

**LEARNING CONCEPTIONS AND STUDYING
APPROACHES AMONG GRAPHIC ARTS
STUDENTS IN TECHNICAL TRAINING
INSTITUTIONS IN NAIROBI, KENYA**

BY

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E83/7778/2002

**A THESIS SUBMITTED TO SCHOOL OF
EDUCATION, IN FULFILMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE
DEGREE OF DOCTOR OF PHILOSOPHY OF
KENYATTA UNIVERSITY**

AUGUST 2013

DECLARATION

Declaration by the Candidate

This thesis is my original work and has not been presented for a degree in any other University OR for any other Award.

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DEDICATION

To God the Almighty,
and to my loving husband Callistus Ogol, and my adorable children
Adrian, Esther and Boniface for their support and understanding.

ACKNOWLEDGEMENTS

I would like to express my appreciation to the Director of Kenya Institute of Curriculum Development (KICD), Dr (Mrs.) L. N. Nzomo, my colleagues Mr. J. Kimotho, Dr Laban Ayiro, Mrs. Mary Wambaria, for the encouragement and support they accorded to me in the pursuit of this study. To Rosemary Kathenge and all the Educational Resources Division (KICD), staff, thank you very much for your prayers, patience and total support.

I am grateful to my supervisors Prof. Grace Bunyi and Prof. Jack Green Okech, for painstakingly supervising this thesis. I would also like to appreciate Engineer Moustafa Wahba UNEVOC TVET consultant for providing me with crucial research references and guidance. My gratitude also goes to Prof. N. Entwistle who granted me permission to adapt the ASSIST Inventory and manual for this study. Recognition goes to Mr. Boniface Kimani, Principal of Buru Buru Institute of Fine Arts, Prof. Aduol Principal of Kenya Polytechnic University College, Mrs. Marie-Claire Kidenda and Mrs. Lily Kimaru, School of Arts and Media Studies at the Kenya Polytechnic University College, for allowing me to conduct research in their esteemed institutions. Mr. A. D. Bojana also deserves gratitude for his editorial contribution.

Sincere gratitude also goes to my husband Callistus Ogol, my children, Adrian, Esther and Boniface, and my parents Mr. Joseph and Mrs. Margaret Arara, and siblings who have supported me by way of prayers, love and encouragement.

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LIST OF ABBREVIATIONS

B. I. F. A.	:	Buru Buru Institute of Fine Arts
G. A.	:	Graphic Arts
I.T.	:	Institute of Technology
K.C.S.E.	:	Kenya Certificate of Secondary Education
K.E.S.S.P.	:	Kenya Education Sector Support Programme
K.I.E.	:	Kenya Institute of Education
K.N.E.C.	:	Kenya National Examinations Council
K.P.U.C.	:	Kenya Polytechnic University College
Mo E.	:	Ministry of Education
Mo H.E.S.T.	:	Ministry of Higher Education, Science and Technology
N.C.C.T.E.	:	National Center for Career and Technical Education (USA)
S.F.T.C.P.P.A.	:	Selangor & Federal Territory Chinese Printing Presses Association
T.S.C.	:	Teachers Service Commission
T.T.I.	:	Technical Training Institute

LIST OF ACRONYMS

ASSIST	:	Approaches to Study Skills Inventory for Students
EFA	:	Education for All
ESD	:	Education for Sustainable Development
GoK	:	Government of Kenya
ICTs	:	Information and Communication Technologies
MDGs	:	Millennium Development Goals
PRSP	:	Poverty Reduction Strategy Paper
RASI	:	Revised Approaches to Studying Inventory
ST&I	:	Science, Technology and Innovation
T&L	:	Teaching and Learning
TIVET	:	Technical, Industrial, Vocational, Entrepreneurship Training
TVET	:	Technical and Vocational Education and Training
UNESCO	:	United Nations Educational, Scientific and Cultural Organization
UNEVOC	:	UNESCO's International Project on Technical and Vocational Education
UWEZO	:	Capability (in Kiswahili)

ABSTRACT

Research in Europe and the Far East reveal that contrasts in learning conceptions (surface and deep) and studying approaches (surface, strategic and deep) depict the future learning orientations among students in higher education. According to that research, the students who adopt the ‘deep’ contrast interpreted as transformative learning are more successful learners than those who adopt the ‘surface’ contrast, interpreted as passive, rote and rarely sustainable learning. Some students found to adopt ‘strategic’ learning focus on the current achievement of high grades, rather than the futuristic benefits of learning. Similar research is neglected among Technical Education (TE) students, yet, the rapid 21st century uncertainties and technological changes affect these students’ learning and future employability. Establishment of the learning conceptions and studying approaches that Technical Education Graphic Arts (GA) students adopted, were the paramount objectives of the study. Data was collected from an equal size random sample of 120 Technical Education GA students (90 male and 30 female), obtained from a target population of 278 students, studying at Kenya Polytechnic University College and Buru Buru Institute of Fine Arts, training institutions in Nairobi, offering government GA developed Diploma level courses. An exploratory quantitative research design was utilised. Two close-ended questionnaires and an observation schedule adapted from the Approaches to Study Skills Inventory for Students (ASSIST, 2006), were used to collect data. Cronbach alpha was 0.707 for Learning Conceptions and 0.64 for Deep Studying Approaches. Data were analyzed using ANOVA test and the independent sample *t* test and statistical difference set at $p < .10$. There were no statistically significant differences found in the means of students’ learning conceptions by year of study. The mean scores nonetheless indicated that third-year students exhibited deep learning conceptions more than the other two years. Both female and male students exhibited mixed combinations of learning conceptions. Significant statistical differences were found in the memorization ($p < .019$) and experiences ($p < .004$) responses. Female students scored higher means in learning conceptions. The students studying approaches means by year of study, showed no statistically significant differences, however second-year student scores tended to be higher in the strategic approach than the other two years. The means by gender also indicated significant statistical differences, found in the uncertainty ($p < .009$), focus on minimum requirements ($p < .028$), linkages to prior knowledge ($p < .019$), and critical assessment of validity ($p < .012$) responses. The female students mean scores were more favourable

