrounding landmarks. The houses are mixed across pathways. An important aim of the house organisation is 'to provide structure by which teachers teach and students learn' (Reynolds Time tracker, 1999/00, p.4) and to enable teachers to track students more closely. Each house is charged with the responsibility to develop instructional strategies that will be used by teachers in core curriculum subjects of English, social studies, mathematics, science, Wellness, and focus – all of which are taken by all 9th grade students. Additionally, roles of the house include: personalising individual students' learning experience, assisting the individual students to develop and achieve his or her academic and career goals; more importantly, integrating classroom instruction to make links between learning and the real world application (Reynolds Career Pathways of Studies, 2000/01, p4).

Each year, some 140 new students are assigned to each house and will all share a teacher in key subjects such as English and Maths. Each house is made up of teachers and counsellors and is headed by an assistant principal. Teachers from each house meet two times a week to discuss individual student progress; house administrators also meet regularly to review and evaluate operational progress. Their house grouping throughout their four years in the school identifies students, 'as they move from grade 10 to 11 and make career pathway choices, their academic programme will follow those decisions.' (Reynolds Time Tracker, 1999/00, p4). The students spend the last two years on their major and, at the end of grade 12, move on to higher education (i.e. to university or to

community college for their Associate Degree) or to technical school. By then 'they have the advantage – they know what they are doing, they know how to do it, they have been doing it, they have been practising it, they have taken fundamental courses in it,' said Reynolds' Principal.

6.15 Curriculum delivery and arrangements

In terms of the curriculum delivery and scheduling (timetabling), the overriding consideration is time, adequate time for teachers to work together on integrated projects; time to deal with learning problems of individual students, and time to manage behaviour better:

> *Why do we integrate curriculum? The reason why we believe that integration is so good as a tool is because in the traditional classroom you ask a student to learn a particular discipline – whether it be science or social studies or mathematics – many times they don't know how that applies in the real world. It is too abstract for students because they don't have many experiences, they have never seen it. But when you integrate things you show them that there is a connection between what they are studying in English – whether it is about writing a particular thing on science – and the science class they are studying. Then they begin to get a little understanding about why they need to study these things in science and in mathematics. (Teacher of English, Reynolds' Natural Resources Academy.)*

Scheduling is also designed to allow students adequate time to think; more time to do their work; more time to research/explore areas of their own career interests before they are able to select a career major that most interested them:

Another goal is to set up a schedule to allow a variety of time assignments so that in certain programmes, if the nature of the programme involves the need for longer learning experiences, we can build that into the schedule. If a particular programme will work better in a 86 or 90-minute period, we do that instead of 40 minutes. So the schedule has to be designed to allow that to happen. (Assistant Principal (Scheduling), Reynolds High School.)

Reynolds daily class timetables/schedules start earlier than those of many English schools and colleges. A School day starts from 7.15 (period 0) till 4.30 pm (period 9).

6.16 Assessment/nurturing student creativity

Assessment at the school takes three forms – through formal external tests/examinations, criterion referencing and project work. Where appropriate, students will be expected to meet strict national, state and local skill standards during their four-years in the high school. For instance, the State of Oregon requires every student, during their four-year high school period, to earn a Certificate of Initial Mastery (CIM) and Certificate of Advanced Mastery (CAM) after taking state tests (and produce work samples with a minimum score of 4 out of 6) in English, mathematics, sciences; the social sciences, which include history, geography, economics and civics; the arts and second languages, which are all pitched at grade 10 and grade 12 performance standards respectively. Project work is an important means through which the school nurtures and fosters student creativity:

We don't require that all students are doing the same thing – they all have different projects. In every kind of assignment that we create we try to find different ways to satisfy that assignment (Teacher of English, RHS).

Teacher of Hospitality and Home Economics:

> *I think one thing that makes it (instructional technique) pretty easy is that the students here see children. They see the point of doing the lessons. If we are talking about strengthening finger muscles, etc, they can see how it relates to the real life. Students are always kind of reminded that it is a real pre-school, it is not pretend, and it is just like (any other) workplace. So, it is connected and I think the students know it is connected.*

Teacher of Hotel and Catering:

> *It (instructional technique) all relates to material we use. I used a variety of booklets, meeting and convention planning booklet. I get every package from all the hotels I can possible get and I do on a timely basis – any time we are doing a unit more letters go out. If you open convention booklet from Las Vegas, etc, you make it (lesson) very real, better than if I were just to give them a piece of paper and say here is how they do it, it is not real. I got the entire whole room back there full of materials, newspapers, weekly magazines, etc.*

Students' feedback about their learning experiences was very positive, describing their experiences variously as 'great', 'cool', 'fun', 'good'. They were particularly pleased at the freedom to choose their own project and opportunities to do 'something different every day', as well as the opportunity to apply classroom knowledge to real life projects, in a variety of settings:

> *I like it here (at Reynolds' Natural Resources Academy). I would not have been here if I had to come here every day to do the same thing! (Student of Horticultural Science.)*

6.17 Student retention and achievement

Student achievement has consistently improved since the school was reformed in 1996. Available data covering the first three years of the reform - from 1997 to 1999 show a marked improvement in grade 10 student achievement in key CIM subject areas of English (Writing and Reading), Maths (problem-solving and multiple choice). In 1999, 81 per cent and 61 per cent of 10th grade students met CIM standards in English (Writing and reading), compared with 72 per cent and 52 per cent respectively for state-wide average; 52 per cent of the students met CIM standards in maths (problem-solving), compared with 50 per cent state-wide average. A recent analysis of test scores in English (reading) and Maths in 1999 - 2000 by *The Oregonian*, a respected newspaper in the state, put Reynolds on top of the league table among local high schools (Stern, 2001). *The Oregonian* analysis used weighting scores that measured high school achievement relative to education levels of parents and student poverty rates. Reynolds required its students to achieve 27 credits to graduate, compared to 24 credits, the 'norm' for many high schools in the state.

Daily attendance from 1997 to 1999 averaged 92.5 per cent, while drop-out rate has been consistently falling - drop-out rate of 7.2 per cent in 1996-97 fell to 5.7 per cent and 5.4 per cent in 1998-99 and 1999-2000, respectively (Olczak and Sessler, 2000; Oregon State Schools Report Card, 2001):

> *The issue of retention is a problem in the United States in some areas, but not so much here. We believe that if students enjoy what they are doing and find meaning in their lives with the thing they are doing they won't leave. They would leave if they see absolutely no relationship between their classes and what it means, and how to use it, and what to do with it. So, in this school we have seen drop out rate go down successively in the past few*

years because students want to be where they are doing something they want to do and if we can find the right connection so that students see relationship between what they are learning and what they want to do and what they like and we blend the two that students want to come. And they come. Why our students are staying long is that we didn't personalise programmes. We personalise each student learning experience, so they have different requirements depending on what they are in. All learners are not the same so why would the requirements be exactly the same for every student? (Principal, RHS.)

Teacher of Horticulture:

> *Students will leave the course if they can't see the relevancy of why they are doing what they are doing, and quite often, to be honest, they are right. Students will leave if the curriculum expectation is not relevant to their lives.*

6.18 Productive collaborative partnership

A key aspect of Reynolds' successful career pathways is its collaborative partnership with lower-level (middle and elementary) schools, the businesses and the higher education providers in the state:

> *I don't think you can ask a student at 15 years old 'ok, pick your career for the rest of your life,' if they haven't been thinking about it and looking at different things when they were 10 and 11 and 12. (Assistant Principal (Scheduling), Reynolds High School.)*

In devising certain curriculum programmes, a team of specialists from relevant curriculum areas from the school, higher education institutions and the business community would meet to draw up and agree on the curriculum content. Students in 11th grade and or 12th grade, on certain programmes, can earn college credits in either academic or professional-technical courses while still in school. These programmes are

linked to two-year Associate Degree (AS) programmes at Mt. Hood Community College, a local partnership college; students may, thereafter, transfer to a four-year college (university) to upgrade their degree. 30 per cent of Reynolds students go on to a two-year college. Mt Hood Regional Education Consortium, one of the 15 in the state, facilitates the collaborative venture and is also responsible for bring together players in the partnership:

> *My role is take the things that people want that don't exist – those connections between what happens at the high school level, what happens at the post-secondary level and connecting it to real life business and industry in their notions. Or, how do we partners get together on a common agenda where everybody pulls their resources to ensure that we have a good outcome? (Regional Co-ordinator, Mt. Hood Regional Education Consortium.)*

A follow-up survey of students in the consortium area showed that 70 percent had continued to some form of higher education one to three years after high school graduation (OCCRL Brief, January, 2000, p.4).

6.19 Conclusion

A number of conclusions can be drawn from the foregoing case studies. First, the case studies provide some confirmation that curriculum can serve as a catalyst to fostering creativity - both in 16-19 provision and 14-19 provision. Second, the case studies indicate that creativity is best nurtured in an environment where principles of creativity are institutionalised: the MHCC value/mission statements emphasise a commitment to 'promoting creativity and flexibility in all aspects' of the college experience (MHCC 2010

Institutional Master Plan, 2000, p.14), while the RHS expects its students to express their creativity in their work.

Both the MHCC and RHS curriculum models emphasise knowledge and skill application - the linking of classroom learning to real world. These models lend credence to Seltzer and Bently's (1999) conception of creativity and affirm Ball's (1995) findings that students are more likely to engage in learning if they find relevance, and practical application for their use. The RHS contextual learning model, with its emphasis on developing students' creative qualities, will have potential practical application in the proposed 14-19 provision in England (DfES, 2002a), while the MHCC model offers a basis for delivering curriculum in the Centres of Vocational Excellence recently approved for some further education colleges (DfES, 2001).

The two case studies, particularly the MHCC, have highlighted the importance of extra/co-curricular activities in nurturing students' creative qualities. The results of the student questionnaire in this study indicate a minority student participation in college-wide activities (paragraph 3.14) in England; some of the students interviewed said they did not participate because they were not aware of the benefits of these activities to their learning - although a significant proportion of those who participated said it helped their learning. What the MHCC experience indicates is that students will respond to college extra/co-curricular activities that are linked to their classroom learning.

The case studies have also highlighted the need for teachers' personal/professional development in creativity. The MHCC model takes cognisance of teachers' need for professional development in creativity with the establishment of the teacher-led/directed Teaching and Learning Cooperative (TLC), aimed among other things to foster creativity

and teaching excellence (a similar scheme is proposed for further education in chapter eight of this thesis).

In sum, the two case studies indicate that nurturing creativity in the curriculum have benefits other than achieving qualification goals; such benefits include improved student attendance, retention and achievement. This finding is significant and it lends credence to a contention that fostering creativity in the curriculum is key to improving retention and achievement and job success (see Ogunleye, 1999; 2000; 2002).

The next chapter revisits these findings along with those discussed in the three preceding chapters.

CHAPTER SEVEN

7.0 GENERAL DISCUSSION AND SUMMARY

A number of key questions relating to the results of the present study are (1) what are students' perceptions of their creative attributes, (2) what are students' perceptions of their classroom behaviours and practices, (3) what are students' perceptions of their teachers' classroom behaviours and practices, (4) what are leaders', managers', teachers' and students' perceptions of creativity, (5) to what extent are college institutional variables, curriculum arrangements and teaching approaches driven or not driven by the leaders', managers' and teachers' conceptions of creativity, and (6) what factors impede or promote creativity in a further education context? A full list of the research questions can be found in chapter two paragraph 2.2).

In sum, the students believed that they are creative, but their creative attributes differ significantly across the six measures of originality, flexibility, curiosity, risk-taking, imagination and humour. This finding is in agreement with the literature assertions and empirical findings that everyone has a trait (or a characteristic feature) of creativity, but the degree to which creativity is present in individuals varies. This finding is significant in that the creative attributes on which the students showed the lowest mean ranks – originality, risk-taking and curiosity – are the very creative qualities that children have been reported to show in their early education (see Watson, 1968). This suggests a gradual, but significant, decline in children's creative qualities between their early

education and the time of commencing or finishing post-16 (further) education. The implication of this finding for the current national drive on creativity has been highlighted in the section on questionnaire results. More so, the results underline the critical need to foster creativity across the three sectors of English education.

The students' creative attributes and their classroom behaviours and practices showed significant, but complex relationships. It was found that even though students' originality is significantly related to students' ability to experiment or to try out new ideas and approaches to classroom problems or tasks, only a small proportion of the students are innovative in their approaches. Likewise, students' curiosity is significantly related to students' perception of their propensity to ask questions in the classroom, yet the students seldom ask questions in the classroom and will often avoid answering teachers' questions for fear of getting the answer wrong. A number of possible reasons were suggested for this development (see discussion in chapter three). It is suggested that either the students are generally shy to express their creativity in the classroom discourse or more likely that their behaviours have been conditioned by the classroom environment. Studies by Richardson (1988) and Wheldall and Merrett (1997) support the latter explanation. There is, therefore, the need to recognise the role of the teaching and learning environments in promoting or impeding student creativity. The results on student learning styles showed that a greater proportion of students are non-creative learners, while a small proportion are creative learners. Additional multivariate tests on the responses of the two groups of learners showed highly significant differences in their approaches to learning; these differences are explained by the students' originality attribute. This indicates that fostering creativity in teaching and learning in further education might possibly be achieved by encouraging originality. This evidence should help college leaders, managers and teachers to identify how all students can be

encouraged or supported to become creative learners. The results also showed that the government might have been right in its decision to promote thinking skills in the National Curriculum, but underlined the need to extend the initiative to the 16-19 curriculum. The result of student learning styles according to qualification showed that applied vocational qualifications such as GNVQ/AVCE offer greater opportunity to students to express their creativity than do academic qualifications (A levels) and National Vocational Qualifications (NVQs). The result is consistent with findings in Smith (1997) and may also lend empirical credence to the government's rationale for establishing Centres of Vocational Excellence as a catalyst for nurturing creativity in further education (DCMS, 2001; DfES/DTI, 2001).

In examining students' perceptions of teachers' classroom behaviours and practices, it was found that the students differ significantly from each other in their views about their teachers' classroom practices. Teachers' subject knowledge is the most often perceived attribute, while praise is the least frequently perceived followed closely by motivation and thinking. The finding that the students often see their teachers as a repository of knowledge is an age-old theoretical assumption and the students' views concerning their teachers' little of use of praise in the classroom is consistent with results of the classroom observations in this study, as well as findings in Schwieso and Hastings (1997) and Duffield, *et el,* (2000). The results of the classroom observations in this study are on the whole consistent with the students' perceptions of teachers' classroom behaviours and practices analysed from the student questionnaire. The results revealed the dominant role of the teacher in classroom discourse where subject matter was the focus of the discussion. A critical issue highlighted from the classroom observations is that, except in the GNVQ/AVCE classes, there is no significant (percentage) difference in teachers' emphasis on subject matter in the qualification areas despite their having differing aims

and assessment structures. Across the colleges, teachers rarely pay attention to student motivation, hardly respond to student talk; ask an 'average' number of questions, and rarely relate learning to the real world. It is possible that teachers either do not have the pedagogic skills needed to meet the increasingly complex classroom demands or lack the industrial and professional training needed to contextualise learning, or both. But, a study by FEFC (1999, p.22) points to 'shortage of significant opportunities' for industrial and professional development of teaching staff in further education as a contributing factor.

The qualitative part of the study provides fresh insight into leaders', managers', teachers' and students' perceptions of creativity. The interviewees showed familiarity with the word creativity and its concepts and their characterisation of creativity into product, process, personality and environment are consistent with the literature themes. Both the students' and the teachers' conceptions of creativity are similar to those offered by primary pupils in Hammer (2000) and Woods and Jeffrey (2000) and by trainee schoolteachers in Diakidoy and Kanari (1999) and by trained schoolteachers in Fryer and Collings (1991). These results showed that students and teachers in both schools and further education colleges have a clear understanding of the word creativity and that their views are significantly similar. The results also provide a basis upon which an understanding of creativity can be built across the two sectors of education. Notwithstanding the interviewees' [leaders', managers' and teachers'] familiarity with creativity, they admitted that their colleges' institutional variables, curriculum arrangements, and teaching approaches were not driven by their conceptions of creativity, due to reasons of motivation (and an arguably lack of institutional appetite to support creativity in teaching and learning) and some perceived institutional constraints (see below). This revelation will have implications for the New Labour government's drive to nurture young people's creativity in Centres of Vocational Excellence that were

recently established in 87 further education colleges and its aim to have CoVES in half of all colleges (DCMS, 2001; DfES, 2001).

The qualitative study also established a comprehensive list of factors that the interviewees perceived to impede creativity in a further education context. The external constraints such as 'prescriptive' examination requirements and course specifications and the overriding need to prepare students for these examinations, and policy instability and sporadic reforms in qualifications and assessment are universal and affect colleges in almost the same way. There are no convergent views among the leaders, the managers and the teachers interviewed on internal constraints to creativity apart from time and problem of lack of basic skills among students. This suggests that internal constraints such as staffing arrangements, executive capacity, teaching and learning resources, college accommodation problems and student motivation can be action-planned and overcome in time. (See Gore and Dowd (1999) on how the twin-problem of time and paperwork may be ameliorated.)

The case studies provide fresh insights into how creativity can be supported in curriculum content and processes, as well as illuminate factors promoting creativity in a post-16 (further) education context. Evidence from the case studies also revealed that institutional commitment to the principle of creativity (which is reflected in value/mission statements) is central to teachers' efforts to nurture the creativity of students in the classroom. A common feature of the two case studies was an emphasis on practical application of knowledge/skill that links classroom learning to real world experience. This, arguably, not only enabled students to find (creative) relevancy in the curriculum, but also helped to develop their creative skills. This approach to curriculum

delivery has a potential practical application in the proposed 14-19 provision for England (DfES, 2002a).

Finally, the study presented here is essentially exploratory. The study has, by design, introduced research on creativity in further education in England. But, in generalising from the foregoing findings, a cautionary comment needs to be made. This is in addition to the limitations highlighted in the methodology section (paragraph 2.19). Student creativity/learning approaches are measured in this study based on students' self-reports of their creative attributes and learning styles/preferences, which were not independently confirmed through creativity tests or study skills inventory. Future research in this area can improve the reliability of the creativity measures used in this study by using appropriate creativity test and study skills inventory instruments. With this caveat, the following (concluding) section will attempt to introduce a model that can be used to foster student creativity in the further education curriculum in England.

CHAPTER EIGHT

8.0 Conclusion and Recommendations

Research tells us that the brain tends to discard information for which it finds no connection or meaning or for which the meaning is obscure. Fortunately, in recent years, many of us have come to appreciate and understand that the basis for good teaching is combining an information-rich subject content with an experience-rich context of application.

- Dale Parnell (1997)

8.1 A model for fostering student creativity in a further education context

8.2 Introduction

There are three principal aims of this study, (1) to investigate curriculum arrangements conducive to fostering creativity in PCET institutions and classrooms in England - specifically 16-19 provision in further education, (2) to analyse factors promoting or impeding creativity in curriculum content and processes, and (3) to develop models of good practice for encouraging creativity in the further education curriculum. In pursuing the third aim, this chapter presents a model that could be used to encourage creativity in the further education curriculum in England. The model is based on a number of proposals, some of which are based on the results/findings from the current study and other empirical studies, while others are more speculative. The paragraphs are numbered

to identify those proposals that are based on research evidence (8.3 – 8.9) and those that are largely, but not wholly, speculative (8.10 – 8.12). The more speculative proposals are nonetheless informed by the findings from the two case studies presented in chapter six. The proposed model is depicted graphically in figure 8.14.

8.3 The evidence from this study, in comparing the balance of the teachers' response-initiative and student initiation (paragraphs 4.16 – 4.21), suggested that teachers in further education, like teachers in other sectors of formal education, currently spend a disproportionate amount of lesson time on subject matter and less than adequate time on creativity-supporting activities such as motivation, questions, 'encouraging student thinking', practical examples and reference to real-world contexts. The (arguably) general lack of institutional appetite for creativity in further education is also evident (in chapter five) in the interviews with leaders, managers and teachers; they all acknowledged that their colleges' institutional variables, curriculum arrangements and teaching approaches are not driven by their conceptions of creativity.

8.4 Continuing the current practice is no longer tenable, particularly at a time when creativity is increasingly seen as key to job success (Ogunleye, 1999) and when employers are demanding creative qualities from college graduates (Morita, 1992; IPD, 1998) and when the national government is increasingly committed to nurturing the creativity of young people (Blunkett, 1998; DTI/DfES, 2001; DMCS, 2001; DfES, 2002a; Morris, 2002). The time has come, therefore, to translate these expectations into reality in the delivery of 16-19 provision in further education, by examining current approaches to curriculum delivery with a view to helping students develop creative skills needed to apply knowledge in a variety of contexts (both

familiar and unfamiliar situations), required in most academic and vocational course specifications highlighted in the reviews of the literature.

8.5 This study found that across the colleges surveyed, 70 per cent of lesson time is currently spent on subject matter (as shown by the cross content ratios reported in paragraph 4.17). One way to nurture creativity in classroom discourse would be to appropriate lesson time in a way that 'balances' the weightings of key classroom activities – subject matter (knowledge), creativity and real-world application. It is proposed that the current proportion (70 per cent) of lesson time that teachers currently spend on subject matter is reduced to 60 per cent in the first instance, but the medium term goal should be to achieve 55 per cent suggested in Flanders (1970). The remaining 40 per cent should be split evenly between creativity-supporting activities and real-world application. The real-world application component of lesson time will include simulation, class projects, question and answer sessions and practical activities that are robustly linked to real-life contexts. One follow up to this project could be action research and evaluation using such a revised activity balance. Such a pilot was beyond the bound of this doctoral study.

8.6 The model, in essence, builds on current practice, but attempts to even out the disproportionate amount of lesson time found in this study to be currently taken up by subject matter so that students don't end up 'acquiring bodies of inert knowledge' (Clayden, *et al*, 1994, p.172). This model is grounded in theoretical assumptions and empirical studies that have established links between basic skills/knowledge and creativity (Alamshah, 1972; Gardner, 1997; Weisberg, 1999; Nickerson, 1999; Boden, 2001;) and between creativity and real-world application (Ball, 1995; Parnell, 1997;

Seltzer and Bentley, 1999) and the need to connect the three in curriculum arrangements and delivery (Olczak and Sessler, 2000).