towards the strategic studying approaches. The conclusion was that the students training tended to encourage the strategic studying approaches and not deep transformative learning. The study signifies failure of the students, curriculum developers, implementers and evaluators to inculcate learning conceptions and studying approaches that encourage, transformative innovation and creativity, for sustainable development and lifelong learning. It is recommended that vigilant review of the TE curriculum, be conducted at least every five years, in line with the changing career demand. Further studies to diversify TE curriculum instruction designs and gender sensitive pedagogy would transform the quality of learning and ensure study success among the students.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Interest in research on learning at the international levels in primary and higher education is clear from the increasing number of recommendations received from surveys used to inform policy on academic achievement and educational quality for competitive advantage (Entwistle, McCune & Tait, 2006). Palmer, Wedgewood, Hayman, King & Thin, (2007), argue that progressive research findings indicate shortage of high-level technical skills, in the developing countries, despite the increasing demographic working-age population. The quality of education signifies deficits in and poor links between education, training and the labour market (Economist, 2009). Governments, curriculum developers, implementers, gender activists and industry attribute the shortage to the rapidly changing technology and employment demands. However, another stream of research indicates that students' meta-cognitive competencies may also influence the quality of learning and studying in higher education Entwistle, et al. (2006).

Phenomenological research on these meta-cognitive competencies can help predict future trends in students' quality of learning processes as rote, constructive or transformative. This phenomenon is influenced more by the demands of a particular environment than by predispositions of personality. Two metacognitive competencies established to have

important implications on the quality of learning processes and outcomes among students in higher education, are the learning conceptions on two scales (surface and deep) and studying approaches on three scales (surface, deep and strategic) (Entwistle, et al., 2006).

1.1.1 Learning Conceptions

The different learning conceptions are initially described by Säljö (in Marton & Säljö, 1997), and developed further in various contexts by Biggs, in 1987, Entwistle in 1997, 1998, 2000; Entwistle, McCune & Tait in 2006. According to Entwistle et al. (2006), students adapt to the different contexts and demands of university education through powerfully contrasting learning conceptions in the form of beliefs, experiences and understanding. Hence, learning is conceptualised as:

- a). A quantitative increase in knowledge;
- b). Memorizing making sure you remember things well;
- c). The acquisition of facts, methods, practices. which can be retained and used when necessary;
- d). Being able to use the information you have acquired;
- e). The abstraction of meaning of different things and experiences;
- f). Using all the experiences in life;
- g). An interpretative process aimed at understanding reality;
- h). Developing as a person; and;
- i). Being able to relate with people better.

The first four learning conceptions (Nos. a, b, c and d), established as surface learning conceptions scale items, relate to the rote, straightforward acquisition of discrete pieces of knowledge and on simply reproducing information (Anderson, 1995). The respondents do not recognise that the material, which is learned, may need interpretation or transformation. In surface learning conceptions, learning does not involve any challenging change, is quantitative and merely routine. The next five learning conceptions (Nos. e, f, g, h and i), established as deep learning conceptions scale items, imply the existence of a much more proactive learner. A learner, who engages deeply with a text or a problem, experiences and incorporates new information from previous knowledge, achieves a qualitative satisfying personal sense of understanding.

1.1.2 Studying Approaches

Marton and Säljö in 1976 empirically identified two forms of quality of education contrasts in studying approaches: deep and surface studying approaches. While, Entwistle and Ramsden in 1983 identified the third form: strategic studying approach. The term “approach” was chosen to convey a broader meaning than the term “processing” to indicate an interactive relationship between the learner and the learning environment (Speth, Namuth, & Donald, 2007).

The learners’ who take a surface studying approach to a particular academic task intend to simply reproduce parts of the material that they are studying. There is a much more passive acceptance of facts and ideas

without reflection from lecturers and/or textbooks (Speth, et al., 2007; Entwistle et al., 2006). They acquire rote-studying skills.