8.7 The findings from the student questionnaire (paragraph 3.63) and the classroom observations (paragraphs 4.17) from the current study and in Morgan and Forster (1999) have highlighted a critical need to raise student motivation and encourage original thinking in the classroom discourse. Similarly, studies by Stevenson (1990), Amabile (1990), Csikszentmihalyl (1990), Ranson, *et el*, (1996), Collings and Amabile (1999), Nickerson (1999), Street (2001), have demonstrated how (intrinsic) motivation can be used to engage students in learning and to develop their creativity. In developing student creativity, therefore, it is proposed that teachers and curriculum managers give particular attention to student motivation and student thinking skills in classroom discussion.

8.8 Although the proposed model does not anticipate significant demands on teachers, it has implications nonetheless for teacher pedagogy, professional and industrial development and personal development in creativity. A study by Milgram and Feildman (1979), cited in Milgram (1990), found significant relationships between teacher effectiveness and teachers' professional and personal creativity. More recently, Craft (1998) found that personal development in creativity is crucial if teachers are to support learners' creativity. An important issue revealed in this study is the increasingly complex students' classroom practices and behaviours relative to their creative attributes and teachers' relative inability to respond to this challenge (see paragraphs 3.57 and 3.63). It is also evident from the cross content ratios (paragraph 4.19) in the classroom observations that there is no real difference in teachers' classroom practices and behaviours – e.g. teaching approaches/emphasis on

subject matter, etc. – in academic, occupational and Access to HE qualifications, despite their different aims and assessment structures (see cross content ratios in paragraph 4.19). This apparent lack of pedagogical skills to respond to the new challenge of the classroom and curriculum has highlighted failures of teacher professional development programmes in further education as well as the inadequacies in post-compulsory teacher education (see, for instance, James, Ashcroft and Orr-Ewing, 1999).

8.9 Teachers in further education may not adequately help learners to be creative if their training did not prepare them adequately to respond to complex classroom demands. There is a need, therefore, to examine the arguably conservative post-compulsory teacher education with a view to embedding creativity in curriculum content and processes along the models suggested in Gale (2001). Gale's four theoretical models – humanistic, reflective practitioner, critical theory and post-structural – offer platforms on which creativity can be supported in post-compulsory teacher education.

8.10 One way – the researcher's own preference – on how to address the inadequacy of teacher professional development programmes in further education, is to have a new in-house Centre for the Promotion of Creativity and Teaching Excellence, ideally in each college, but because of resource implications, it might be a collaborative scheme between a group of colleges. The Centre should take over teacher professional development functions that are currently performed by college Human Resources Departments, but its core objective should be to provide creativity training for teachers. It should be a clearinghouse and a disseminating centre for good practice in creative and teaching excellence. It should offer grants of up to £2,500 to teachers to

action-research or explore 'burning' ideas on teaching practices/ approaches that might nurture creativity in the classroom discourse. The Centre should establish a Hall of Fame to honour most outstanding creative teachers and celebrate their work. The Hall for Fame should be centrally/prominently located for people to visit and learn about significant contributions that inductees (teachers) have made in promoting creativity in teaching and learning in the college. To ensure its independence, the Centre should be set up and run by teachers, but with regular feedback to senior management staff. Its goals and operational structure should be modelled along those discussed in chapter six, on a case study on Mt Hood Community College. Although the proposed Centre for the Promotion of Creativity and Teaching Excellence is essentially an in-house outfit, its ideas can be incorporated into the new national strategy for the professional development of college leaders and managers (DfES, 2002b). The proposed core curriculum (modules) for the Leadership and Management College are management information analysis, financial management, human resource management, equal opportunities, health and safety, and strategic planning and quality assessment. It is contended that these modules will not achieve the desired results without underpinning them with the principles of creativity. To better prepare leaders and managers for the rolling policy prescriptions in the further education sector, a new core module 'creativity in the management of change process' is proposed.

8.11 Teachers may not exist in isolation from the institution in which they teach. The institution should value creativity and this should be reflected in institutional variables such as curriculum arrangements, organisational/management structure, culture and ethos. Creative values should also be reflected in mission/value statements with which every stakeholder in the college can positively identify. One

institutional variable that might serve as a catalyst for nurturing student creativity in further education is Student Services, as proposed for college student unions by Ainley and Bailey (1997, p.88). The name Student Services is a misnomer, which does not fully reflect students' experiences throughout their time in further education. A new Department of Student Life is proposed. The department will take over the existing role of the Student Services; it should be staffed by academics, administrators and other professional including counsellors and advisors and should be of equal standing with any other departments in the college. The department should have at its base a mission to nurture student creativity, academic and behavioural well-being, and total student development through well-rounded education. A key goal of the department should be to help students develop skills needed to respond to the new challenge of further education. The department will, among other things, offer a 30-hour compulsory pre-course programme that could take the form of seminars, workshops, short courses, etc., to new (16-year old) students on basic skills, study techniques, time management skills, thinking skills, problem solving skills, academic success, career progression and leadership. A 30-hour pre-course orientation programme such as this would mean that new 16-year olds might have to start college some two to three weeks early. A second compulsory 30-hour (complementary) on-course programme should be offered to students at various stages of their studies. The programme should attract a certain number of credits that would count towards relevant key (or life) skills attainments and other qualifications. It is hoped that, in time, the orientation programme will extend to new (over 19) students, who after all constitute the majority in further education. The creation of a Department of Student Life undoubtedly will have some resource implications, but will go a long way in overcoming widely acknowledged blocks to student creativity – e.g. problems of basic skills, motivation, confidence, self-discipline, and arguably

ineffectual transition arrangements for students coming to college from school. The benefits will, in time, outweigh the cost.

8.12 Finally, the external environment – particularly the national government – has a role to play in supporting colleges' efforts to foster creativity in teaching and learning. The two constraints cited universally by the leaders, managers, teachers and students interviewed in this study are examination/ assessment requirements and policy targets occasioned by the government's rolling reforms of post-16 (further) education. These are real concerns, which should not be lost on the government as it shapes its agenda on 14-19 provision and other post-16 initiatives which, by design, have now recognised creative attributes as essential qualities to nurture in young people (see Blunkett, 1998; DMCS, 2001; Morris, 2002; DfES, 2002). That said, it is important to acknowledge that external constraints to creativity in further education will, for time to come, remain cyclical and it is incumbent upon leaders, managers, teachers and students to respond creatively to external prescriptions. In acknowledging that the college, the curriculum and the teachers all have a role to play in facilitating the creativity of students, these stakeholders have, in essence, overcome a significant (mental) block to creativity. All that is needed now is to translate this shared conception of creativity into reality – and the starting point would be in the arrangements and delivery of the curriculum.

8.13 Future Research

This investigation has opened up a number of issues that the researcher believes need to be explored further in future research; some of these issues have already been highlighted elsewhere. The researcher would hope that future research on student creativity will be

based on student creativity tests, and not on students' self-reports of their creative attributes. It will be very interesting to see if the results will be significantly different from the current findings. The extent of the impacts of institutional factors and external prescriptions on creativity in the further education curriculum also needs to be investigated in greater depth. The researcher would also hope that future research would take account of race (which is not included in this study) and how it impacts on learning and creativity. This work is essentially an exploratory study and one hopes it will generate wider research interest in creativity in the further education context.

APPENDIX A

A SAMPLE LETTER OF PERMISSION TO COLLEGE LEADERS

School of Post Compulsory Education and Training
Direct line: 0181 331 7687
School Fax No: 0181 331 7667
e-mail: J.Ogunleye@greenwich.ac.uk

Date:

Mr/Ms
The Principal
College of FE

Dear Mr/Ms

I am a research student in the School of Post-Compulsory Education and Training at the University of Greenwich. My research focuses on the relationship between aspects of the curriculum, such as instructional techniques, and student creativity. It aims to identify factors that facilitate student creativity in post-16 contexts.

I am writing to request permission to undertake some research at your college, which has been selected as part of a random sample of colleges in England. Data will be collected by short interviews with students and selected members of staff and through a small number of classroom observations. This would take place over a period of 2 days during November 2000.

I will of course make any data/results/report from your college available to you, which, I hope you would find of interest and value. I am also happy to discuss the project process with you, including the issue of confidentiality.

The research is supervised by Professor Ian McNay, Head of School of PCET and Michael Bloor, Senior Lecturer.

I look forward to your reply. If, as I hope, it is positive, you may wish to nominate someone with whom I could liaise over arrangements.

Yours sincerely,

James Ogunleye

ADDITIONAL IMFORMATION PROVIDED AT THE REQUEST OF COLLEGES

Research Protocol

(Draft) details of my research work at your college (including class observations and interviews) can now be confirmed:

Observational work:

I plan to observe six lessons in 3 Qualification areas viz.: Academic (A/AS level); Applied Vocational (GNVQ), and Vocational (NVQ). Observations should last no more than 30 minutes per class.

- Academic (2 lessons)
- Applied Vocational (2 lessons)
- Occupational/Vocational (2 lessons)

Students' Questionnaire & Interviews:

Each class will be given a questionnaire to complete, while short (group) interviews will be conducted with a sample of 3/4 students per class. I plan to interview 24 students per college. The sampled students will represent a cross range of ability and gender - to include a mix of first year, final year or continuing students. It will focus on some one or two questions in the student questionnaire. Interviews should last no more that 20 minutes per group.

Interviews with teachers:

I plan to conduct six (short) interviews with teachers - i.e. one per (observed) class. These interviews will focus on instructional techniques, assessment/grading process, and teachers' perceptions of creativity. Interviews should last no more than 25 minutes per teacher.

Interviews with senior management:

I plan to interview two senior management staff - ideally, the principal and deputy/assistant principal or a senior manager (in charge of the curriculum and quality). These interviews will focus on institutional factors (such as college organisational structure, culture, ethos, curriculum arrangements and implementation, student study experience, staff development, resources, etc.) and their perceived impact on student creativity. The interviews will also seek to get managers' perceptions of creativity. Interviews should last no more that 25 minutes per manager.

Content analyses and review

A major part of my work relates to reviewing and analysing documents. I would therefore like access to the following documentation:

- Sample of course handbook/syllabuses/performance criteria; assignment/project briefs per each observed lesson
- Student handbook
- FEFC inspection report (preferable the last two reports, if available)
- College mission statement/college charter
- Staff handbook/strategic plan/ self-assessment report
- College newspaper/newsletter (including several past copies, if possible)
- Other college documentation that show college organisational structure, culture and ethos, ideology, and links with local organisations, agency and employers (see below).

Proposed work date: 2/3 days - xxxxxxxxxxxxx

APPENDIX B

DATA COLLECTION INSTRUMENT: STUDENT QUESTIONNAIRE

University *of* Greenwich
School of Post Compulsory Education and Training

We are studying the kinds of attributes students show in the classroom and their study experience in colleges. The questionnaire aims to collect data on your perceptions of classroom experience. As you read each statement/question, provide the answer that applies most truly to you by circling the appropriate 1-5 rating scale or by ticking the appropriate word. There are no right or wrong answers. Don't worry about what you think might be expected. The questionnaire takes 12 minutes to complete.

Think about each statement/question before you answer it. Don't spend a lot of time trying to reason through it. Don't let other statements/questions influence how you answer each individual statement/question. WE WILL PROTECT YOUR IDENTITY. SO FEEL FREE TO EXPRESS YOURSELF. **ALL QUESTIONS RELATE TO YOUR EXPERIENCE IN THIS CLASS.**

SECTION A – about yourself

1. Please enter your name:
First name:_____ Last name:_____

2. In what year did you enrol at this college? Enter Month and Year:_____

3. Are you enjoying your course? (Please circle the appropriate 1-5 rating scale)
1, not at all 2, sometimes 3,not a lot 4, quite a lot, 5, a lot

4. Are you learning? (Please circle the appropriate 1-5 rating scale)
1, not at all 2, sometimes 3,not a lot 4, quite a lot, 4, a lot

5. List the AS/A level subjects/core AVCE/NVQ units you are taking for your exams/assessment.
1_____ 2_____ 3_____4_____ 5_____6_____

6. Below is a list of term that describe students. Please indicate (by ticking) the level of agreement that BEST describes you.

original curious flexiblerisk-taking humorous imaginative

Self-Profile	Strongly Disagree 1	Disagree 2	Neither agree nor disagree 3	Agree 4	Strongly agree 5
I would describe myself as original					
I am a curious student					
I am flexible					
I like to take risk					
I have a sense of humour					
I am imaginative					

SECTION B – about your work

7. I ask questions in class. (Please circle the appropriate 1-5 rating scale)
1, never true 2, almost never true 3,sometimes 4, often true 5, almost always

8. In class I tend to avoid answering teacher's questions just in case I get it wrong.
(Please circle the appropriate 1-5 rating scale)
1, not at all 2, sometimes 3,not a lot 4, quite a lot, 5, a lot

9. In class discussion I occasionally voice opinions that seem to turn some students off.
(Please circle the appropriate 1-5 rating scale)
1, not at all 2, sometimes 3,not a lot 4, quite a lot, 5, a lot

10. I general prefer to work on my own. (Please circle the appropriate 1-5 rating scale)
1, not at all 2, sometimes 3,not a lot 4, quite a lot, 5, a lot

11. Working in group inspires me. (Please circle the appropriate 1-5 rating scale)
1, not at all 2, sometimes 3,not a lot 4, quite a lot, 5, a lot

12. I try new ideas and approaches to problems or to class activities and assignments.
(Please circle the appropriate 1-5 rating scale)
1, not at all 2, sometimes 3,not a lot 4, quite a lot, 5, a lot

13. I like to work on a problem or class assignment that has caused others great difficulty.
(Please circle the appropriate 1-5 rating scale)
1, not at all 2, sometimes 3,not a lot 4, quite a lot, 5, a lot

14. Which of the following best describe your learning style? (Please tick)

_____ **try out new unproven ways of doing things**

_____ **work within tried and trusted methods**

SECTION C - about your teacher

15. Check each statement that you agree with about your teacher. (Please TICK the relevant box)

My Teacher:	never 1	hardly ever 2	sometimes 3	a lot 4	all the time 5
motivates me to learn the subject					
makes me think					
praises me whenever possible					
encourages me to take responsibility for my work					
allows me to express my views					
asks questions in the class					
is open to students' views					
accepts students' ideas					
is knowledgeable about the subject					
relates learning to real-world experience					
sets assignments that give me a chance to find solutions to problems on my own					

17. Which of these different ways of learning have you experienced in your course?
(Please TICK relevant box.)

Different ways of learning:	never 1	hardly ever 2	sometimes 3	a lot 4	all the time 5
lecture					
discussion group					
practical sessions					
group project					
question and answer session with teacher					
supported studies					
guided independent learning					
study tour or trip					

SECTION D – about college activities

18. Which of the following college activities, apart from attending classes, do you participate in (tick as many as you are involved in):

_____ cultural and practical activities (please state):

_____ work experience and work shadowing (please state number of days/weeks):

_____ Young Enterprise (state your role):

_____ Student Union (state your role):

_____ student governor (state your role):

_____ I take part in NO other college-based activities.

19. How have these activities helped your learning? (Please state briefly)

END – thank you.

FEEDBACK:
Please use this space to tell us which question/s you did not understand:

FOR RESEARCHER'S USE:
COLLEGE SAMPLING CODE:..... PROGRAMME AREA:.....

APPENDIX C

CLASSROOM OBSERVATION INSTRUMENTS – ADAPTED FROM FLANDERS' (1970) CLASSROOM INTERACTION ANALYSIS GRID

CLASSROOM OBSERVATION FORM

College: _____

Site/Campus: _____

Teacher Observed: _____

Class Observed: _____

Date of Observation: _____

Time of Observation: _____

Note any unusual circumstances: _____

_____

_____

Other notes: _____

_____

	Teacher Talk						Student Talk				
Time	1	2	3	4	5	6	7	8	9	Type of Activity	Keys to Classroom Events of Instruction
01											
02											**1. accepts feelings** **2. praise students** **3. allows students' views/accepts ideas** **4. asks questions** **5. lecture** **6. practical examples/ relates learning to real life experience** **7. solicited** **8. unsolicited** **9. silence or non-event** ** Teacher Talk = 1 - 6* ** Student Talk = 7 - 8* *(link to Student Questionnaire (Q.15))*
03											
04											
05											
06											
07											
08											
09											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											**Type of Activity**
23											
24											***Keys to type of activity (link to student Questionnaire (Q.17)):*** *10. lecture* *11. small group/ student feedback to class* *12. practical session* *13. Q & A session with teacher* *14. supported studies* *15. guided independent learning* *16. presentation*
25											
26											
27											
28											
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											**Other Details**
41											
42											**Date:** _____
43											
44											**Class time:** _____
45											
46											**Start time:** _____
											End time: _____

APPENDIX D

INTERVIEW QUESTIONS

STUDENT INTERVIEWS

Are you learning?

Are you enjoying your course?

What is your understanding of the term creativity?

Based on your understanding of creativity, how can your teacher help to bring your creativity into your learning?

What would you consider as constraints to expressing your creativity in your learning?

Do you participate in college extracurricular activities? If yes, what aspects of the college extracurricular activities help your learning? If no, why are you not participating?

TEACHER INTERVIEWS

How many subjects/units do you teach?

What is your understanding of creativity?

Can teachers facilitate creativity in students?
(If yes): As a teacher, what do you see as your role in facilitating student creativity?

What are your criteria for a creative lesson? What would you treat as evidence?

To what extent are your teaching techniques and approaches driven (or not driven) by your perception of creativity?

What would you consider as blocks or contraints to facilitating student creativity?

How do you nourish your own creativity?

THANK YOU

CURRICULUM MANAGER INTERVIEWS

What are the main aims of the college curriculum?

What is your understanding of creativity?

Can creativity be facilitated in the curriculum? (If yes): What do you think should be role of the curriculum in facilitating student creativity?

What are your criteria for a creative curriculum? What would you treat as evidence?

How do the current arrangements of the college curriculum manifest in student creativity?

What are the constraints to facilitating creativity in the curriculum?

How do you nourish your own creativity?

LEADER INTERVIEWS

What do you expect of your students as members of the college community?

Do you have guidelines for instruction in the classroom? (If yes): what are the aims of such guidelines?

What is your understanding of creativity?

Can college facilitate creativity in students? (If yes): What do you see as the role of college such as yours in facilitating student creativity?

What are your criteria for a creative college? What would you treat as evidence?

What do you consider as barriers to facilitating student creativity in a college such as yours?

How would you describe the organisational/management structure of the college?

Who engineered the current structure? What were the most important factors in deciding the college organisational structure?

To what extent does the college organisational structure impact on student creativity?

How would you describe the college culture and ethos?

How do you nourish your own creativity?

THANK YOU

APPENDIX E

FULL SPSS OUTPUT – RELIABILITY ANALYSIS OF STUDENT QUESTIONNAIRE

REALIABILITY ANALYSIS OF STUDENTS' CREATIVE ATTRIBUTES – SCALE (ALPHA)

Appendix table 1: Reliability Analysis - students' creative attributes (SPSS output)

****** Method 2 (covariance matrix) will be used for this analysis ******

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Correlation Matrix

	STATE3	STATE4	STATE5	STATE6	STATE7
STATE3	1.0000				
STATE4	.2290	1.0000			
STATE5	.2029	.2180	1.0000		
STATE6	.1869	.1200	.1160	1.0000	
STATE7	.1619	.1591	.1425	.2180	1.0000
STATE8	.3510	.2204	.1674	.1814	.4015

	STATE8
STATE8	1.0000

N of Cases = 519.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	23.0000	7.6988	2.7747	6

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
STATE3	19.3372	5.5830	.3812	.1726	.5370
STATE4	19.2736	5.7976	.3085	.1058	.5680
STATE5	19.2389	6.1050	.2753	.0847	.5799
STATE6	19.4220	5.6923	.2642	.0790	.5925
STATE7	18.7553	6.0037	.3614	.1897	.5491
STATE8	18.9730	5.4549	.4434	.2590	.5112

Reliability Coefficients 6 items

Alpha .6013 Standardized item alpha = .6075

REALIABILITY ANALYSIS OF STUDENTS' PERCEPTIONS OF TEACHERS' CLASSROOM PRACTICES AND BEHAVIOURS – SCALE (ALPHA)

Appendix table 2: Reliability Analysis - Students' perception of teacher's classroom behaviours and practices

****** Method 2 (covariance matrix) will be used for this analysis ******

R E L I A B I L I T Y A N A L Y S I S S C A L E (A L P H A)

Correlation Matrix

	STATE17	STATE18	STATE19	STATE20	STATE21
STATE17	1.0000				
STATE18	.6263	1.0000			
STATE19	.5063	.3966	1.0000		
STATE20	.4231	.3732	.3566	1.0000	
STATE21	.4162	.3308	.4671	.4073	1.0000
STATE22	.3456	.2986	.2641	.3240	.4344
STATE23	.4176	.3043	.3632	.3394	.5497
STATE24	.4386	.3274	.3665	.3903	.5242
STATE25	.4100	.4042	.2663	.2956	.3669
STATE26	.3584	.3406	.2073	.2662	.3673
STATE27	.3833	.4048	.3148	.3692	.3177

	STATE22	STATE23	STATE24	STATE25	STATE26
STATE22	1.0000				
STATE23	.4329	1.0000			
STATE24	.4006	.7120	1.0000		
STATE25	.3393	.3841	.4073	1.0000	
STATE26	.3226	.4086	.4224	.3475	1.0000
STATE27	.2181	.3334	.3955	.2706	.3654

	STATE27
STATE27	1.0000

N of Cases = 541.0

N of

Statistics for	Mean	Variance	Std Dev	Variables
Scale	41.6784	38.3371	6.1917	11

R E L I A B I L I T Y A N A L Y S I S - S C A L E (A L P H A)

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
STATE17	38.1128	31.1521	.6577	.5256	.8518
STATE18	38.0185	32.5589	.5734	.4572	.8581
STATE19	38.5619	31.8874	.5254	.3576	.8618
STATE20	37.7689	32.5447	.5312	.3028	.8608
STATE21	37.8429	31.3549	.6374	.4546	.8533
STATE22	37.6839	33.1018	.5035	.2889	.8626
STATE23	37.7172	31.2662	.6475	.5698	.8525
STATE24	37.8447	31.1203	.6713	.5756	.8509
STATE25	37.3364	33.5162	.5209	.2952	.8616
STATE26	37.9760	32.0642	.5063	.2956	.8633
STATE27	37.9205	32.5029	.5050	.2949	.8628

Reliability Coefficients 11 items

Alpha .8694 Standardized item alpha .8702

APPENDIX F

DESCRIPTIVE STATISTICS, TABLES AND CHARTS - FULL SPSS OUTPUT

Presenting frequency distribution, central tendency and spread of distribution - median, mode, range, interquartile range, index of diversity of variable statements.

Variable statement 1 – Are you enjoying your course?

[Variable value and label for statements 1 and 2: not at all (1), sometimes (2), and not a lot (3), quite a lot (4), a lot (5)]

Table 1a

Statistics

Are you enjoying your course?

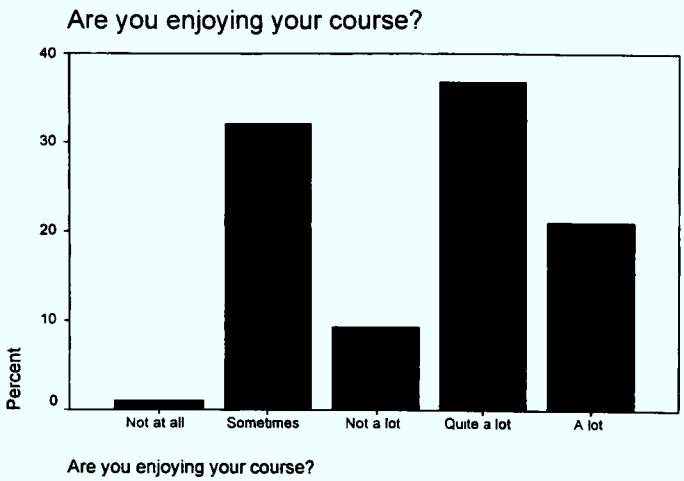
N	Valid	553
	Missing	2
Median		4.00
Mode		4
Range		4
Percentiles	25	2.00
	50	4.00
	75	4.00

Table 1b

Are you enjoying your course?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all	6	1.1	1.1	1.1
	Sometimes	177	31.9	32.0	33.1
	Not a lot	51	9.2	9.2	42.3
	Quite a lot	203	36.6	36.7	79.0
	A lot	116	20.9	21.0	100.0
	Total	553	99.6	100.0	
Missing	System	2	.4		
Total		555	100.0		

Table 1c



Variable statement 2 – Are you learning?

Table 2a

Statistics

Are you learning?

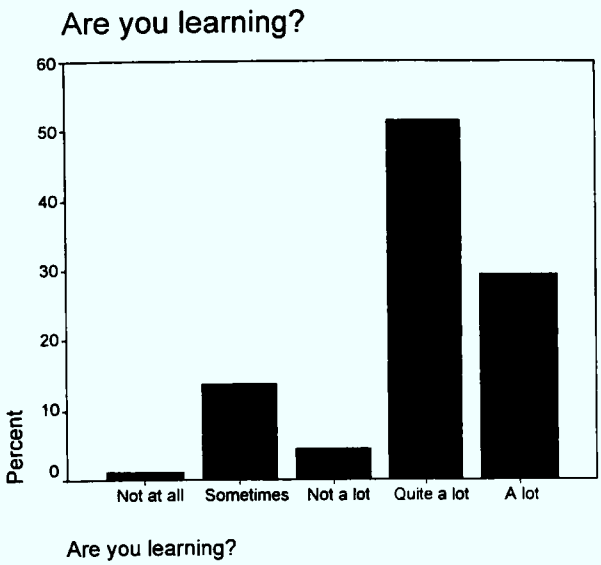
N	Valid	554
	Missing	1
Median		4.00
Mode		4
Range		4
Percentiles	25	4.00
	50	4.00
	75	5.00

Table 2b

Are you learning?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all	6	1.1	1.1	1.1
	Sometimes	76	13.7	13.7	14.8
	Not a lot	25	4.5	4.5	19.3
	Quite a lot	285	51.4	51.4	70.8
	A lot	162	29.2	29.2	100.0
	Total	554	99.8	100.0	
Missing	System	1	.2		
Total		555	100.0		

Table 2c



Students' perceptions of own creative attributes

Variable statement 3 - I would describe myself as original

[Variable label and values for statements 3 - 8: strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4), strongly agree (5)]

Table 3a

Statistics

Self-profile: I would describe myself as original

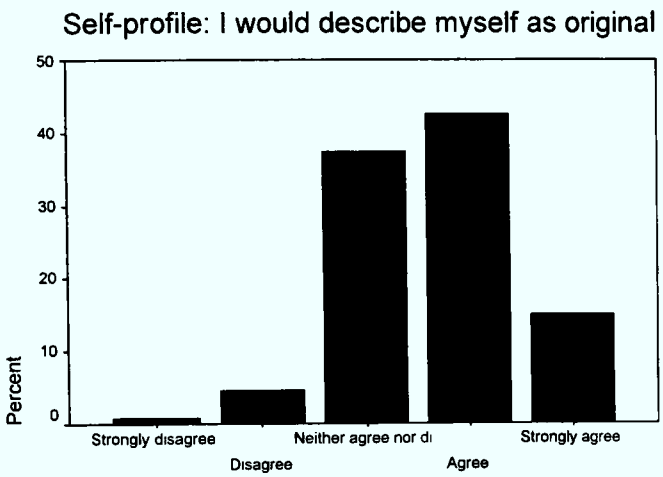
N	Valid	528
	Missing	27
Median		4.0000
Mode		4.00
Range		4.00
Percentiles	25	3.0000
	50	4.0000
	75	4.0000

Table 3b

Self-profile: I would describe myself as original

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	.7	.8	.8
	Disagree	24	4.3	4.5	5.3
	Neither agree nor disagree	197	35.5	37.3	42.6
	Agree	224	40.4	42.4	85.0
	Strongly agree	79	14.2	15.0	100.0
	Total	528	95.1	100.0	
Missing	System	27	4.9		
Total		555	100.0		

Table 3c



Self-profile: I would describe myself as original

Variable statement 4 – I am a curious student

Table 4a

Statistics

I am a curious student

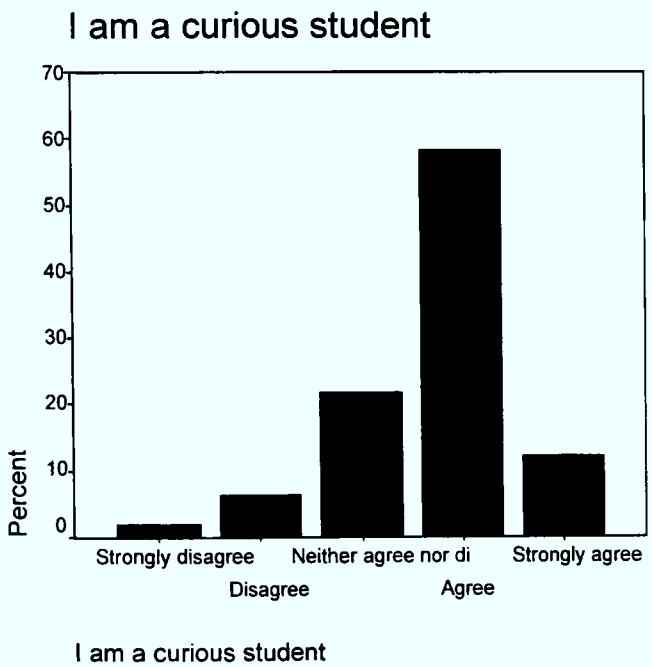
N	Valid	549
	Missing	6
Median		4.0000
Mode		4.00
Range		4.00
Percentiles	25	3.0000
	50	4.0000
	75	4.0000

Table 4b

I am a curious student

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	10	1.8	1.8	1.8
	Disagree	35	6.3	6.4	8.2
	Neither agree nor disagree	119	21.4	21.7	29.9
	Agree	319	57.5	58.1	88.0
	Strongly agree	66	11.9	12.0	100.0
	Total	549	98.9	100.0	
Missing	System	6	1.1		
Total		555	100.0		

Table 4c



I am a curious student

Variable statement 5 – I am flexible

Table 5a

Statistics

I am flexible

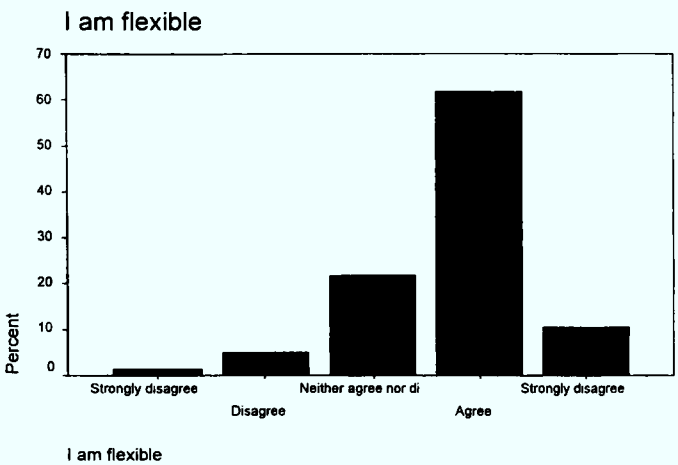
N	Valid	548
	Missing	7
Median		4.0000
Mode		4.00
Range		4.00
Percentiles	25	3.0000
	50	4.0000
	75	4.0000

Table 5b

I am flexible

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	7	1.3	1.3	1.3
	Disagree	27	4.9	4.9	6.2
	Neither agree nor disagree	119	21.4	21.7	27.9
	Agree	338	60.9	61.7	89.6
	Strongly disagree	57	10.3	10.4	100.0
	Total	548	98.7	100.0	
Missing	System	7	1.3		
Total		555	100.0		

Table 5c



Variable statement 6 – I like to take risks

Table 6a

Statistics

I like to take risks

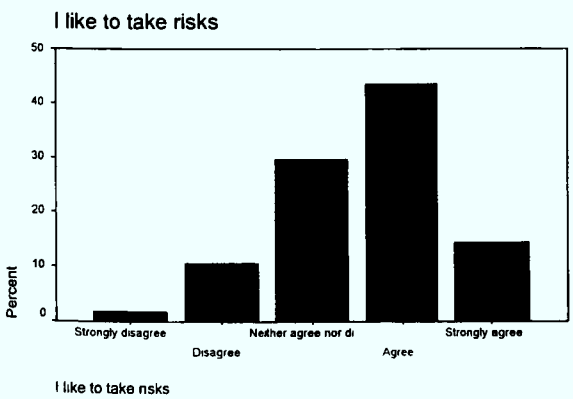
N	Valid	553
	Missing	2
Median		4.0000
Mode		4.00
Range		4.00
Percentiles	25	3.0000
	50	4.0000
	75	4.0000

Table 6b

I like to take risks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	10	1.8	1.8	1.8
	Disagree	59	10.6	10.7	12.5
	Neither agree nor disagree	164	29.5	29.7	42.1
	Agree	241	43.4	43.6	85.7
	Strongly agree	79	14.2	14.3	100.0
	Total	553	99.6	100.0	
Missing	System	2	.4		
Total		555	100.0		

Table 6c



Variable statement 7 – I have a sense of humour

Table 7a

Statistics

I have a sense of humour

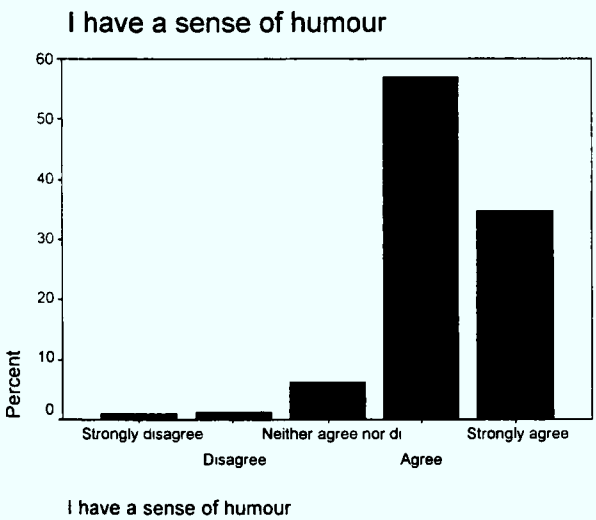
N	Valid	554
	Missing	1
Median		4.0000
Mode		4.00
Range		4.00
Percentiles	25	4.0000
	50	4.0000
	75	5.0000

Table 7b

I have a sense of humour

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	.9	.9	.9
	Disagree	7	1.3	1.3	2.2
	Neither agree nor disagree	34	6.1	6.1	8.3
	Agree	315	56.8	56.9	65.2
	Strongly agree	193	34.8	34.8	100.0
	Total	554	99.8	100.0	
Missing	System	1	.2		
Total		555	100.0		

Table 7c



Variable statement 8 – I am imaginative

Table 8a

Statistics

I am imaginative

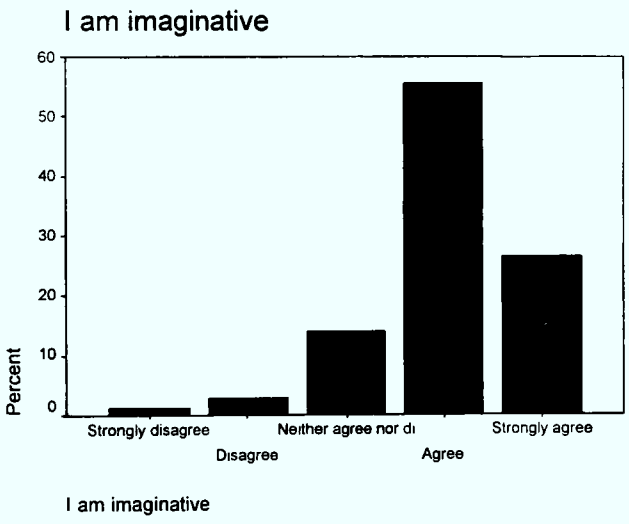
N	Valid	551
	Missing	4
Median		4.0000
Mode		4.00
Range		4.00
Percentiles	25	4.0000
	50	4.0000
	75	5.0000

Table 8b

I am imaginative

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	6	1.1	1.1	1.1
	Disagree	16	2.9	2.9	4.0
	Neither agree nor disagree	77	13.9	14.0	18.0
	Agree	306	55.1	55.5	73.5
	Strongly agree	146	26.3	26.5	100.0
	Total	551	99.3	100.0	
Missing	System	4	.7		
Total		555	100.0		

Table 8c



Students' perceptions of own classroom behaviours and practices

Variable statement 9 – I ask question in class

[Variable label and values for statements 9 - 15: never true (1), almost never true (2), sometimes (3), often true (4), almost always (5)]

Table 9a

Statistics

I ask questions in class

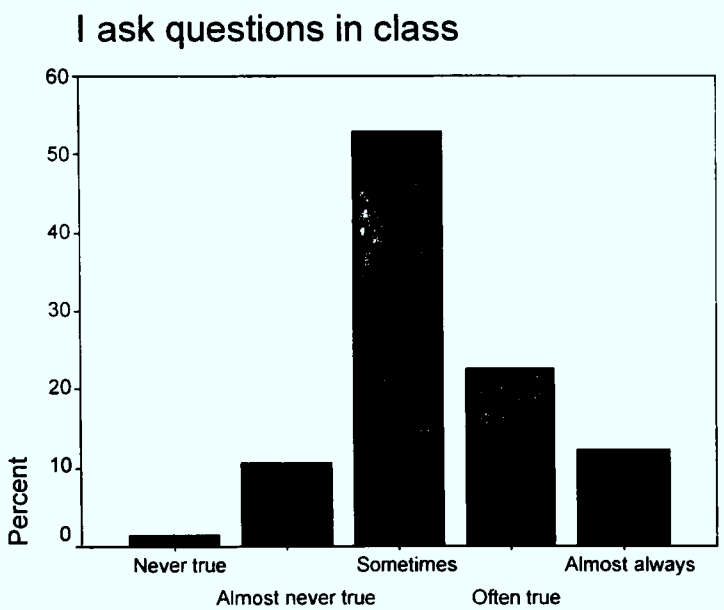
N	Valid	554
	Missing	1
Median		3.0000
Mode		3.00
Range		4.00
Percentiles	25	3.0000
	50	3.0000
	75	4.0000

Table 9b

I ask questions in class

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never true	8	1.4	1.4	1.4
	Almost never true	59	10.6	10.6	12.1
	Sometimes	293	52.8	52.9	65.0
	Often true	126	22.7	22.7	87.7
	Almost always	68	12.3	12.3	100.0
	Total	554	99.8	100.0	
Missing	System	1	.2		
Total		555	100.0		

Table 9c



I ask questions in class

Variable statement 10 – In class I tend to avoid answering teacher's questions just in case I get it wrong

Table 10a

Statistics

In class I tend to avoid answering teacher's questions just in case I get it wrong

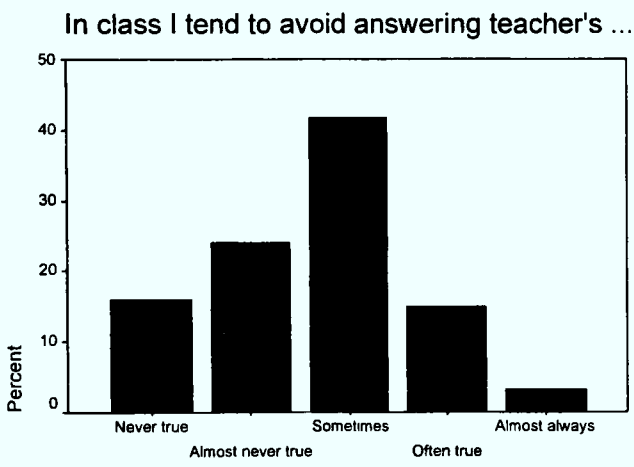
N	Valid	555
	Missing	0
Median		3.0000
Mode		3.00
Range		4.00
Percentiles	25	2.0000
	50	3.0000
	75	3.0000

Table 10b

In class I tend to avoid answering teacher's questions just in case I get it wrong

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never true	*89*	*16.0*	*16.0*	*16.0*
	Almost never true	*133*	*24.0*	*24.0*	*40.0*
	Sometimes	*232*	*41.8*	*41.8*	*81.8*
	Often true	*83*	*15.0*	*15.0*	*96.8*
	Almost always	*18*	*3.2*	*3.2*	*100.0*
	Total	*555*	*100.0*	*100.0*	

Table 10c



Variable statement 11 – In class discussion I occasionally voice opinions that seem to turn some students off

Table 11a

Statistics

In class discussion I occationally voice opinions that seem to turn some students off

N	Valid	551
	Missing	4
Median		2.0000
Mode		3.00
Range		4.00
Percentiles	25	1.0000
	50	2.0000
	75	3.0000

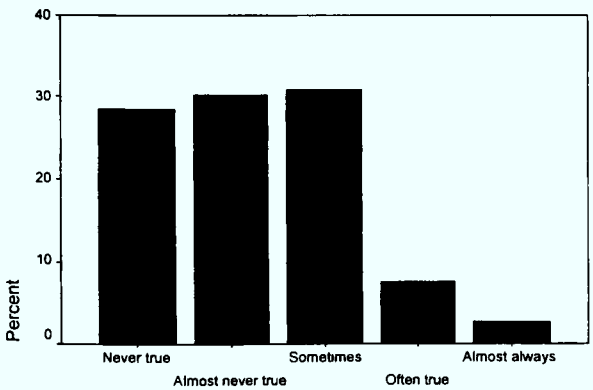
Table 11b

n class discussion I occationally voice opinions that seem to turn some students off

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never true	157	28.3	28.5	28.5
	Almost never true	167	30.1	30.3	58.8
	Sometimes	170	30.6	30.9	89.7
	Often true	42	7.6	7.6	97.3
	Almost always	15	2.7	2.7	100.0
	Total	551	99.3	100.0	
Missing	System	4	.7		
Total		555	100.0		

Table 11c

In class discussion I occationally voice opinions . . .



In class discussion I occationally voice opinions ...

Variable statement 12 – I generally prefer to work on my own

Table 12a

Statistics

I generally prefer to work on my own

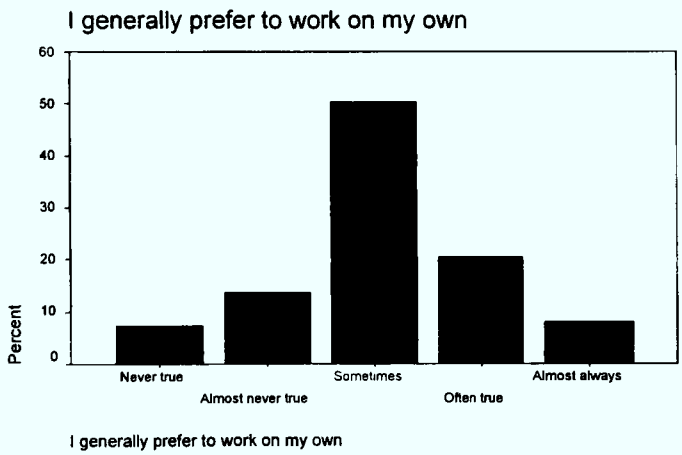
N	Valid	553
	Missing	2
Median		3.0000
Mode		3.00
Range		4.00
Percentiles	25	3.0000
	50	3.0000
	75	4.0000

Table 12b

I generally prefer to work on my own

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never true	40	7.2	7.2	7.2
	Almost never true	76	13.7	13.7	21.0
	Sometimes	278	50.1	50.3	71.2
	Often true	114	20.5	20.6	91.9
	Almost always	45	8.1	8.1	100.0
	Total	553	99.6	100.0	
Missing	System	2	.4		
Total		555	100.0		

Table 12c



Variable statement 13 – Working in a group inspires me

Table 13a

Statistics

Working in a group inspires me

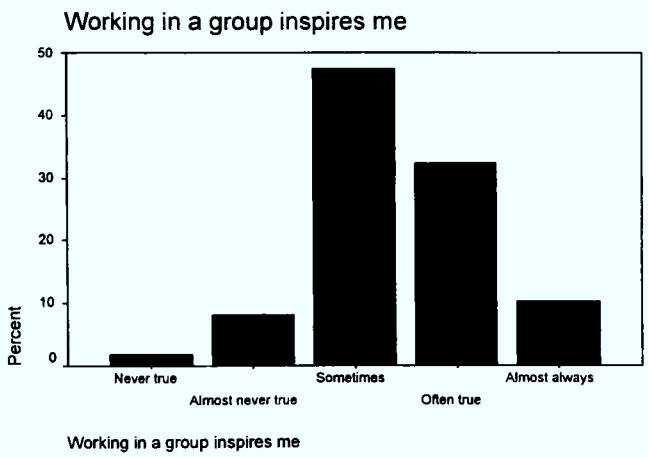
N	Valid	554
	Missing	1
Median		3.0000
Mode		3.00
Range		4.00
Percentiles	25	3.0000
	50	3.0000
	75	4.0000

Table 13b

Working in a group inspires me

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never true	10	1.8	1.8	1.8
	Almost never true	45	8.1	8.1	9.9
	Sometimes	263	47.4	47.5	57.4
	Often true	179	32.3	32.3	89.7
	Almost always	57	10.3	10.3	100.0
	Total	554	99.8	100.0	
Missing	System	1	.2		
Total		555	100.0		

Table 13c



Variable statement 14 – I try new ideas and approaches to problems or to class activities

Table 14a

Statistics

I try new ideas and approaches to problems or to class activities

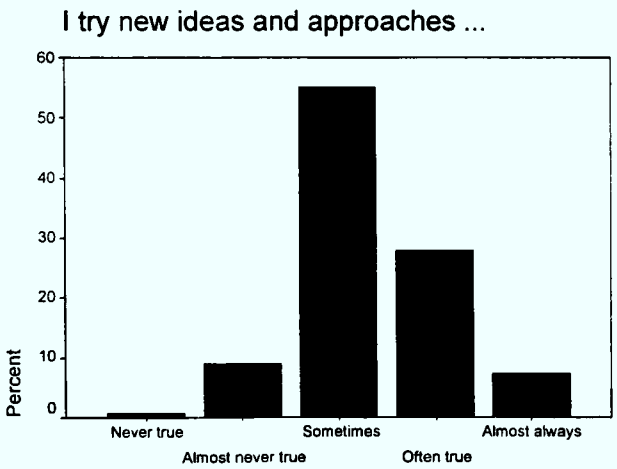
N	Valid	555
	Missing	0
Median		3.0000
Mode		3.00
Range		4.00
Percentiles	25	3.0000
	50	3.0000
	75	4.0000

Table 14b

I try new ideas and approaches to problems or to class activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never true	4	.7	.7	.7
	Almost never true	50	9.0	9.0	9.7
	Sometimes	305	55.0	55.0	64.7
	Often true	155	27.9	27.9	92.6
	Almost always	41	7.4	7.4	100.0
	Total	555	100.0	100.0	

Table 14c



I try new ideas and approaches ...

Variable statement 15 – I like to work on a problem or class assignment that has caused others great difficulty

Table 15a

Statistics

I like to work on a problem or class assignment that has caused others great difficulty

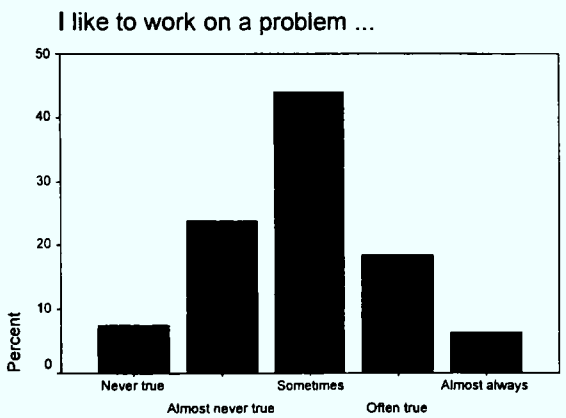
N	Valid	554
	Missing	1
Median		3.0000
Mode		3.00
Range		4.00
Percentiles	25	2.0000
	50	3.0000
	75	3.2500

Table 15b

I like to work on a problem or class assignment that has caused others great difficulty

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never true	41	7.4	7.4	7.4
	Almost never true	132	23.8	23.8	31.2
	Sometimes	243	43.8	43.9	75.1
	Often true	103	18.6	18.6	93.7
	Almost always	35	6.3	6.3	100.0
	Total	554	99.8	100.0	
Missing	System	1	.2		
Total		555	100.0		

Table 15c



I like to work on a problem ...

Students' perceptions of their learning styles: risk-takers or conservatives?
Variable statement 16 – Which of the following best describe your learning styles? [Variable label and value: try out new unproven ways of doing things (1), work within tried and trusted methods (2)]

16a Index of variability (D) - risk takers or conservatives?

$D = 1\ [(205/548)^2 + (343/548)^2]$

$= 1 - [0.140 + 0.392]$

$= 1 - 0.532 = 0.47$

Actual value of D = 0.47, indicating almost even degree of concentration of the ratings in the two categories.

Calculating the maximum value of the index

= (c-1))/ c, where c is the number of categories in the data

= (2 – 1)/ 2 = 0.50

Then compare the (maximum) value with the actual value of diversity (D),

i.e. 0.47 v 0.50. The result suggests a small degree of variation among students in terms of their learning styles.

Table 16b

Statistics

Which of the following best describe your learning styles?

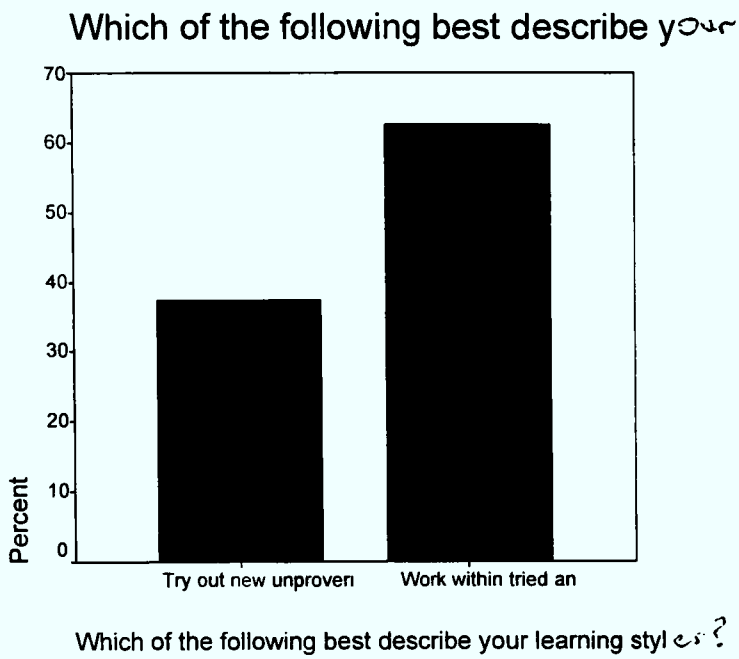
N	Valid	548
	Missing	7
Median		2.0000
Mode		2.00
Range		1.00
Percentiles	25	1.0000
	50	2.0000
	75	2.0000

Table 16c

Which of the following best describe your learning styles?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Try out new unproven ways of doing things	205	36.9	37.4	37.4
	Work within tried and trusted methods	343	61.8	62.6	100.0
	Total	548	98.7	100.0	
Missing	System	7	1.3		
Total		555	100.0		

Table 16d



Students' perceptions of classroom teachers' behaviours and practices

Variable statement 17 – my teacher: motivates me to learn the subject

[Variable label and values for statements 17 - 27: never (1), Hardly ever (2), sometimes (3), a lot (4), all the time (5)]

Table 17a

Statistics

Students' perception of classroom teacher: motivates me to learn the subject

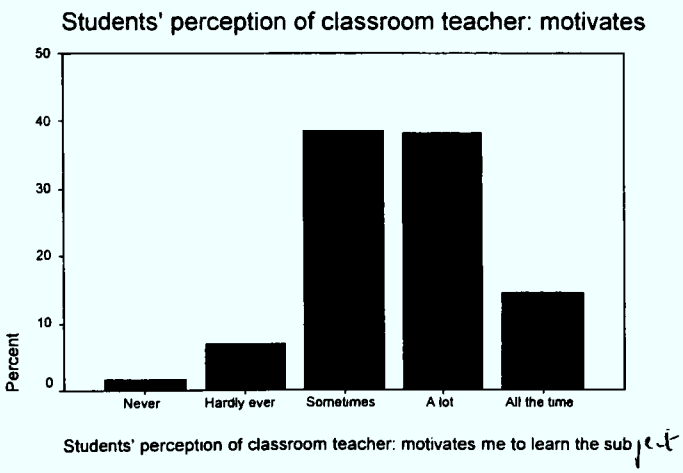
N	Valid	552
	Missing	3
Median		4.0000
Mode		3.00
Range		4.00
Percentiles	25	3.0000
	50	4.0000
	75	4.0000

Table 17b

Students' perception of classroom teacher: motivates me to learn the subject

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	9	1.6	1.6	1.6
	Hardly ever	39	7.0	7.1	8.7
	Sometimes	213	38.4	38.6	47.3
	A lot	211	38.0	38.2	85.5
	All the time	80	14.4	14.5	100.0
	Total	552	99.5	100.0	
Missing	System	3	.5		
Total		555	100.0		

Table 17c



Variable statement 18 – makes me think

Table 18a

Statistics

makes me think

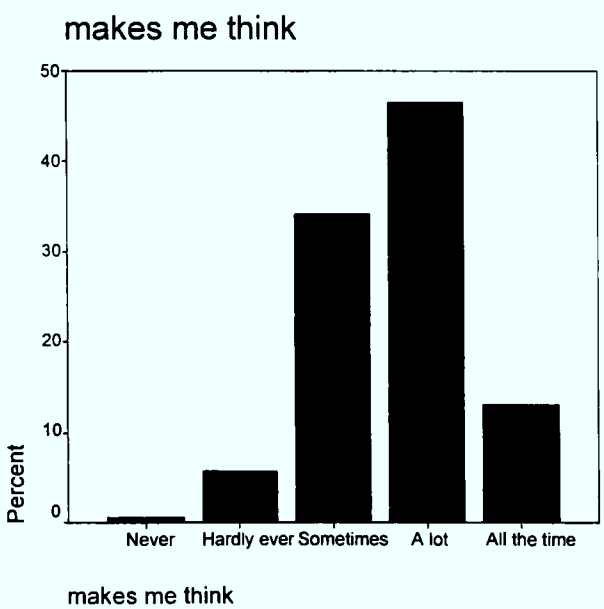
N	Valid	553
	Missing	2
Median		4.0000
Mode		4.00
Range		4.00
Percentiles	25	3.0000
	50	4.0000
	75	4.0000

Table 18b

makes me think

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	3	.5	.5	.5
	Hardly ever	32	5.8	5.8	6.3
	Sometimes	189	34.1	34.2	40.5
	A lot	257	46.3	46.5	87.0
	All the time	72	13.0	13.0	100.0
	Total	553	99.6	100.0	
Missing	System	2	.4		
Total		555	100.0		

Table 18c



Variable statement 19 – praises me whenever possible

Table 19a

Statistics

praises me whenever possible

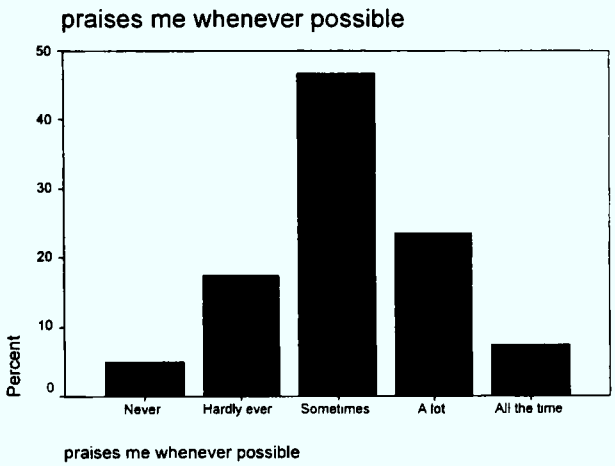
N	Valid	552
	Missing	3
Median		3.0000
Mode		3.00
Range		4.00
Percentiles	25	3.0000
	50	3.0000
	75	4.0000

Table 19b

praises me whenever possible

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	27	4.9	4.9	4.9
	Hardly ever	96	17.3	17.4	22.3
	Sometimes	258	46.5	46.7	69.0
	A lot	130	23.4	23.6	92.6
	All the time	41	7.4	7.4	100.0
	Total	552	99.5	100.0	
Missing	System	3	.5		
Total		555	100.0		

Table 19c



Variable statement 20 – encourages me to take responsibility for my work

Table 20a

Statistics

encourages me to take responsibility for my work

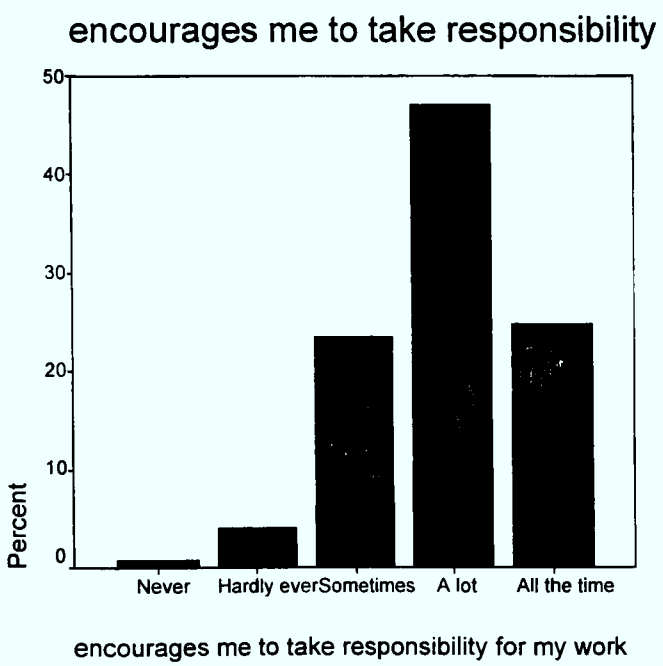
N	Valid	553
	Missing	2
Median		4.0000
Mode		4.00
Range		4.00
Percentiles	25	3.0000
	50	4.0000
	75	4.0000

Table 20b

encourages me to take responsibility for my work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	4	.7	.7	.7
	Hardly ever	22	4.0	4.0	4.7
	Sometimes	130	23.4	23.5	28.2
	A lot	260	46.8	47.0	75.2
	All the time	137	24.7	24.8	100.0
	Total	553	99.6	100.0	
Missing	System	2	.4		
Total		555	100.0		

Table 20c



Variable statement 21 – allows me to express my views

Table 21a

Statistics

allows me to express my views

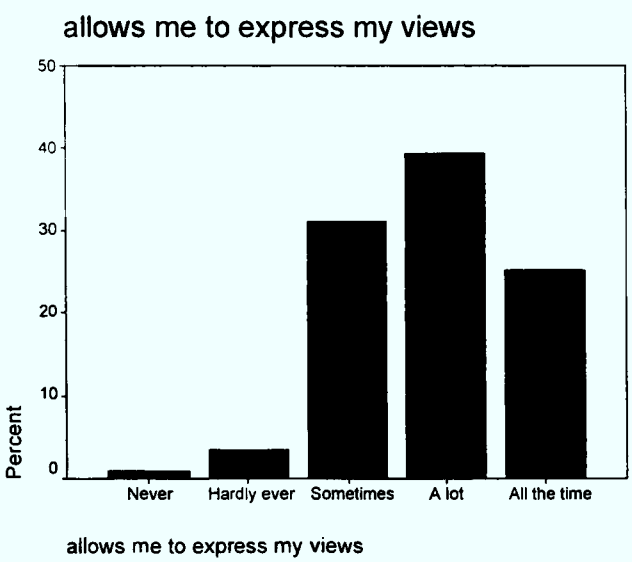
N	Valid	550
	Missing	5
Median		4.0000
Mode		4.00
Range		4.00
Percentiles	25	3.0000
	50	4.0000
	75	5.0000

Table 21b

allows me to express my views

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	5	.9	.9	.9
	Hardly ever	19	3.4	3.5	4.4
	Sometimes	171	30.8	31.1	35.5
	A lot	216	38.9	39.3	74.7
	All the time	139	25.0	25.3	100.0
	Total	550	99.1	100.0	
Missing	System	5	.9		
Total		555	100.0		

Table 21c



Variable statement 22 – asks questions in the class

Table 22a

Statistics

asks questions in the class

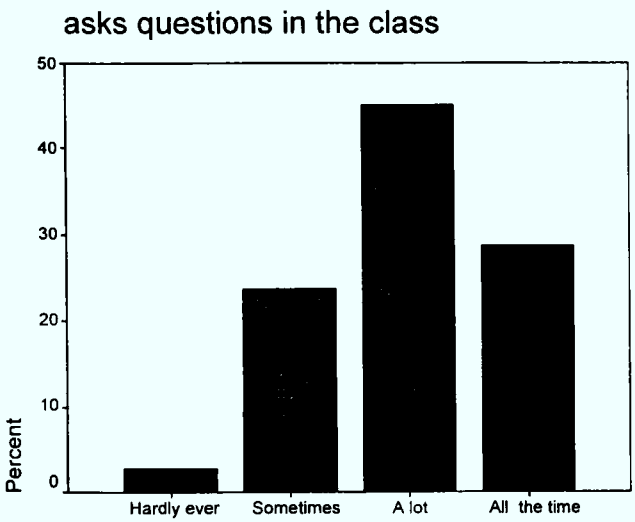
N	Valid	554
	Missing	1
Median		4.0000
Mode		4.00
Range		3.00
Percentiles	25	3.0000
	50	4.0000
	75	5.0000

Table 22b

asks questions in the class

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hardly ever	15	2.7	2.7	2.7
	Sometimes	131	23.6	23.6	26.4
	A lot	249	44.9	44.9	71.3
	All the time	159	28.6	28.7	100.0
	Total	554	99.8	100.0	
Missing	System	1	.2		
Total		555	100.0		

Table 22c



asks questions in the class

Variable statement 23 – is open to students' views

Table 23a

Statistics

is open to students' views

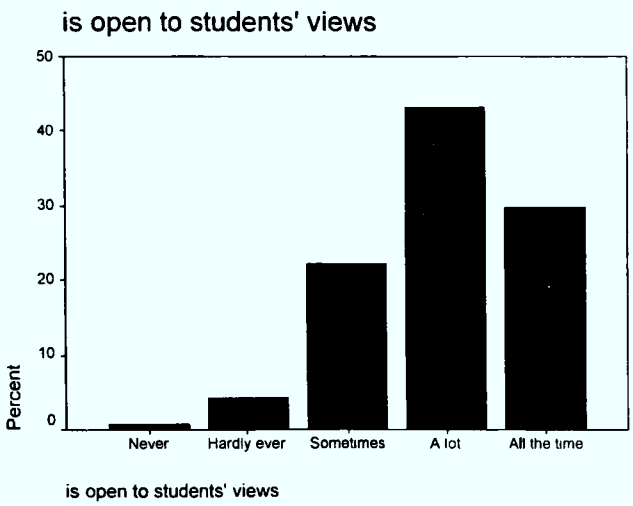
N	Valid	552
	Missing	3
Median		4.0000
Mode		4.00
Range		4.00
Percentiles	25	3.0000
	50	4.0000
	75	5.0000

Table 23b

is open to students' views

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	4	.7	.7	.7
	Hardly ever	23	4.1	4.2	4.9
	Sometimes	123	22.2	22.3	27.2
	A lot	238	42.9	43.1	70.3
	All the time	164	29.5	29.7	100.0
	Total	552	99.5	100.0	
Missing	System	3	.5		
Total		555	100.0		

Table 23c



Variable statement 24 – accepts students' ideas

Table 24a

Statistics

accepts students' ideas

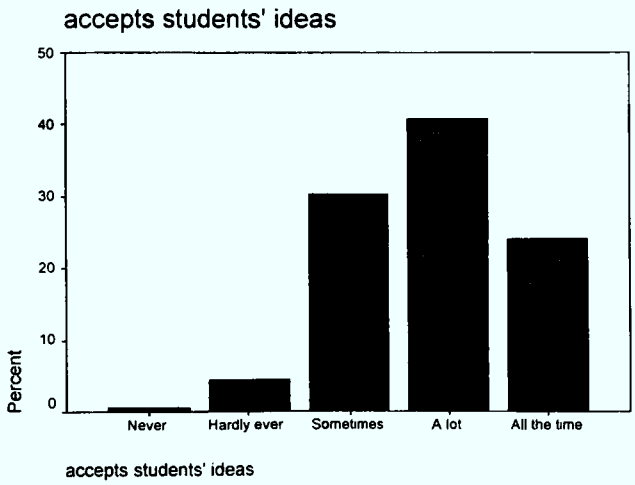
N	Valid	554
	Missing	1
Median		4.0000
Mode		4.00
Range		4.00
Percentiles	25	3.0000
	50	4.0000
	75	4.0000

Table 24b

accepts students' ideas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	3	.5	.5	.5
	Hardly ever	24	4.3	4.3	4.9
	Sometimes	168	30.3	30.3	35.2
	A lot	226	40.7	40.8	76.0
	All the time	133	24.0	24.0	100.0
	Total	554	99.8	100.0	
Missing	System	1	.2		
Total		555	100.0		

Table 24c



Variable statement 25 – is knowledgeable about the subject

Table 25a

Statistics

is knowledgeable about the subject

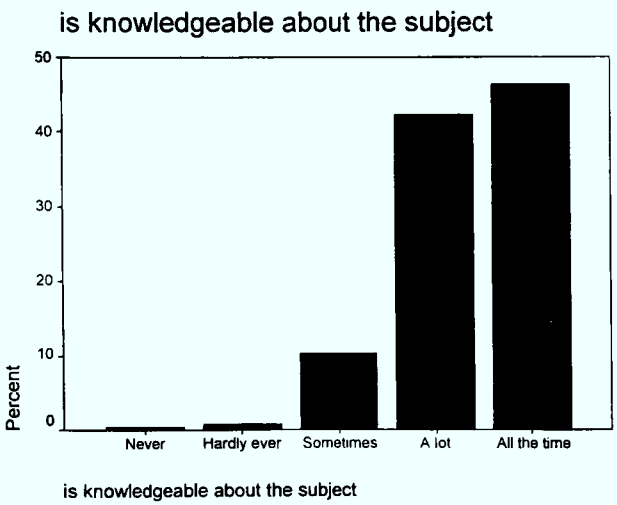
N	Valid	553
	Missing	2
Median		4.0000
Mode		5.00
Range		4.00
Percentiles	25	4.0000
	50	4.0000
	75	5.0000

Table 25b

is knowledgeable about the subject

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	2	.4	.4	.4
	Hardly ever	4	.7	.7	1.1
	Sometimes	57	10.3	10.3	11.4
	A lot	234	42.2	42.3	53.7
	All the time	256	46.1	46.3	100.0
	Total	553	99.6	100.0	
Missing	System	2	.4		
Total		555	100.0		

Table 25c



Variable statement 26 – relates learning to real-life experience

Table 26a

Statistics

relates learning to real-life experience

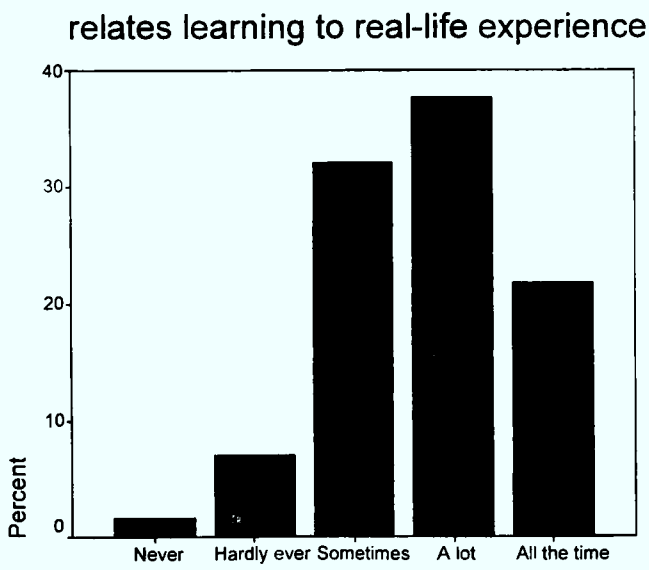
N	Valid	553
	Missing	2
Median		4.0000
Mode		4.00
Range		4.00
Percentiles	25	3.0000
	50	4.0000
	75	4.0000

Table 26b

relates learning to real-life experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	9	1.6	1.6	1.6
	Hardly ever	39	7.0	7.1	8.7
	Sometimes	177	31.9	32.0	40.7
	A lot	208	37.5	37.6	78.3
	All the time	120	21.6	21.7	100.0
	Total	553	99.6	100.0	
Missing	System	2	.4		
Total		555	100.0		

Table 26c



Variable statement 27 – sets assignments that give me a chance to find solutions to problems

Table 27a

Statistics

sets assignments that give me a chance to find solutions to problems

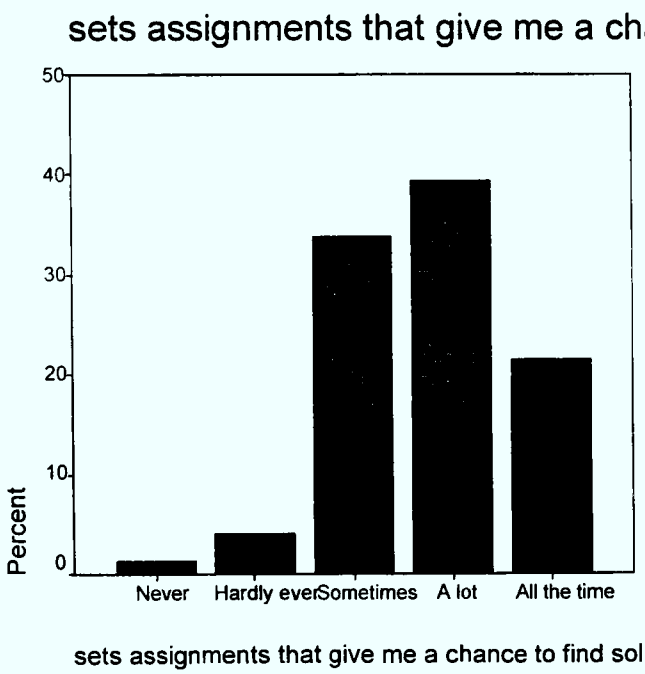
N	Valid	551
	Missing	4
Median		4.0000
Mode		4.00
Range		4.00
Percentiles	25	3.0000
	50	4.0000
	75	4.0000

Table 27b

sets assignments that give me a chance to find solutions to problems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	7	1.3	1.3	1.3
	Hardly ever	22	4.0	4.0	5.3
	Sometimes	186	33.5	33.8	39.0
	A lot	217	39.1	39.4	78.4
	All the time	119	21.4	21.6	100.0
	Total	551	99.3	100.0	
Missing	System	4	.7		
Total		555	100.0		

Table 27c



Variable statement 36 – participation in college activities

Table 36a

Statistics

Participation in college activities

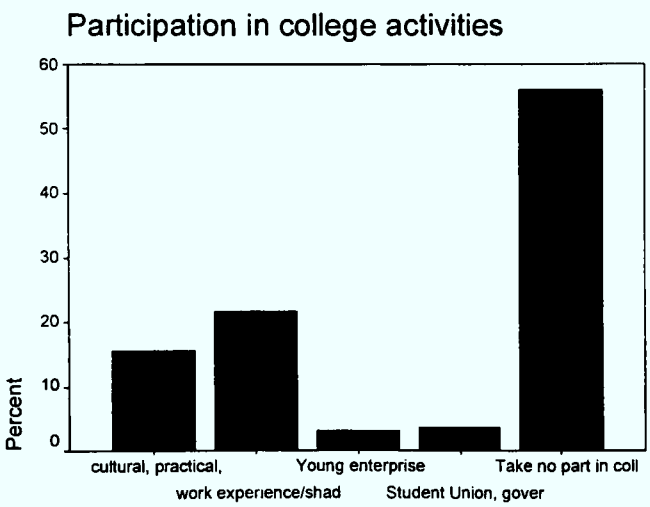
N	Valid	555
	Missing	0
Median		5.0000
Mode		5.00
Range		4.00
Percentiles	25	2.0000
	50	5.0000
	75	5.0000

Table 36b

Participation in college activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	cultural, practical, outdoor	86	15.5	15.5	15.5
	work experience/shadowing	121	21.8	21.8	37.3
	Young enterprise	17	3.1	3.1	40.4
	Student Union, governor, course rep	20	3.6	3.6	44.0
	Take no part in college activities	311	56.0	56.0	100.0
	Total	555	100.0	100.0	

Table 36c



Participation in college activities

Table 36d

Statistics

Participation in college activitiies

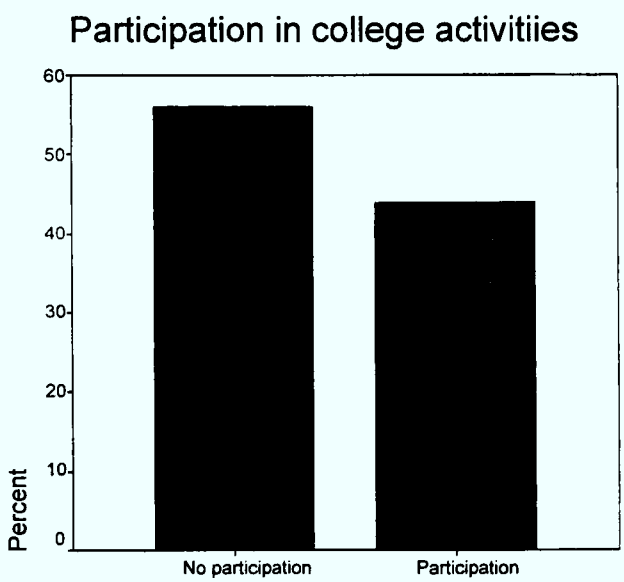
N	Valid	555
	Missing	0
Median		.0000
Mode		.00
Range		1.00
Percentiles	25	.0000
	50	.0000
	75	1.0000

Table 36e

Participation in college activitiies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No participation	311	56.0	56.0	56.0
	Participation	244	44.0	44.0	100.0
	Total	555	100.0	100.0	

Table 36f



Participation in college activitiies

Variable 37 - Comments on college activities: how have these activities helped your learning?

Table 37a

Statistics

Students' comments on college activities: How have these activities helped your learning?

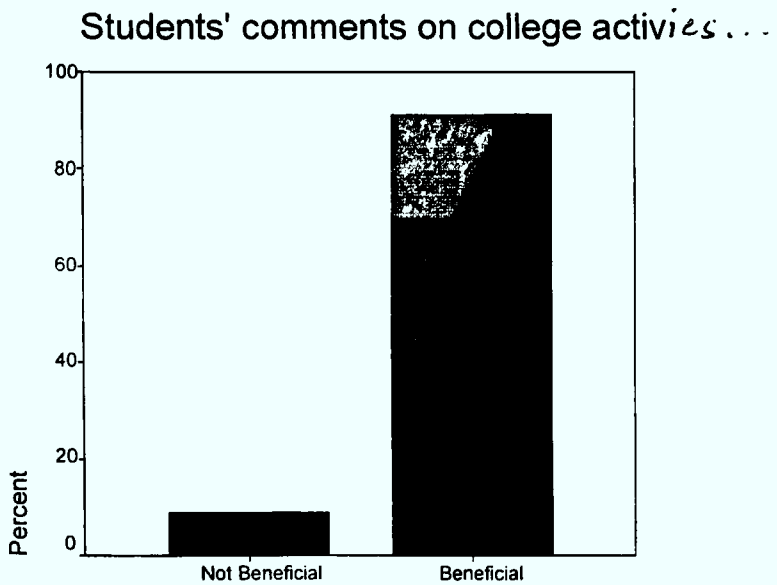
N	Valid	196
	Missing	359
Median		1.0000
Mode		1.00
Range		1.00
Percentiles	25	1.0000
	50	1.0000
	75	1.0000

Table 37b

Students' comments on college activities: How have these activities helped your learning?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Beneficial	17	3.1	8.7	8.7
	Beneficial	179	32.3	91.3	100.0
	Total	196	35.3	100.0	
Missing	System	359	64.7		
Total		555	100.0		

Table 37c



Students' comments on college activities: How have their . . .

APPENDIX G

BIVARIATE ANALYSIS

HYPOTHESIS TESTING – COMPARING TWO VARIABLES OF RELATED MEASURES RELIMINARY

SPSS OUTPUT

Hypothesis #1 [Tables 3.22a & 3.22b]

Table 3.22a
Friedman Test

Ranks

	Mean Rank
Self-profile: I would describe myself as original	3.05
I am a curious student	3.28
I am flexible	3.35
I like to take risk	3.00
I have a sense of humour	4.39
I am imaginative	3.92

Table 3.22b

Test Statistics[a]

N	519
Chi-Square	327.249
df	5
Asymp. Sig.	.000

a. Friedman Test

Hypothesis #2 [Tables 3.23a & 3.23b]

Table 3.23a
Friedman Test

Ranks

	Mean Rank
Students' perception of classroom teacher: motivates me to learn the subject	5.06
makes me think	5.43
praises me whenever possible	3.64
encourages me to take responsibility for my work	6.46
allows me to express my views	6.18
asks questions in the class	6.77
is open to students' views	6.67
accepts students' ideas	6.16
is knowledgeable about the subject	8.16
relates learning to real-life experience	5.62
sets assignments that give me a chance to find solutions to problems	5.86

Table 3.23b

Test Statistics[a]

N	541
Chi-Square	884.657
df	10
Asymp. Sig.	.000

a. Friedman Test

Hypothesis #3 [Tables 3.25a & 3.25b]

Table 3.25a

If-profile: I would describe myself as original * I try new ideas and approaches to problems or to class activitie Crosstabulation

Count

		I try new ideas and approaches to problems or to class activities					
		Never true	Almost never true	Sometimes	Often true	Almost always	Total
Self-profile: I would describe myself as original	Strongly disagree		4	1		1	6
	Disagree	4	23	29	21	4	81
	Neither agree nor disagree	3	72	437	178	24	714
	Agree	3	63	464	264	52	846
	Strongly agree		5	133	101	73	312
Total		10	167	1064	564	154	1959

Table 3.25b

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.259	.023	11.849	.000[c]
Ordinal by Ordinal	Spearman Correlation	.232	.022	10.546	.000[c]
N of Valid Cases		1959			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

Hypothesis #4 [Tables 3.25c & 3.25d]

Table 3.25c

I am a curious student * I ask questions in class Crosstabulation

Count

		I ask questions in class					
		Never true	Almost never true	Sometimes	Often true	Almost always	Total
I am a curious student	Strongly disagree		2	6	1	1	10
	Disagree	4	16	34	10	6	70
	Neither agree nor disagree	3	39	231	72	12	357
	Agree	20	124	680	300	152	1276
	Strongly agree		20	100	105	100	325
Total		27	201	1051	488	271	2038

Table 3.25d

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	.244	.021	11.339	.000[c]
Ordinal by Ordinal	Spearman Correlation	.250	.021	11.634	.000[c]
N of Valid Cases		2038			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

BIVARIATE ANALYSIS: COMPARING VARIABLES BETWEEN INDEPENDENT GROUPS

Student gender

Hypothesis #5 [Tables 3.27a, 3.27b & 3.27c]

Table 3.27a

Which of the following best describe your learning styles? * Gender Crosstabulation

			Gender		
			Male	Female	Total
Which of the following best describe your learning styles?	Try out new unproven ways of doing things	Count	92	107	199
		Expected Count	81.3	117.7	199.0
		% within Which of the following best describe your learning styles?	46.2%	53.8%	100.0%
		% within Gender	42.4%	34.1%	37.5%
		% of Total	17.3%	20.2%	37.5%
	Work within tried and trusted methods	Count	125	207	332
		Expected Count	135.7	196.3	332.0
		% within Which of the following best describe your learning styles?	37.7%	62.3%	100.0%
		% within Gender	57.6%	65.9%	62.5%
		% of Total	23.5%	39.0%	62.5%
Total		Count	217	314	531
		Expected Count	217.0	314.0	531.0
		% within Which of the following best describe your learning styles?	40.9%	59.1%	100.0%
		% within Gender	100.0%	100.0%	100.0%
		% of Total	40.9%	59.1%	100.0%

Table 3.27b

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.791[b]	1	.052		
Continuity Correction [a]	3.444	1	.063		
Likelihood Ratio	3.777	1	.052		
Fisher's Exact Test				.056	.032
Linear-by-Linear Association	3 784	1	.052		
N of Valid Cases	531				

[a] Computed only for a 2x2 table

[b] 0 cells (.0%) have expected count less than 5 The minimum expected count is 81.32

Table 3.27c

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Nominal by Nominal	Phi	.084			.052
	Cramer's V	.084			.052
Interval by Interval	Pearson's R	084	.044	1.950	.052[c]
Ordinal by Ordinal	Spearman Correlation	.084	.044	1.950	.052[c]
N of Valid Cases		531			

a. Not assuming the null hypothesis

b Using the asymptotic standard error assuming the null hypothesis

c. Based on normal approximation

Hypothesis #6 [Tables 3.27d & 3.27e]

Table 3.27d: Mann-Whitney Test

Ranks

	Gender	N	Mean Rank	Sum of Ranks
I try new ideas and approaches to problems or to class activities	Male	217	281.21	61023.00
	Female	320	260.72	83430.00
	Total	537		

Table 3.27e

Test Statistics [a]

	I try new ideas and approaches to problems or to class activities
Mann-Whitney U	32070.000
Wilcoxon W	83430.000
Z	-1 669
Asymp. Sig. (2-tailed)	.095

a Grouping Vanable: Gender

Hypothesis #7 [Tables 3.27f & 3.27g]

Table 3.2ff: Mann-Whitney Test

Ranks

	Gender	N	Mean Rank	Sum of Ranks
I ask questions in class	Male	217	271.37	58887 50
	Female	319	266.55	85028.50
	Total	536		

Table 3.27g

Test Statistics [a]

	I ask questions in class
Mann-Whitney U	33988.500
Wilcoxon W	85028.500
Z	-.387
Asymp. Sig. (2-tailed)	.699

a. Grouping Vanable. Gender

Hypothesis #8 [Tables 3.27h & 3.27i]

Table 3.27h: Mann-Whitney Test

Ranks

	Gender	N	Mean Rank	Sum of Ranks
Composite variables: Students' Creative Attributes	Male	204	245.93	50170.50
	Female	297	254 48	75580.50
	Total	501		

Table 3.27i

Test Statistics [a]

	Composite variables: Students' Creative Attributes
Mann-Whitney U	29260 500
Wilcoxon W	50170 500
Z	-.655
Asymp Sig (2-tailed)	513

a. Grouping Variable Gender

Hypothesis #9 [Tables 3.27j & 3.27k]

Table 3.27j: Mann-Whitney Test

Ranks

	Gender	N	Mean Rank	Sum of Ranks
Composite variables: Students' Perception of Teacher's Classroom Practices	Male	213	241.27	51391.50
	Female	310	276.24	85634.50
	Total	523		

Table 3.27k

Test Statistics [a]

	Composite variables: Students' Perception of Teacher's Classroom Practices
Mann-Whitney U	28600.500
Wilcoxon W	51391.500
Z	-2.603
Asymp. Sig. (2-tailed)	.009

[a] Grouping Variable: Gender

Qualification

Hypothesis #10 [Tables 3.28a & 3.28b]

Table 3.28a: Kruskal-Wallis Test

Ranks

	Qualification Type	N	Mean Rank
Which of the following best describe your learning styles?	A level	211	295.19
	GNVQ/AVCE	249	255.96
	NVQ	74	280.73
	Access/other	14	259.57
	Total	548	

Table 3.28b

Test Statistics [a,b]

	Which of the following best describe your learning styles?
Chi-Square	10.331
df	3
Asymp. Sig.	016

[a] Kruskal Wallis Test

[b] Grouping Variable: Qualification Type

Hypothesis #11 [Tables 3.28a & 3.28b]

Table 3.28c: Kruskal-Wallis Test

Ranks

	Qualification Type	N	Mean Rank
Composite variables: Students' Creative Attributes	A level	205	261.93
	GNVQ/AVCE	233	260.60
	NVQ	68	243.03
	Access/other	13	307.62
	Total	519	

Table 3.28d

Test Statistics [a,b]

	Composite variables: Students' Creative Attributes
Chi-Square	2.256
df	3
Asymp. Sig.	.521

[a] Kruskal Wallis Test

[b] Grouping Variable: Qualification Type

Hypothesis #12 [Tables 3.28e & 3.28f]

Table 3.28e: Kruskal-Wallis Test

Ranks

	Qualification Type	N	Mean Rank
Composite variables. Students' Perception of Teacher's Classroom Practices	A level	208	277.73
	GNVQ/AVCE	247	243.37
	NVQ	72	351.39
	Access/other	14	245.07
	Total	541	

Table 3.28f

Test Statistics [a,b]

	Composite variables: Students' Perception of Teacher's Classroom Practices
Chi-Square	27.598
df	3
Asymp. Sig.	.000

a. Kruskal Wallis Test

b. Grouping Variable: Qualification Type

College

Hypothesis #13 [Tables 3.29a, 3.29b & 3.29c]

Table 3.29a

Which of the following best describe your learning styles? * College Type Crosstabulation

			College Type		
			Sixth Form	General FE	Total
Which of the following best describe your learning styles?	Try out new unproven ways of doing things	Count	81	124	205
		Expected Count	87.9	117.1	205.0
		% within Which of the following best describe your learning styles?	39.5%	60.5%	100.0%
		% within College Type	34.5%	39.6%	37.4%
		% of Total	14.8%	22.6%	37.4%
	Work within tried and trusted methods	Count	154	189	343
		Expected Count	147.1	195.9	343.0
		% within Which of the following best describe your learning styles?	44.9%	55.1%	100.0%
		% within College Type	65.5%	60.4%	62.6%
		% of Total	28.1%	34.5%	62.6%
Total		Count	235	313	548
		Expected Count	235.0	313.0	548.0
		% within Which of the following best describe your learning styles?	42.9%	57.1%	100.0%
		% within College Type	100.0%	100.0%	100.0%
		% of Total	42.9%	57.1%	100.0%

Table 3.29b

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.520[b]	1	.218		
Continuity Correction [a]	1.308	1	.253		
Likelihood Ratio	1.525	1	.217		
Fisher's Exact Test				.246	.126
Linear-by-Linear Association	1.517	1	.218		
N of Valid Cases	548				

[a] Computed only for a 2x2 table

[b] 0 cells (0%) have expected count less than 5 The minimum expected count is 87.91

Table 3.29c

Symmetric Measures

		Value	Asymp Std. Error[a]	Approx. T[b]	Approx. Sig.
Nominal by Nominal	Phi	- 053			.218
	Cramer's V	.053			.218
Interval by Interval	Pearson's R	-.053	.042	-1.232	.218[c]
Ordinal by Ordinal	Spearman Correlation	-.053	.042	-1.232	.218[c]
N of Valid Cases		548			

a Not assuming the null hypothesis

b Using the asymptotic standard error assuming the null hypothesis.

c Based on normal approximation.

Hypothesis #14 [Tables 3.29e & 3.29f]

Table 3.29e

Mann-Whitney Test

Ranks

	College Type	N	Mean Rank	Sum of Ranks
Composite variables: Students' Creative Attributes	Sixth Form	231	261.71	60454.50
	General FE	288	258.63	74485.50
	Total	519		

Table 3.29f

Test Statistics [a]

	Composite variables: Students' Creative Attributes
Mann-Whitney U	32869.500
Wilcoxon W	74485.500
Z	-.234
Asymp. Sig. (2-tailed)	.815

a Grouping Variable College Type

Hypothesis #15 [Tables 3.29g & 3.29h]

Table 3.29g: Mann-Whitney Test

Ranks

	College Type	N	Mean Rank	Sum of Ranks
Composite variables: Students' Perception of Teacher's Classroom Practices	Sixth Form	231	296.52	68497.00
	General FE	310	251.98	78114.00
	Total	541		

Table 3.29h

Test Statistics [a]

	Composite variables: Students' Perception of Teacher's Classroom Practices
Mann-Whitney U	29909.000
Wilcoxon W	78114.000
Z	-3.283
Asymp. Sig. (2-tailed)	.001

[a] Grouping Variable: College Type

APPENDIX H

MULTIVARIATE ANALYSIS

3.35 CREATIVE AND NON CREATIVE LEARNERS – TEST FOR POSSIBLE VIOLATIONS OF UNDERLYING ASSUMPTIONS

SPSS EXPLORE COMMAND SHOWING BOTH THE BOXPLOTS AND STEM-AND-LEAF PLOTS

NOTE: Variables which show extreme outliers are removed from the discriminant analysis.

Which of the following best describe your learning styles?
Stem-and-Leaf Plots
Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE3= Strongly disagree

Frequency	Stem &	Leaf
1.00	1 .	0
.00	1 .	
3.00	2	000

Stem width: 1.00
Each leaf: 1 case(s)

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE3= Disagree

Frequency	Stem &	Leaf
7.00	1 .	0000000
.00	1 .	
15.00	2 .	000000000000000

Stem width: 1.00
Each leaf: 1 case(s)

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE3= Neither agree nor disagree

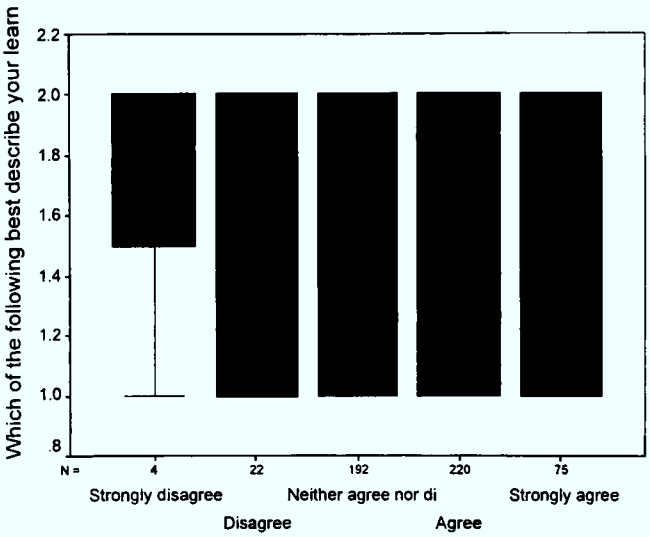
```
 Frequency     Stem &  Leaf

    50.00        10 .  00000000000000000
      .00        11 .
      .00        12 .
      .00        13 .
      .00        14 .
      .00        15 .
      .00        16 .
      .00        17 .
      .00        18 .
      .00        19
   142.00        20 .  00000000000000000000000000000000000000000000000000

 Stem width:        .10
 Each leaf:        3 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE3= Agree

```
 Frequency     Stem &  Leaf

    91.00        10 .  00000000000000000000000000000
      .00        11 .
      .00        12 .
      .00        13
      .00        14
      .00        15 .
      .00        16 .
      .00        17
      .00        18
      .00        19 .
   129.00        20 .  00000000000000000000000000000000000000000000000

 Stem width:        .10
 Each leaf:        3 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE3= Strongly agree

```
 Frequency     Stem &  Leaf

    41.00         1    00000000000000000000000000000000000000000000
      .00         1 .
      .00         1 .
      .00         1 .
      .00         1 .
    34.00         2    0000000000000000000000000000000000

 Stem width:       1.00
 Each leaf:        1 case(s)
```



Self-profile: I would describe myself as original

I am a curious student
Which of the following best describe your learning styles?
Stem-and-Leaf Plots

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE4= Strongly disagree

```
 Frequency     Stem &  Leaf

     4.00        1    0000
      .00        1 .
     5.00        2    00000

 Stem width:      1.00
 Each leaf:       1 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE4= Disagree

```
 Frequency     Stem &  Leaf

    10.00        1 .  0000000000
      .00        1 .
      .00        1 .
      .00        1 .
      .00        1 .
    22.00        2 .  00000000000000000000

 Stem width:      1.00
 Each leaf:       1 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE4= Neither agree nor disagree

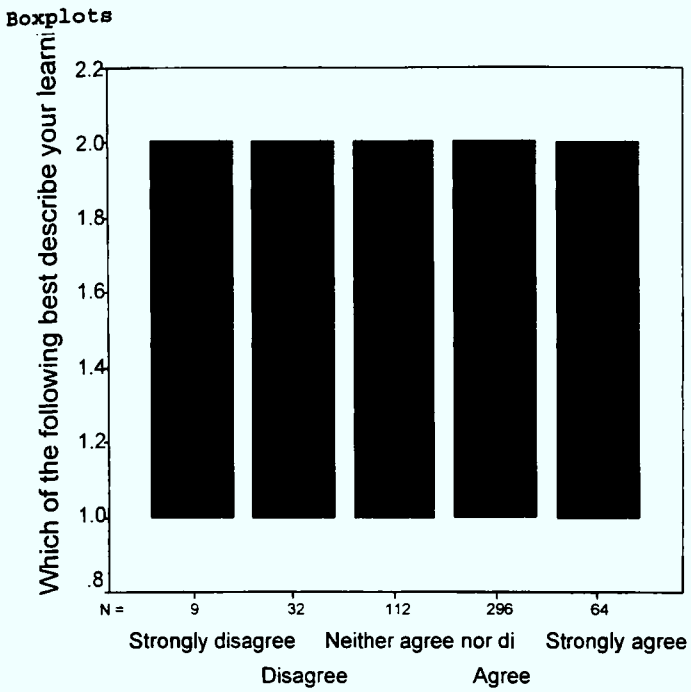
```
 Frequency    Stem &  Leaf

    33.00       10 .  0000000000000000
      .00       11 .
      .00       12 .
      .00       13 .
      .00       14
      .00       15 .
      .00       16 .
      .00       17
      .00       18
      .00       19 .
    79.00       20 .  0000000000000000000000000000000000000000

 Stem width:       .10
 Each leaf:       2 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE4= Agree

```
 Frequency    Stem &  Leaf

   120.00       10 .  00000000000000000000000000000000
      .00       11 .
      .00       12 .
      .00       13 .
      .00       14
      .00       15 .
      .00       16 .
      .00       17 .
      .00       18 .
      .00       19 .
   176.00       20 .  0000000000000000000000000000000000000000000000

 Stem width:       .10
 Each leaf:       4 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE4= Strongly agree

```
 Frequency    Stem &  Leaf

    23.00        1 .  00000000000000000000
      .00        1 .
      .00        1 .
      .00        1 .
      .00        1 .
    41.00        2    0000000000000000000000000000000000000000

 Stem width:      1.00
 Each leaf:       1 case(s)
```



I am flexible
Which of the following best describe your learning styles?
Stem-and-Leaf Plots

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE5= Strongly disagree

Frequency	Stem &	Leaf
3.00	1	000
.00	1	
3.00	2	000

Stem width: 1.00
Each leaf: 1 case(s)

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE5= Strongly disagree

Frequency	Stem &	Leaf
27.00	1 .	000000000000000000000000000
.00	1 .	
.00	1 .	
.00	1 .	
.00	1 .	
28.00	2 .	0000000000000000000000000000

Stem width: 1.00
Each leaf: 1 case(s)

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE5= Disagree

```
 Frequency     Stem &  Leaf

     8.00        1 .  00000000
      .00        1 .
      .00        1 .
      .00        1 .
      .00        1 .
    15.00        2 .  000000000000000

 Stem width:      1.00
 Each leaf:       1 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE5= Neither agree nor disagree

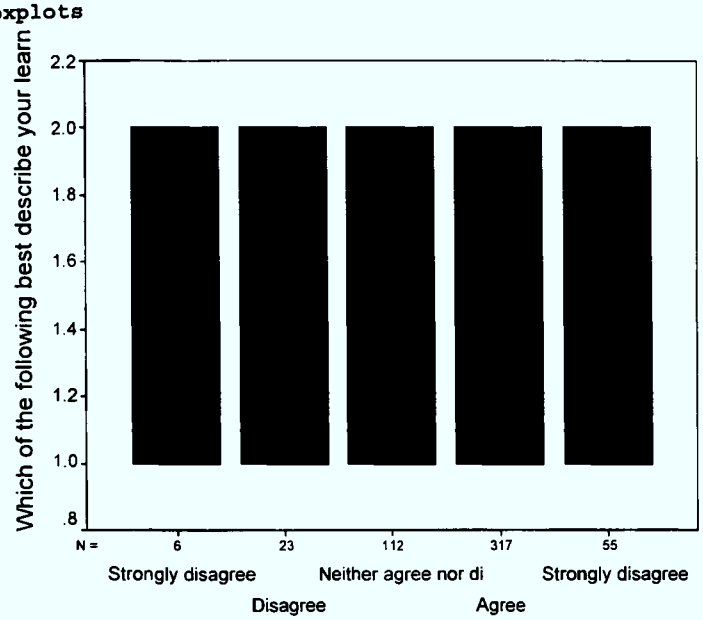
```
 Frequency     Stem &  Leaf

    39.00       10 .  000000000000000000
      .00       11 .
      .00       12 .
      .00       13 .
      .00       14 .
      .00       15 .
      .00       16 .
      .00       17 .
      .00       18 .
      .00       19 .
    73.00       20 .  00000000000000000000000000000000000000

 Stem width:       .10
 Each leaf:      2 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE5= Agree

```
 Frequency     Stem &  Leaf

   113.00       10 .  00000000000000000000
      .00       11
      .00       12 .
      .00       13 .
      .00       14 .
      .00       15 .
```

```
     .00        16 .
     .00        17 .
     .00        18 .
     .00        19 .
  204.00        20 .  00000000000000000000000000000000000000000000

Stem width:        .10
Each leaf:        5 case(s)
```

Boxplots



I am flexible

I like to take risks
Which of the following best describe your learning styles?
Stem-and-Leaf Plots

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE6= Strongly disagree

```
 Frequency     Stem &  Leaf

     3.00        1 .  000
      .00        1 .
     6.00        2 .  000000

 Stem width:      1.00
 Each leaf:       1 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for

STATE6= Disagree

```
 Frequency    Stem &  Leaf

    11.00 Extremes    (=<1)
      .00        0 .
    42.00        0 .  22222222222222222222222222222222222222222222

 Stem width:     10.00
 Each leaf:       1 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE6= Neither agree nor disagree

```
 Frequency    Stem &  Leaf

    51.00       10 .  00000000000000000
      .00       11 .
      .00       12 .
      .00       13 .
      .00       14 .
      .00       15 .
      .00       16 .
      .00       17 .
      .00       18 .
      .00       19 .
   107.00       20 .  00000000000000000000000000000000000000

 Stem width:       .10
 Each leaf:       3 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE6= Agree

```
 Frequency    Stem &  Leaf

    78.00       10 .  000000000000000000000000000
      .00       11 .
      .00       12 .
      .00       13 .
      .00       14 .
      .00       15 .
      .00       16 .
      .00       17 .
      .00       18 .
      .00       19 .
   139.00       20 .  00000000000000000000000000000000000000000000000000

 Stem width:       .10
 Each leaf:       3 case(s)
```

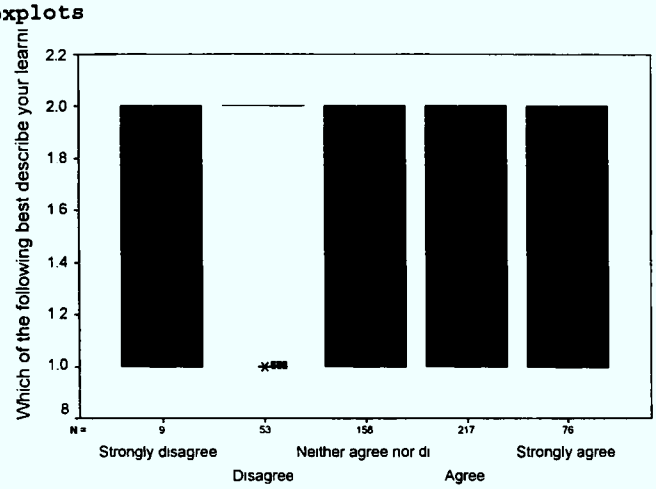
Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE6= Strongly agree

```
 Frequency    Stem &  Leaf
```

```
  47.00        1 .  00000000000000000000000000000000000000000000000000
    .00        1 .
    .00        1 .
    .00        1 .
    .00        1 .
  29.00        2    00000000000000000000000000000
```

Stem width: 1.00
Each leaf: 1 case(s)

Boxplots



I like to take risk

I have a sense of humour
Which of the following best describe your learning styles?
Stem-and-Leaf Plots

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE7= Strongly disagree

```
 Frequency    Stem &  Leaf

    1.00        1 .  0
     .00        1 .
    3.00        2 .  000
```

Stem width: 1.00
Each leaf: 1 case(s)

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE7= Disagree

```
 Frequency    Stem &  Leaf

    4.00        1 .  0000
     .00        1 .
    3.00        2 .  000
```

```
 Stem width:      1.00
 Each leaf:       1 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE7= Neither agree nor disagree

```
 Frequency    Stem &  Leaf

    11.00       1 .  00000000000
      .00       1 .
      .00       1 .
      .00       1 .
      .00       1 .
    19.00       2 .  0000000000000000000

 Stem width:      1.00
 Each leaf:       1 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE7= Agree

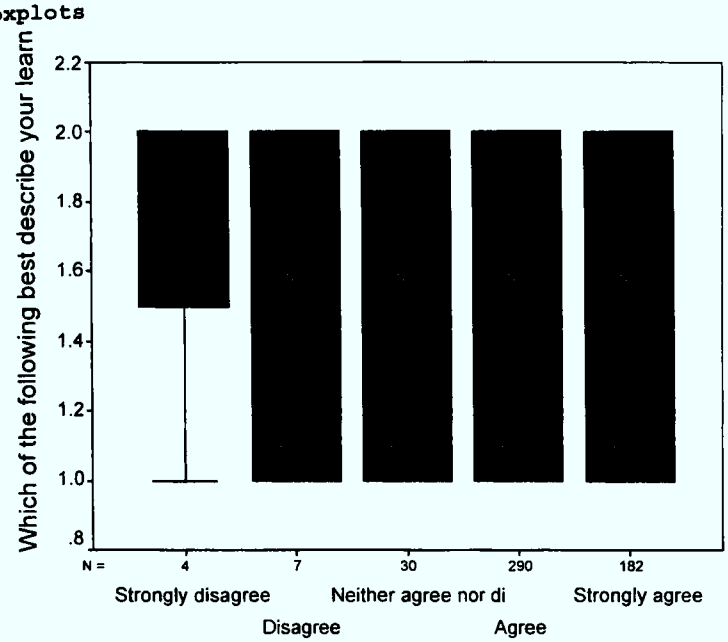
```
 Frequency    Stem &  Leaf

    90.00      10 .  00000000000000000000
      .00      11 .
      .00      12 .
      .00      13 .
      .00      14 .
      .00      15 .
      .00      16 .
      .00      17 .
      .00      18 .
      .00      19 .
   200.00      20 .  00000000000000000000000000000000000000000000000000

 Stem width:      .10
 Each leaf:       4 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE7= Strongly agree

```
 Frequency    Stem &  Leaf

    84.00      10 .  00000000000000000000000000000000000000000000
      .00      11 .
      .00      12
      .00      13 .
      .00      14 .
      .00      15
      .00      16 .
      .00      17 .
      .00      18 .
      .00      19 .
    98.00      20 .  00000000000000000000000000000000000000000000000000
```

```
Stem width:        .10
Each leaf:       2 case(s)
```

Boxplots



I have a sense of humour

I am imaginative
Which of the following best describe your learning styles?
Stem-and-Leaf Plots

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE8= Strongly disagree

```
 Frequency    Stem &  Leaf

     1.00 Extremes    (=<1)
     4.00         0 .  2222

 Stem width:     10.00
 Each leaf:       1 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE8= Disagree

```
 Frequency    Stem &  Leaf

     5.00         1    00000
      .00         1 .
     9.00         2 .  000000000

 Stem width:      1.00
 Each leaf:       1 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE8= Neither agree nor disagree

```
 Frequency    Stem &  Leaf

    18.00 Extremes    (=<1)
      .00        0 .
    57.00        0 .  222222222222222222222222222

 Stem width:     10.00
 Each leaf:       2 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE8= Agree

```
 Frequency    Stem &  Leaf

    93.00       10 .  00000000000000000000
      .00       11 .
      .00       12 .
      .00       13 .
      .00       14 .
      .00       15 .
      .00       16 .
      .00       17 .
      .00       18 .
      .00       19 .
   193.00       20 .  0000000000000000000000000000000000000000000000000

 Stem width:       .10
 Each leaf:       4 case(s)
```

Which of the following best describe your learning styles? Stem-and-Leaf Plot for
STATE8= Strongly agree

```
 Frequency    Stem &  Leaf

    73.00       10 .  00000000000000000000000000000000000
      .00       11
      .00       12 .
      .00       13 .
      .00       14 .
      .00       15 .
      .00       16 .
      .00       17 .
      .00       18 .
      .00       19 .
    60.00       20 .  000000000000000000000000000000

 Stem width:       .10
 Each leaf:       2 case(s)
```

CREATIVE LEARNERS AND NON-CREATIVE LEARNERS – DISCRIMINANT FUNCTION ANALYSIS

Table 3.36a

Analysis Case Processing Summary

Unweighted Cases		N	Percent
Valid		515	92.8
Excluded	Missing or out-of-range group codes	6	1.1
	At least one missing discriminating variable	33	5.9
	Both missing or out-of-range group codes and at least one missing discriminating variable	1	.2
	Total	40	7.2
Total		555	100.0

Table 3.36b

Group Statistics

Which of the following best describe your learning styles?		Mean	Std. Deviation	Valid N (listwise)	
				Unweighted	Weighted
Try out new unproven ways of doing things	Self-profile: I would describe myself as original	3.8632	.8114	190	190.000
	I am a curious student	3.7789	.8058	190	190.000
	I am flexible	3.8053	.7895	190	190.000
	I have a sense of humour	4.3263	.7266	190	190.000
Work within tried and trusted methods	Self-profile: I would describe myself as original	3.5446	.7790	325	325.000
	I am a curious student	3.7015	.8316	325	325.000
	I am flexible	3.7385	.7174	325	325.000
	I have a sense of humour	4.2000	.6667	325	325.000
Total	Self-profile: I would describe myself as original	3.6621	.8052	515	515.000
	I am a curious student	3.7301	.8222	515	515.000
	I am flexible	3.7631	.7448	515	515.000
	I have a sense of humour	4.2466	.6914	515	515.000

Table 3.36c

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
Self-profile: I would describe myself as original	.963	19.441	1	513	.000
I am a curious student	.998	1.063	1	513	.303
I am flexible	.998	.965	1	513	.326
I have a sense of humour	.992	4.026	1	513	.045

Table 3.36d

Pooled Within-Groups Matrices

		Self-profile: I would describe myself as original	I am a curious student	I am flexible	I have a sense of humour
Correlation	Self-profile: I would describe myself as original	1.000	.240	.189	.158
	I am a curious student	.240	1.000	.221	.155
	I am flexible	.189	.221	1.000	.152
	I have a sense of humour	.158	.155	.152	1.000

Table 3.36e: Box's Test of Equality of Covariance Matrices

Log Determinants

Which of the following best describe your	Rank	Log Determinant
Try out new unproven ways of doing things	1	-.418
Work within tried and trusted methods	1	-.500
Pooled within-groups	1	-.469

The ranks and natural logarithms of determinants printed are those of the group covariance matrices.

Test Results

Box's M		.401
F	Approx.	.400
	df1	1
	df2	653427.7
	Sig.	.527

Tests null hypothesis of equal population covariance matrices.

Table 3.36f: Stepwise Statistics

Variables Entered/Removed[a,b,c,d]

Step	Entered	Wilks' Lambda							
						Exact F			
		Statistic	df1	df2	df3	Statistic	df1	df2	Sig.
1	Self-profile: I would describe myself as original	.963	1	1	513.000	19.441	1	513.000	.000

At each step, the variable that minimizes the overall Wilks' Lambda is entered.

a. Maximum number of steps is 8.

b. Minimum partial F to enter is 3.84.

c. Maximum partial F to remove is 2.71.

d. F level, tolerance, or VIN insufficient for further computation.

Variables in the Analysis

Step		Tolerance	F to Remove
1	Self-profile: I would describe myself as original	1.000	19.441

Variables Not in the Analysis

Step		Tolerance	Min. Tolerance	F to Enter	Wilks' Lambda
0	Self-profile: I would describe myself as original	1.000	1.000	19.441	.963
	I am a curious student	1.000	1.000	1.063	.998
	I am flexible	1.000	1.000	.965	.998
	I have a sense of humour	1.000	1.000	4.026	.992
1	I am a curious student	.942	.942	.001	.963
	I am flexible	.964	.964	.022	.963
	I have a sense of humour	.975	.975	1.697	.960

Wilks' Lambda

Step	Number of Variables	Lambda	df1	df2	df3	Exact F			
						Statistic	df1	df2	Sig.
1	1	.963	1	1	513	19.441	1	513.000	.265E-05

Table 3.36g: Summary of Canonical Discriminant Functions

Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	.038[a]	100.0	100.0	.191

a. First 1 canonical discriminant functions were used in the analysis.

Table 3.36h

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.963	19.063	1	.000

Table 3.36i

Standardized Canonical Discriminant Function Coefficients

	Function
	1
Self-profile: I would describe myself as original	1.000

Table 3.36j

Structure Matrix

	Function
	1
Self-profile: I would describe myself as original	1.000
I am a curious student[a]	.240
I am flexible[a]	.189
I have a sense of humour[a]	.158

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
Variables ordered by absolute size of correlation within function.

a. This variable not used in the analysis.

Table 3.36k

Functions at Group Centroids

Which of the following best describe your learning styles?	Function
	1
Try out new unproven ways of doing things	.254
Work within tried and trusted methods	-.149

Unstandardized canonical discriminant functions evaluated at group means

Table 3.36l

Classification Processing Summary

Processed		555
Excluded	Missing or out-of-range group codes	0
	At least one missing discriminating variable	27
Used in Output		528

Table 3.36m

Prior Probabilities for Groups

Which of the following best describe your learning styles?	Prior	Cases Used in Analysis	
		Unweighted	Weighted
Try out new unproven ways of doing things	.500	190	190.000
Work within tried and trusted methods	.500	325	325.000
Total	1.000	515	515.000

Table 3.3nn

Classification Results[a]

		Which of the following best describe your learning styles?	Predicted Group Membership: Try out new unproven ways of doing things	Predicted Group Membership: Work within tried and trusted methods	Total
Original	Count	Try out new unproven ways of doing things	136	59	195
		Work within tried and trusted methods	164	163	327
		Ungrouped cases	3	3	6
	%	Try out new unproven ways of doing things	69.7	30.3	100.0
		Work within tried and trusted methods	50.2	49.8	100.0
		Ungrouped cases	50.0	50.0	100.0

a. 57.3% of original grouped cases correctly classified.

3.39 STUDENT CREATIVITY – TEST FOR POSSIBLE VIOLATIONS OF UNDERLYING ASSUMPTIONS

SPSS SHOWING BOTH STEM-AND-LEAF PLOTS AND THE BOXPLOTS ACROSS THE TWO LEVELS OF CREATIVITY MEASURES WITH THE PREDICTORS VARIABLES

Stem-and-Leaf Plots

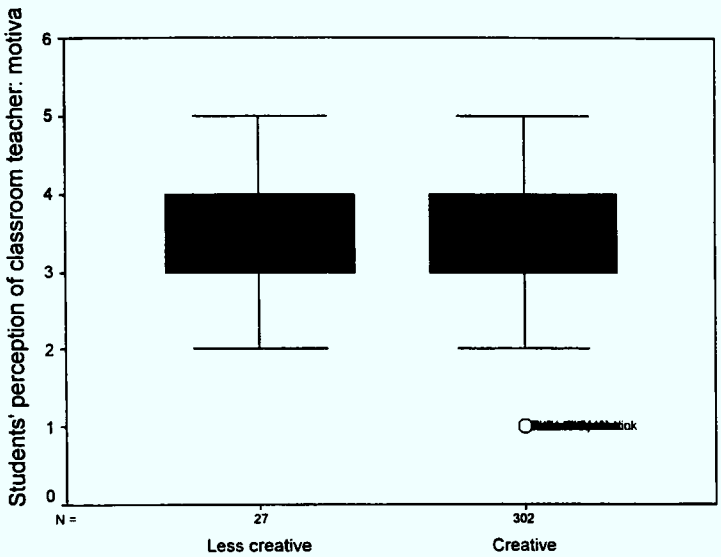
Students' perception of classroom teacher: motivates me to learn the sub
Stem-and-Leaf Plot for
STUDCRE1= Less creative

```
 Frequency    Stem &  Leaf

     6.00        2 .  000000
      .00        2
    12.00        3 .  000000000000
      .00        3 .
     3.00        4 .  000
      .00        4 .
     6.00        5 .  000000

 Stem width:      1.00
 Each leaf:       1 case(s)
```

Students' perception of classroom teacher: motivates me to learn the sub
Stem-and-Leaf Plot for
STUDCRE1= Creative

```
 Frequency    Stem &  Leaf

     6.00 Extremes    (=<1.0)
    22.00        2 .  0000000
      .00        2 .
      .00        2 .
      .00        2 .
      .00        2 .
    98.00        3    00000000000000000000000000000000
      .00        3
      .00        3 .
      .00        3 .
      .00        3
   128.00        4 .  00000000000000000000000000000000000000000000
      .00        4
      .00        4
      .00        4
      .00        4 .
    48.00        5 .  0000000000000000

 Stem width:      1.00
 Each leaf:       3 case(s)
```

The Boxplots



Student Creativity (defined by Originality Attribute)

makes me think
Stem-and-Leaf Plots
makes me think Stem-and-Leaf Plot for
STUDCRE1= Less creative

Frequency	Stem &	Leaf
8.00	2 .	00000000
.00	2 .	
9.00	3 .	000000000
.00	3 .	
8.00	4 .	00000000
.00	4 .	
2.00	5 .	00

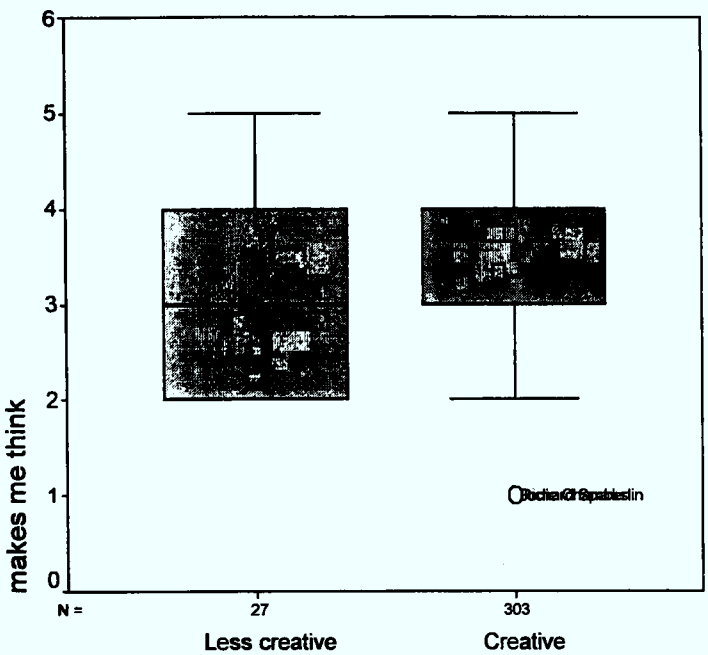
Stem width: 1.00
Each leaf: 1 case(s)

makes me think Stem-and-Leaf Plot for
STUDCRE1= Creative

Frequency	Stem &	Leaf
2.00 Extremes	(=<1.0)	

```
  14.00        2 .  000
    .00        2 .
    .00        2 .
    .00        2 .
    .00        2 .
  88.00        3 .  0000000000000000000000
    .00        3 .
    .00        3 .
    .00        3 .
    .00        3 .
 154.00        4 .  00000000000000000000000000000000000000000
    .00        4 .
    .00        4 .
    .00        4 .
    .00        4 .
  45.00        5 .  00000000000

Stem width:     1.00
Each leaf:      4 case(s)
```

The Boxplots



Student Creativity (defined by Originality Attribute)

praises me whenever possible
Stem-and-Leaf Plots

praises me whenever possible Stem-and-Leaf Plot for
STUDCRE1= Less creative

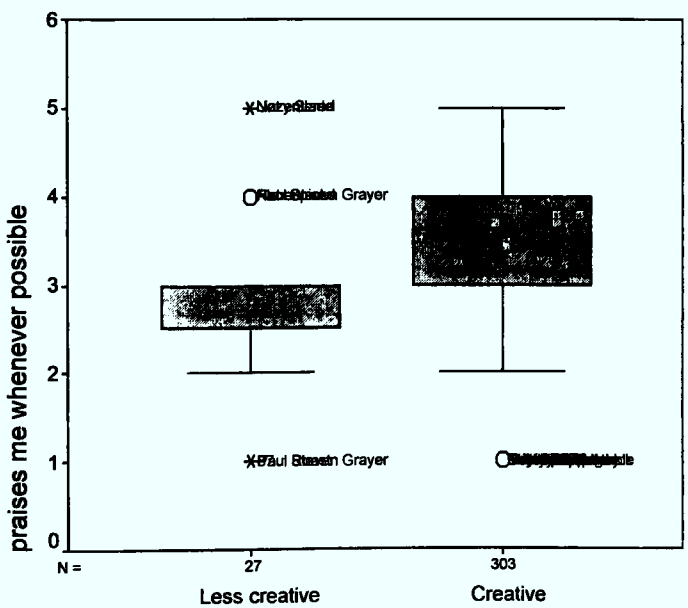
```
 Frequency     Stem &  Leaf

     3.00 Extremes     (=<1.0)
     4.00        2 .   0000
      .00        2 .
      .00        2 .
```

```
     .00        2 .
     .00        2 .
   15.00        3 .  000000000000000
    5.00 Extremes    (>=4.0)

 Stem width:      1.00
 Each leaf:       1 case(s)
```

praises me whenever possible Stem-and-Leaf Plot for
STUDCRE1= Creative

```
 Frequency    Stem &  Leaf

   17.00 Extremes    (=<1.0)
   58.00        2 .  00000000000000000
     .00        2 .
     .00        2 .
     .00        2 .
     .00        2 .
  131.00        3 .  00000000000000000000000000000000000000000000000
     .00        3 .
     .00        3 .
     .00        3 .
     .00        3 .
   67.00        4 .  00000000000000000000
     .00        4 .
     .00        4 .
     .00        4 .
     .00        4 .
   30.00        5 .  0000000000

 Stem width:      1.00
 Each leaf:       3 case(s)
```

The Boxplots



Student Creativity (defined by Originality Attribute)

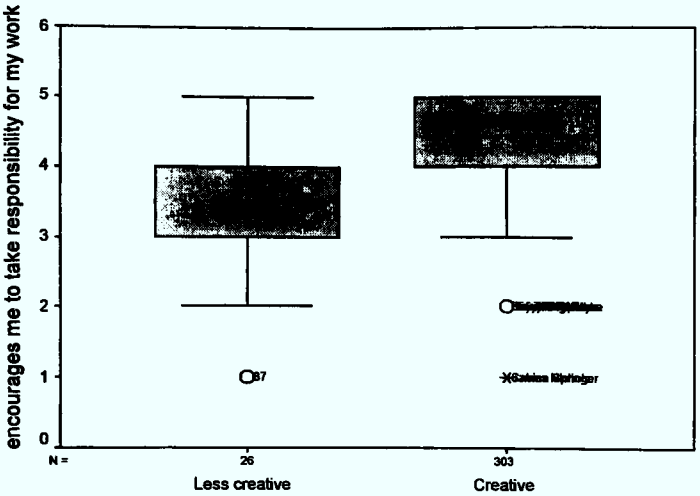
encourages me to take responsibility for my work
Stem-and-Leaf Plots
encourages me to take responsibility for my work Stem-and-Leaf Plot for
STUDCRE1= Less creative

```
 Frequency    Stem &  Leaf

     1.00 Extremes    (=<1.0)
     3.00        2 .  000
      .00        2 .
     6.00        3 .  000000
      .00        3 .
    11.00        4 .  00000000000
      .00        4 .
     5.00        5    00000

 Stem width:      1.00
 Each leaf:       1 case(s)
```

encourages me to take responsibility for my work Stem-and-Leaf Plot for
STUDCRE1= Creative

```
 Frequency    Stem &  Leaf

    14.00 Extremes    (=<2.0)
    60.00        3 .  0000000000000000000
      .00        3 .
      .00        3 .
      .00        3
      .00        3 .
   140.00        4    00000000000000000000000000000000000000000000000000
      .00        4
      .00        4 .
      .00        4
      .00        4
    89.00        5 .  00000000000000000000000000000

 Stem width:      1.00
 Each leaf:       3 case(s)
```

The Boxplots



Student Creativity (defined by Originality Attribute)

allows me to express my views
Stem-and-Leaf Plots
allows me to express my views Stem-and-Leaf Plot for
STUDCRE1= Less creative

Frequency	Stem &	Leaf
1.00	1 .	0
.00	1 .	
3.00	2 .	000
.00	2 .	
6.00	3 .	000000
.00	3 .	
8.00	4 .	00000000
.00	4 .	
8.00	5 .	00000000

Stem width: 1.00
Each leaf: 1 case(s)

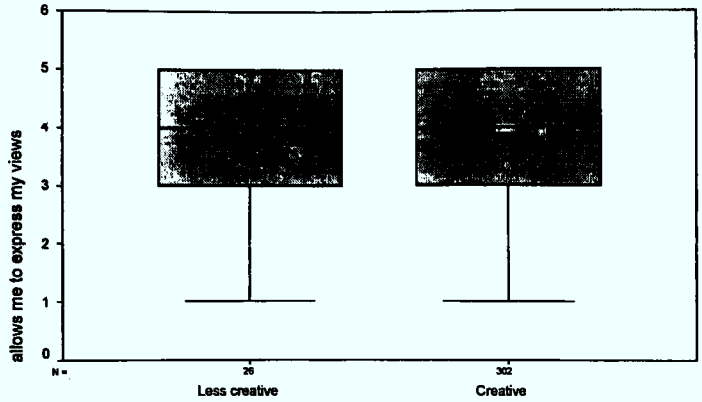
allows me to express my views Stem-and-Leaf Plot for
STUDCRE1= Creative

Frequency	Stem &	Leaf
1.00	1 .	&
.00	1 .	
12.00	2 .	0000
.00	2 .	
92.00	3 .	00000000000000000000000000000000
.00	3 .	
111.00	4 .	000000000000000000000000000000000000000
.00	4 .	
86.00	5 .	00000000000000000000000000000

Stem width: 1.00
Each leaf: 3 case(s)

& denotes fractional leaves.

The Boxplots



asks questions in the class
Stem-and-Leaf Plots

asks questions in the class Stem-and-Leaf Plot for
STUDCRE1= Less creative

Frequency	Stem &	Leaf
7.00	3 .	0000000
.00	3 .	
10.00	4 .	0000000000
.00	4 .	
10.00	5 .	0000000000

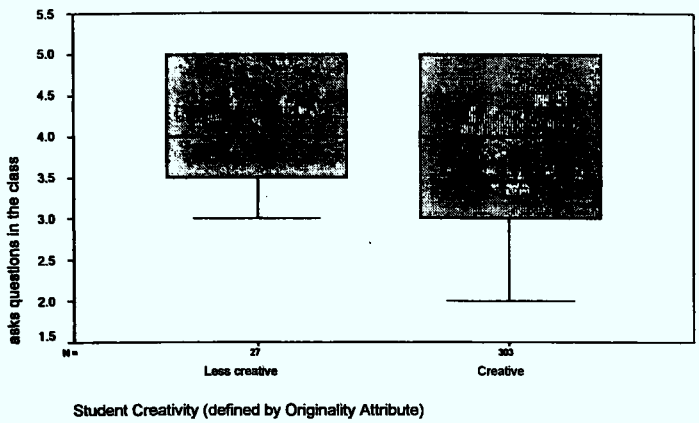
Stem width: 1.00
Each leaf: 1 case(s)

asks questions in the class Stem-and-Leaf Plot for
STUDCRE1= Creative

Frequency	Stem &	Leaf
7.00	2 .	00
.00	2 .	
.00	2 .	
.00	2 .	
.00	2 .	
75.00	3 .	000000000000000000000000
.00	3 .	
.00	3 .	
.00	3 .	
.00	3 .	
131.00	4 .	00000000000000000000000000000000000000000000000
.00	4 .	
.00	4 .	
.00	4 .	
.00	4 .	
90.00	5 .	000000000000000000000000000000

Stem width: 1.00
Each leaf: 3 case(s)

The Boxplots



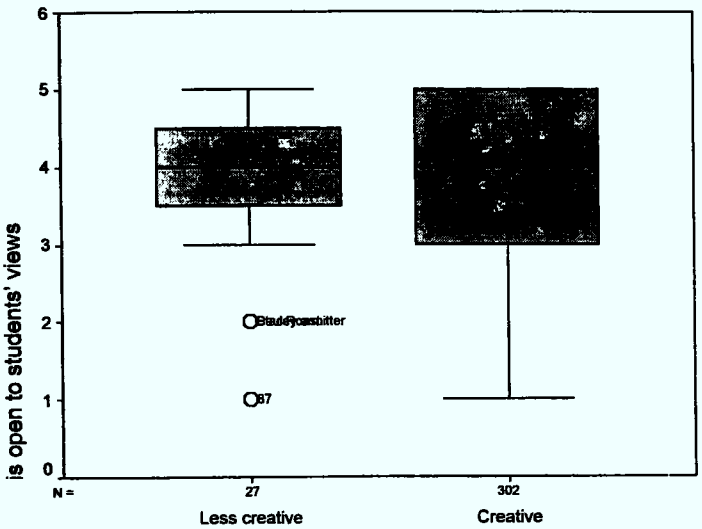
is open to students' views
Stem-and-Leaf Plots
is open to students' views Stem-and-Leaf Plot for
STUDCRE1= Less creative

```
 Frequency     Stem &  Leaf

     3.00 Extremes    (=<2.0)
     4.00        3 .  0000
      .00        3 .
    13.00        4 .  0000000000000
      .00        4 .
     7.00        5 .  0000000

 Stem width:      1.00
 Each leaf:       1 case(s)
```

is open to students' views Stem-and-Leaf Plot for
STUDCRE1= Creative

```
 Frequency     Stem &  Leaf

     3.00        1 .  0
      .00        1 .
    11.00        2 .  0000
      .00        2 .
    73.00        3 .  0000000000000000000000
      .00        3 .
   117.00        4 .  000000000000000000000000000000000000000000
      .00        4 .
    98.00        5 .  00000000000000000000000000000000

 Stem width:      1.00
 Each leaf:       3 case(s)
```

The Boxplots



Student Creativity (defined by Originality Attribute)

accepts students' ideas
Stem-and-Leaf Plots

accepts students' ideas Stem-and-Leaf Plot for
STUDCRE1= Less creative

Frequency	Stem &	Leaf
4.00	2 .	0000
.00	2 .	
10.00	3 .	0000000000
.00	3 .	
6.00	4 .	000000
.00	4 .	
7.00	5 .	0000000

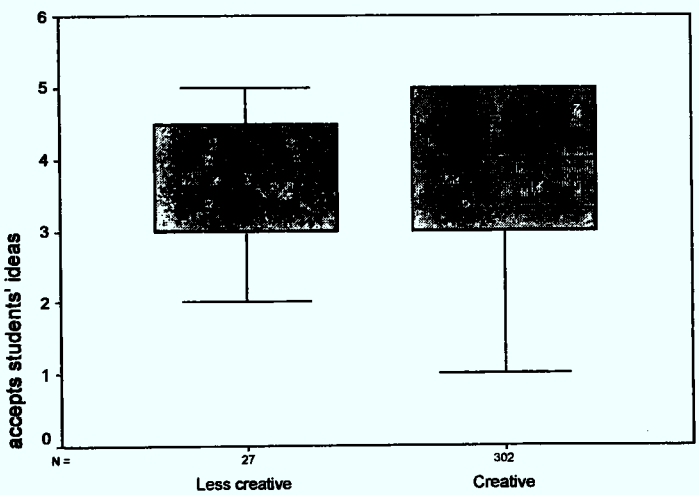
Stem width: 1.00
Each leaf: 1 case(s)

accepts students' ideas Stem-and-Leaf Plot for
STUDCRE1= Creative

```
Frequency     Stem &  Leaf

    2.00        1 .  0
     .00        1 .
   12.00        2 .  0000
     .00        2 .
   92.00        3 .  0000000000000000000000000000000
     .00        3 .
  116.00        4 .  00000000000000000000000000000000000000000
     .00        4 .
   80.00        5 .  00000000000000000000000000
```

```
Stem width:     1.00
Each leaf:      3 case(s)
```

The Boxplots



Student Creativity (defined by Originality Attribute)

is knowledgeable about the subject
Stem-and-Leaf Plots

is knowledgeable about the subject Stem-and-Leaf Plot for
STUDCRE1= Less creative

```
 Frequency     Stem &  Leaf

     1.00 Extremes     (=<1.0)
     6.00        3 .  000000
      .00        3 .
    10.00        4 .  0000000000
      .00        4 .
    10.00        5 .  0000000000
```

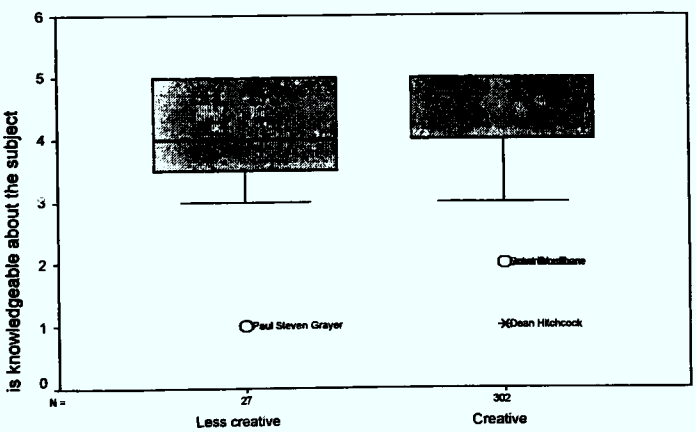
```
Stem width:      1.00
Each leaf:       1 case(s)
```

is knowledgeable about the subject Stem-and-Leaf Plot for
STUDCRE1= Creative

Frequency		Stem &	Leaf
4.00	Extremes		(=<2.0)
25.00		3 .	00000000
.00		3 .	
.00		3 .	
.00		3 .	
.00		3 .	
126.00		4 .	000000000000000000000000000000000000000000
.00		4 .	
.00		4 .	
.00		4 .	
.00		4 .	
147.00		5 .	000000000000000000000000000000000000000000000000000

```
Stem width:      1.00
Each leaf:       3 case(s)
```

The Boxplots



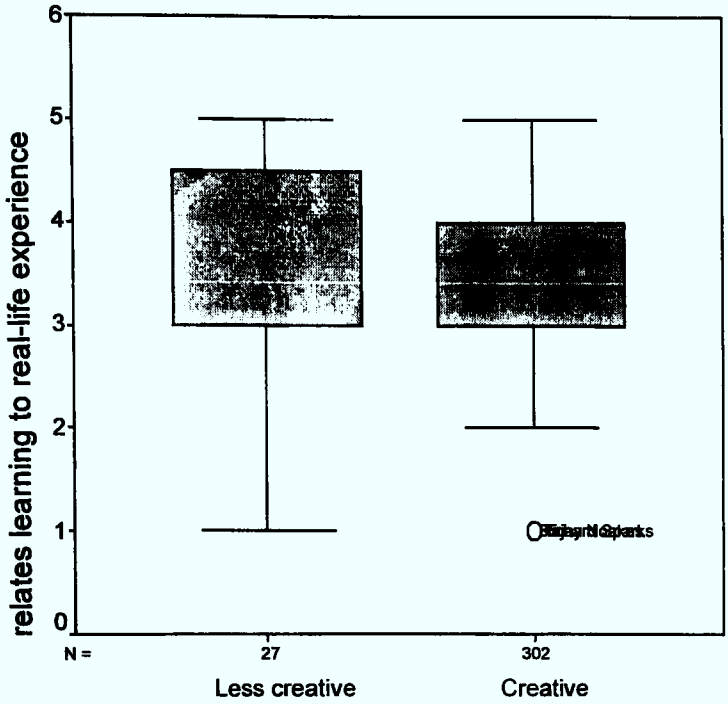
Student Creativity (defined by Originality Attribute)

relates learning to real-life experience
Stem-and-Leaf Plots
relates learning to real-life experience Stem-and-Leaf Plot for
STUDCRE1= Less creative

Frequency	Stem &	Leaf

```
     1.00        1 .  0
      .00        1
     1.00        2    0
      .00        2 .
    12.00        3    000000000000
      .00        3
     6.00        4 .  000000
      .00        4
     7.00        5 .  0000000

 Stem width:      1.00
 Each leaf:       1 case(s)


relates learning to real-life experience Stem-and-Leaf Plot for
STUDCRE1= Creative

 Frequency    Stem &  Leaf

     3.00 Extremes    (=<1.0)
    20.00        2    0000000
      .00        2
      .00        2 .
      .00        2
      .00        2 .
    94.00        3 .  0000000000000000000000000000000
      .00        3
      .00        3 .
      .00        3
      .00        3
   121.00        4 .  000000000000000000000000000000000000000000
      .00        4
      .00        4
      .00        4
      .00        4
    64.00        5    00000000000000000000

 Stem width:      1.00
 Each leaf:       3 case(s)
```

The Boxplots



Student Creativity (defined by Originality Attribute)

sets assignments that give me a chance to find solutions to problems
Stem-and-Leaf Plots

sets assignments that give me a chance to find solutions to problems Stem-and-Leaf Plot for
STUDCRE1= Less creative

Frequency	Stem &	Leaf
1.00	Extremes	(=<1.0)
1.00	2 .	0
.00	2 .	
12.00	3 .	000000000000
.00	3 .	
10.00	4 .	0000000000
.00	4 .	
3.00	5 .	000

Stem width: 1.00
Each leaf: 1 case(s)

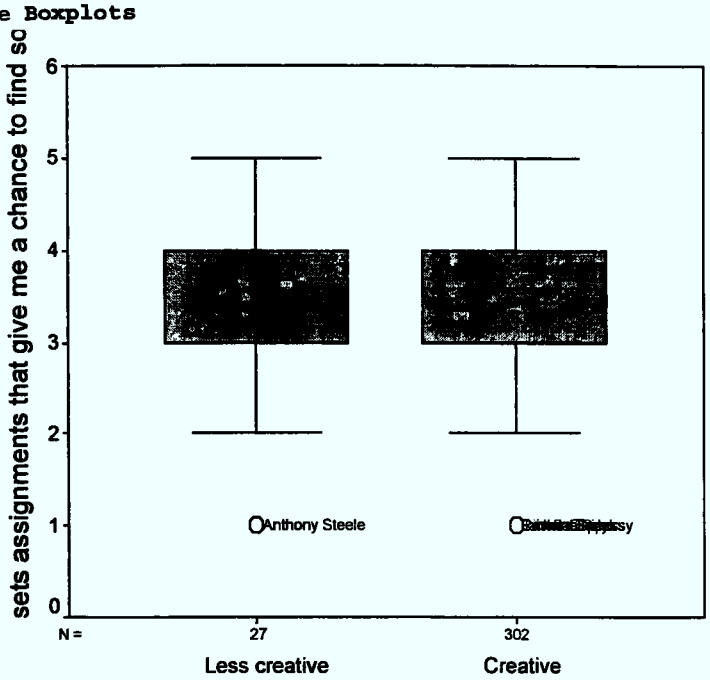
sets assignments that give me a chance to find solutions to problems Stem-and-Leaf Plot for
STUDCRE1= Creative

Frequency	Stem &	Leaf
4.00	Extremes	(=<1.0)
12.00	2 .	0000
.00	2 .	
.00	2 .	
.00	2 .	
.00	2 .	

```
  87.00        3 .  00000000000000000000000000
    .00        3 .
    .00        3 .
    .00        3 .
    .00        3 .
 133.00        4 .  0000000000000000000000000000000000000000000000
    .00        4 .
    .00        4 .
    .00        4 .
    .00        4 .
  66.00        5 .  00000000000000000000
```

Stem width: 1.00
Each leaf: 3 case(s)

The Boxplots



Student Creativity (defined by Originality Attribute)

STUDENT CREATIVITY - DISCRIMINANT FUNCTION ANALYSIS

Table 3.40a

Analysis Case Processing Summary

Unweighted Cases		N	Percent
Valid		325	58.6
Excluded	Missing or out-of-range group codes	218	39.3
	At least one missing discriminating variable	5	.9
	Both missing or out-of-range group codes and at least one missing discriminating variable	7	1.3
	Total	230	41.4
Total		555	100.0

Table 3.40b

Group Statistics

Student Creativity (defined by Student Originality Attribute)		Mean	Std. Deviation	Valid N (listwise)	
				Unweighted	Weighted
Less creative	Students' perception of classroom teacher: motivates me to learn the subject	3.3846	1.0612	26	26.000
	makes me think	3.1538	.9672	26	26.000
	allows me to express my views	3.7308	1.1509	26	26.000
	asks questions in the class	4.1154	.8162	26	26.000
	is open to students' views	3.8462	1.0466	26	26.000
	accepts students' ideas	3.6154	1.0612	26	26.000
	relates learning to real-life experience	3.5769	1.0266	26	26.000
	sets assignments that give me a chance to find solutions to problems	3.5000	.9055	26	26.000
Creative	Students' perception of classroom teacher: motivates me to learn the subject	3.6321	.9003	299	299.000
	makes me think	3.7559	.7711	299	299.000
	allows me to express my views	3.8796	.8741	299	299.000
	asks questions in the class	4.0000	.7985	299	299.000
	is open to students' views	3.9732	.8970	299	299.000
	accepts students' ideas	3.8595	.8787	299	299.000
	relates learning to real-life experience	3.7425	.9033	299	299.000
	sets assignments that give me a chance to find solutions to problems	3.8127	.8660	299	299.000
Total	Students' perception of classroom teacher: motivates me to learn the subject	3.6123	.9148	325	325.000
	makes me think	3.7077	.8036	325	325.000
	allows me to express my views	3.8677	.8981	325	325.000
	asks questions in the class	4.0092	.7993	325	325.000
	is open to students' views	3.9631	.9087	325	325.000
	accepts students' ideas	3.8400	.8953	325	325.000
	relates learning to real-life experience	3.7292	.9132	325	325.000
	sets assignments that give me a chance to find solutions to problems	3.7877	.8720	325	325.000

Table 3.40c

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
Students' perception of classroom teacher: motivates me to learn the subject	.995	1.755	1	323	.186
makes me think	.959	13.961	1	323	.000
allows me to express my views	.998	.656	1	323	.418
asks questions in the class	.998	.498	1	323	481
is open to students' views	.999	.467	1	323	.495
accepts students' ideas	.995	1.783	1	323	.183
relates learning to real-life experience	.998	.786	1	323	.376
sets assignments that give me a chance to find solutions to problems	.991	3.096	1	323	.079

Table 3.40d

Box's Test of Equality of Covariance Matrices

Log Determinants

Student Creativity (defined by Student	Rank	Log Determinant
Less creative	2	-.506
Creative	2	-1.095
Pooled within-groups	2	-1.036

The ranks and natural logarithms of determinants printed are those of the group covariance matrices.

Table 3.40e

Test Results

Box's M		4.429
F	Approx.	1.433
	df1	3
	df2	22487.817
	Sig.	.231

Tests null hypothesis of equal population covariance matrices.

Table 3.40f: Stepwise Statistics

Variables Entered/Removed[a,b,c,d]

Step	Entered	Wilks' Lambda							
						Exact F			
		Statistic	df1	df2	df3	Statistic	df1	df2	Sig.
1	makes me think	.959	1	1	323.000	13.961	1	323.000	.000
2	asks questions in the class	.947	2	1	323.000	9.031	2	322.000	.000

At each step, the variable that minimizes the overall Wilks' Lambda is entered.

a. Maximum number of steps is 16.

b. Minimum partial F to enter is 3.84.

c. Maximum partial F to remove is 2.71.

d. F level, tolerance, or VIN insufficient for further computation.

Variables in the Analysis

Step		Tolerance	F to Remove	Wilks' Lambda
1	makes me think	1.000	13.961	
2	makes me think	.893	17.538	.998
	asks questions in the class	.893	3.972	.959

Wilks' Lambda

Step	umber of Variables	Lambda	df1	df2	df3	Exact F			
						Statistic	df1	df2	Sig.
1	1	.959	1	1	323	13.961	1	323.000	206E-04
2	2	.947	2	1	323	9.031	2	322.000	528E-04

Table 3.43g: Summary of Canonical Discriminant Functions

Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	.056[a]	100.0	100.0	.230

a. First 1 canonical discriminant functions were used in the analysis.

Table 3.40h

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.947	17.573	2	.000

Table 3.40i

Standardized Canonical Discriminant Function Coefficients

	Function
	1
makes me think	1.043
asks questions in the class	-.507

Table 3.40j

Structure Matrix

	Function
	1
makes me think	.878
Students' perception of classroom teacher: motivates me to learn the subject[a]	.518
sets assignments that give me a chance to find solutions to problems[a]	.355
accepts students' ideas[a]	.225
relates learning to real-life experience[a]	.203
allows me to express my views[a]	.185
asks questions in the class	-.166
is open to students' views[a]	.159

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
Variables ordered by absolute size of correlation within function.

a. This variable not used in the analysis.

Table 3.40k

Functions at Group Centroids

Student Creativity (defined by Student Originality Attribute)	Function 1
Less creative	- 801
Creative	6.962E-02

Unstandardized canonical discriminant functions evaluated at group means

Table 3.40l

Classification Processing Summary

Processed		555
Excluded	Missing or out-of-range group codes	0
	At least one missing discriminating variable	3
Used in Output		552

Table 3.40m

Prior Probabilities for Groups

Student Creativity (defined by Student Originality Attribute)	Prior	Cases Used in Analysis	
		Unweighted	Weighted
Less creative	.500	26	26.000
Creative	.500	299	299.000
Total	1.000	325	325.000

Table 3.40n

Classification Results[a]

		Student Creativity (defined by Student Originality Attribute)	Predicted Group Membership		Total
			Less creative	Creative	
Original	Count	Less creative	14	13	27
		Creative	65	238	303
		Ungrouped cases	72	150	222
	%	Less creative	51.9	48.1	100.0
		Creative	21.5	78.5	100.0
		Ungrouped cases	32.4	67.6	100.0

a. 76.4% of original grouped cases correctly classified.

APPENDIX I

CLASSROOM OBSEREVATION – FULL SPSS OUTPUT

Table 1: Summary of descriptive statistics

Statistics

		Teacher's and Student's Talk frequency column shows time in minutes	Types of activity
N	Valid	794	794
	Missing	0	0
Mean		5.71	1.6171
Std. Error of Mean		6.27E-02	4.971E-02
Median		5.00	1.0000
Mode		5	1.00
Std. Deviation		1.77	1.4006
Variance		3.12	1.9617
Skewness		1.118	2.674
Std Error of Skewness		.087	.087
Kurtosis		.273	6.560
Std Error of Kurtosis		.173	.173
Range		9	6.00
Percentiles	25	5.00	1.0000
	50	5.00	1.0000
	75	7.00	2.0000

Table 2: Teacher's and Student's Talk – SPSS keys

Item/ Nominal number	Variable name
1	Accepts feelings
2	Praise students
3	Views/ accepts ideas
4	Asks questions
5	Lecture
6	Practical examples/relates learning to real life
7	Solicited
8	Unsolicited
9	Silence or non event
10	Others – student's activity, presentation, etc.

Table3: Frequency Table

Teacher's and Student's Talk frequency column shows time in minutes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	accept feelings	1	.1	.1	.1
	praise students	1	.1	.1	.3
	allows students' views/accepts ideas	5	.6	.6	.9
	asks questions	157	19.8	19.8	20.7
	lecture	392	49 4	49.4	70.0
	practical examples/relates learning to real life	25	3.1	3.1	73.2
	solicited	52	6.5	6.5	79.7
	unsolicited	86	10.8	10.8	90.6
	silence or non-event	23	2.9	2.9	93.5
	Others - student's activity, presentation, etc	52	6.5	6.5	100.0
	Total	794	100 0	100.0	

Table 4

Types of activity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lecture	592	74.6	74.6	74.6
	Small group/student feedback to class	112	14.1	14.1	88.7
	Q & A with teacher	42	5.3	5.3	94.0
	Supported studies	18	2.3	2.3	96.2
	Presentation	30	3.8	3.8	100.0
	Total	794	100.0	100.0	

Table 8

Teacher's and Student's Talk frequency column shows time in minutes

Types of activity			Frequency	Percent	Valid Percent	Cumulative Percent
Lecture	Valid	allows students' views/accepts ideas	5	.8	.8	.8
		asks questions	118	19.9	19.9	20.8
		lecture	320	54.1	54.1	74.8
		practical examples/relates learning to real life	20	3.4	3.4	78.2
		solicited	26	4.4	4.4	82.6
		unsolicited	66	11.1	11.1	93.7
		silence or non-event	22	3 7	3.7	97.5
		Others - student's activity, presentation, etc	15	2.5	2.5	100.0
		Total	592	100.0	100.0	
Small group/student feedback to class	Valid	accept feelings	1	9	.9	9
		praise students	1	9	.9	1.8
		asks questions	23	20 5	20.5	22.3
		lecture	44	39.3	39.3	61.6
		practical examples/relates learning to real life	4	3.6	3.6	65.2
		solicited	22	19 6	19.6	84.8
		unsolicited	9	8 0	8.0	92.9
		silence or non-event	1	9	.9	93.8
		Others - student's activity, presentation, etc	7	6 3	6.3	100.0
		Total	112	100.0	100.0	
Q & A with teacher	Valid	asks questions	14	33.3	33.3	33 3
		lecture	15	35.7	35.7	69 0
		practical examples/relates learning to real life	1	2.4	2.4	71.4
		solicited	4	9.5	9.5	81.0
		unsolicited	8	19.0	19.0	100.0
		Total	42	100.0	100.0	
Supported studies	Valid	asks questions	2	11.1	11 1	11.1
		lecture	13	72.2	72.2	83.3
		unsolicited	3	16.7	16.7	100.0
		Total	18	100.0	100.0	
Presentation	Valid	Others - student's activity, presentation, etc	30	100.0	100.0	100.0

Modes of learning

Table 9: **Lecture**

Statistics

Different ways of learning: lecture

N	Valid	543
	Missing	12
Mode		4.00
Range		4.00

Different ways of learning: lecture

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	66	11.9	12.2	12.2
	Hardly ever	44	7.9	8.1	20.3
	Sometimes	169	30.5	31.1	51.4
	A lot	185	33.3	34.1	85.5
	All the time	79	14.2	14.5	100.0
	Total	543	97.8	100.0	
Missing	System	12	2.2		
Total		555	100.0		

Table10: **Discussion group**

Statistics

discussion group

N	Valid	551
	Missing	4
Mode		4.00
Range		4.00

discussion group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	20	3.6	3.6	3.6
	Hardly ever	49	8.8	8.9	12.5
	Sometimes	206	37.1	37.4	49.9
	A lot	229	41.3	41.6	91.5
	All the time	47	8.5	8.5	100.0
	Total	551	99.3	100.0	
Missing	System	4	.7		
Total		555	100.0		

Table 11: **Practical sessions**

Statistics

practical sessions

N	Valid	552
	Missing	3
Mode		4.00
Range		4.00

practical sessions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	55	9.9	10.0	10.0
	Hardly ever	94	16.9	17.0	27.0
	Sometimes	170	30.6	30.8	57.8
	A lot	182	32.8	33.0	90.8
	All the time	51	9.2	9.2	100.0
	Total	552	99.5	100.0	
Missing	System	3	.5		
Total		555	100.0		

Table 12: **Group project**

Statistics

group project

N	Valid	551
	Missing	4
Mode		3.00
Range		4.00

group project

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	63	11.4	11.4	11.4
	Hardly ever	112	20.2	20.3	31.8
	Sometimes	223	40.2	40.5	72.2
	A lot	120	21.6	21.8	94.0
	All the time	33	5.9	6.0	100.0
	Total	551	99.3	100.0	
Missing	System	4	.7		
Total		555	100.0		

Table 13: **Question and Answer session with teacher**

Statistics

question and answer session with teacher

N	Valid	553
	Missing	2
Mode		3.00
Range		4.00

question and answer session with teacher

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	25	4.5	4.5	4.5
	Hardly ever	84	15.1	15.2	19.7
	Sometimes	238	42.9	43.0	62.7
	A lot	147	26.5	26.6	89.3
	All the time	59	10.6	10.7	100.0
	Total	553	99.6	100.0	
Missing	System	2	.4		
Total		555	100.0		

Table 14: **Supported studies**

Statistics

supported studies

N	Valid	542
	Missing	13
Mode		3.00
Range		4.00

supported studies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	84	15.1	15.5	15.5
	Hardly ever	110	19.8	20.3	35.8
	Sometimes	231	41.6	42.6	78.4
	A lot	90	16.2	16.6	95.0
	All the time	27	4.9	5.0	100.0
	Total	542	97.7	100.0	
Missing	System	13	2.3		
Total		555	100.0		

Table 15 **Guided independent learning**

Statistics

guided independent learning

N	Valid	543
	Missing	12
Mode		3.00
Range		4.00

guided independent learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	58	10.5	10.7	10.7
	Hardly ever	77	13.9	14.2	24.9
	Sometimes	235	42.3	43.3	68.1
	A lot	132	23.8	24.3	92.4
	All the time	41	7.4	7.6	100.0
	Total	543	97.8	100.0	
Missing	System	12	2.2		
Total		555	100.0		

Table: 16 **Study tour or trip**

Statistics

study tour or trip

N	Valid	550
	Missing	5
Mode		1.00
Range		4.00

study tour or trip

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	223	40.2	40.5	40.5
	Hardly ever	126	22.7	22.9	63.5
	Sometimes	149	26.8	27.1	90.5
	A lot	39	7.0	7.1	97.6
	All the time	13	2.3	2.4	100.0
	Total	550	99.1	100.0	
Missing	System	5	.9		
Total		555	100.0		

Table 17

Teacher's and Student's Talk - frequency column shows time in minutes

Subject Category			Frequency	Percent	Valid Percent	Cumulative Percent
Humanities/social sciences	Valid	praise students	1	.6	.6	.6
		allows students' views/accepts ideas	2	1 2	1.2	1 8
		asks questions	47	28.3	28 3	30.1
		lecture	72	43 4	43 4	73.5
		practical examples/relates learning to real life	2	1.2	1.2	74 7
		solicited	17	10 2	10.2	84.9
		unsolicited	12	7.2	7.2	92 2
		silence or non-event	6	3.6	3 6	95 8
		Others - student's activity, presentation, etc	7	4 2	4 2	100.0
		Total	166	100.0	100 0	
Maths and sciences	Valid	asks questions	19	13.6	13.6	13.6
		lecture	80	57.1	57.1	70.7
		practical examples/relates learning to real life	9	6.4	6 4	77.1
		unsolicited	23	16.4	16.4	93.6
		silence or non-event	1	7	7	94 3
		Others - student's activity, presentation, etc	8	5 7	5.7	100.0
		Total	140	100 0	100.0	
IT	Valid	asks questions	8	13.3	13 3	13 3
		lecture	19	31.7	31.7	45 0
		practical examples/relates learning to real life	1	1 7	1.7	46.7
		solicited	1	1.7	1 7	48 3
		unsolicited	1	1.7	1 7	50.0
		Others - student's activity, presentation, etc	30	50 0	50 0	100.0
		Total	60	100.0	100 0	
Business Studies/NVQ Administration	Valid	asks questions	41	20.9	20 9	20.9
		lecture	97	49.5	49.5	70 4
		practical examples/relates learning to real life	8	4 1	4.1	74 5
		solicited	17	8.7	8.7	83 2
		unsolicited	16	8.2	8.2	91.3
		silence or non-event	10	5.1	5.1	96 4
		Others - student's activity, presentation, etc	7	3 6	3.6	100 0
		Total	196	100 0	100.0	
Other - Hair & Beauty, Health & Social Care, Travel, etc	Valid	accept feelings	1	4	4	4
		allows students' views/accepts ideas	3	1 3	1 3	1.7
		asks questions	42	18 1	18 1	19 8
		lecture	124	53.4	53.4	73 3
		practical examples/relates learning to real life	5	2.2	2.2	75 4
		solicited	17	7.3	7.3	82 8
		unsolicited	34	14 7	14.7	97 4
		silence or non-event	6	2 6	2.6	100.0
		Total	232	100 0	100 0	

Table 18

Teacher's and Student's Talk frequency column shows time in minutes

Qualification Type			Frequency	Percent	Valid Percent	Cumulative Percent
A level	Valid	allows students' views/accepts ideas	2	.7	.7	.7
		asks questions	68	22.5	22.5	23.2
		lecture	157	52.0	52.0	75.2
		practical examples/relates learning to real life	9	3.0	3.0	78.1
		solicited	13	4.3	4.3	82.5
		unsolicited	29	9.6	9.6	92.1
		silence or non-event	10	3.3	3.3	95.4
		Others - student's activity, presentation, etc	14	4.6	4.6	100.0
		Total	302	100.0	100.0	
GNVQ/AVCE	Valid	allows students' views/accepts ideas	1	.3	.3	.3
		asks questions	43	13.8	13.8	14.1
		lecture	142	45.5	45.5	59.6
		practical examples/relates learning to real life	11	3.5	3.5	63.1
		solicited	27	8.7	8.7	71.8
		unsolicited	38	12.2	12.2	84.0
		silence or non-event	12	3.8	3.8	87.8
		Others - student's activity, presentation, etc	38	12.2	12.2	100.0
		Total	312	100.0	100.0	
NVQ	Valid	accept feelings	1	.7	.7	.7
		allows students' views/accepts ideas	2	1.3	1.3	2.0
		asks questions	33	22.0	22.0	24.0
		lecture	82	54.7	54.7	78.7
		practical examples/relates learning to real life	5	3.3	3.3	82.0
		solicited	7	4.7	4.7	86.7
		unsolicited	19	12.7	12.7	99.3
		silence or non-event	1	.7	.7	100.0
		Total	150	100.0	100.0	
Access/other	Valid	praise students	1	3.3	3.3	3.3
		asks questions	13	43.3	43.3	46.7
		lecture	11	36.7	36.7	83.3
		solicited	5	16.7	16.7	100.0
		Total	30	100.0	100.0	

Table 19

Teacher's and Student's Talk frequency column shows time in minutes

College Type			Frequency	Percent	Valid Percent	Cumulative Percent
Sixth Form	Valid	allows students' views/accepts ideas	3	.8	.8	.8
		asks questions	67	16.9	16.9	17.7
		lecture	221	55.8	55.8	73.5
		practical examples/relates learning to real life	12	3.0	3.0	76.5
		solicited	23	5.8	5.8	82.3
		unsolicited	43	10.9	10.9	93.2
		silence or non-event	12	3.0	3.0	96.2
		Others - student's activity, presentation, etc	15	3.8	3.8	100.0
		Total	396	100.0	100.0	
General FE	Valid	accept feelings	1	.3	.3	.3
		praise students	1	.3	.3	.5
		allows students' views/accepts ideas	2	.5	.5	1.0
		asks questions	90	22.6	22.6	23.6
		lecture	171	43.0	43.0	66.6
		practical examples/relates learning to real life	13	3.3	3.3	69.8
		solicited	29	7.3	7.3	77 1
		unsolicited	43	10 8	10.8	87.9
		silence or non-event	11	2.8	2.8	90.7
		Others - student's activity, presentation, etc	37	9 3	9.3	100.0
		Total	398	100 0	100.0	

APPENDIX J

List/Location of colleges in the study – based on the (former) FEFC Regions

SF College 1 – Greater London Region (Surrey)

FE College 2 – Northeast Region

FE College 3 – Northeast Region

FE College 4 – Greater London Region

SF College 5 – Greater London Region

SF College 6 – Southeast Region (Brighton & Hove)

FE College 7 – Eastern Region (Cambridgeshire)

FE College 8 – Eastern Region (Essex)

FE College 9 – Eastern Region

SF College 10 – Eastern Region

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END NOTE

How many of us glaze over in long, boring training sessions in our own jobs? Yet, in the schooling process, the primary emphasis is on the passive learning styles of looking, listening and memorising. The universal challenge in education is to keep alive the student's native tendencies towards action, towards applying knowledge and towards finding out what it means.

– Dale Parnell (1997)