In contrast, a very different intention guides a student taking a deep studying approach. Deep studying approach describes the type of learning that is associated with an intention to understand material for oneself and to practically interact in a critical, engaged way with content (Anderson, 1995; Entwistle et.al., 2006; Ferla, Valcke & Schuyten, 2008). When students start out with this intention, they are concerned with relating new ideas to existing knowledge, examining carefully the logic of arguments and finding organising principles to integrate their thoughts. They acquire qualitatively and effective transformative, versatile and reflective skills in their entire learning process.

According to Entwistle and Ramsden (1983), the third category of studying approach – strategic –, is summarised as a well-organized surface approach, with the learner's pure intention of achieving the highest possible grades in a particular situation. The process depends on cue-seeking from instructors, well-organised study methods, and effective time management. The students thus portray mixed motives, depending on the circumstances and the learning environments. This kind of learning though constructive, is time bound, motivated by a need to achieve, as opposed to fear of failure.

1.1.3. Research on learning conceptions and studying approaches

Currently studies on the contrasts of deep, surface and strategic studying approaches utilise various adaptations of the Approaches to Study Skills Inventory for Students (ASSIST) framework, developed at the Centre for Research on Learning and Instruction at the University of Edinburgh, by Entwistle, McCune, and Tait in 2006. The ASSIST establishes the meta-cognition contrasts of deep (transformative, qualitative, reflective), strategic (constructive, time bound) and surface (rote, quantitative) orientations among learners, through various research designs. Empirical evidence, sourced only from students in higher education in Europe and the Far East, indicates that students exhibit different learning conceptions and studying approaches depending on cues from their environment.

Research indicates that the surface studying approach is more visible among first year medical and engineering students (Long, 2000, 2003), and deep studying approach is observed among health students in higher education tiers in Britain (Richardson, Dawson, Sadlo, Jenkins & Mcinnes, 2007). In Hong Kong, high achieving first year students in pre-service teacher education training have an inclination towards memorizing with understanding learning conceptions (Lai & Chan, 2005). Business education students exhibited a strong inclination towards the strategic studying approach, indicating interest in production of time-bound products (Hooijer, 2010).

The most important component of these studies is the stakeholders understanding and awareness of the students' different learning conceptions and the different ways they approach studying. They inform lecturers/instructors on the eventual and long-term influence of the students' conceptions and approaches as they enter and progress in higher education courses.

1.1.4 Technical Education

Worldwide, Technical Education (TE) curriculum aims at providing real world knowledge competence training skills, which are practical, responsive and relevant to international and national social and economic needs (GoK, 2007a; Hansen, 2008; KIE, 2002; UNESCO/UNEVOC, 2000). TE can buffer the effects of poverty in communities by creating competitive and highly competent individuals (GoK, 2007a). The Kenya's *National Poverty Eradication Plan 1999-2015* (GoK, 1999), *Education for All Initiatives* (UNESCO, 2000), *Decade for Education for Sustainable Development 2005-2015* (UNESCO, 2009), *Millennium Development Goals*, the *Economic Recovery Strategy for Wealth and Employment Creation 2003-2007* (GoK, 2003a), *Sessional Paper No.1 of 2005* (Go, 2005), *Kenya Vision 2030* (GoK, 2007a), and *Constitution of Kenya* (GoK, 2010), *Gender Equality and Development* (World Bank, 2011) attest to this. The learners, both male and female, require lifelong learning, transformative knowledge, skills and attitudes desirable for global competitiveness and prosperity (GoK, 2003b; 2007a; 2010). To

this end, the Kenya government has proposed strengthening of science, technology and innovation, curriculum content and delivery in TE whilst monitoring and evaluating the progress for sustainable development regularly (GoK, 2007a; 2008). One of the targets for the Kenya government was to increase the transition rates to technical institutions and universities from 3% to 8% by the year 2012. The Government of Kenya is cognisant of the low student enrolment and slow female attraction in Technical Education and stresses that:

Technical training institutions will play a critical role in the production of skills that are required to achieve the goals and objectives of the Vision....*On raising the quality of education:* In order to improve the productivity and competitiveness of the Kenya's human resource pool, all students will be provided with a better learning environment, including improved teaching skills and more textbooks. This will provide the learners with opportunities to exploit their potential to the fullest. *And on addressing inequalities...* measures will be taken to address disparities between males and females to attain gender parity (GoK, 2007a, pp 84).

1.1.5 Graphic Arts Education

The TE courses include Graphics Arts (GA) education, for students intending to join the GA industry sector worldwide (KIE, 2002; 2010). Competences expected by the end of the courses include creative and

innovative problem-solving skills, communication skills, conveying information, ideas and feelings, as applied in GA industry, and ensuring that learners adapt to existing and emerging technological changes in printing, publishing, packaging and electronic imaging. Graphic Arts is among the older ICT industry that includes radio, TV and internet and is rapidly changing (Saskia, Galster, Kramer, Trang Le, Marz, Ragusa, Riede, Schneidar, Schütz, Stein, Zebic, Ziegler, Zöllkau, 2008). GA deals mostly with production of printed products, for instance, posters, books, newspapers and tin and carton packaging in a highly competitive industry (Farnand, 2009; Heidelberg, 2008; The Selangor & Federal Territory Chinese Printing Presses Association (SFTCPPA), 1994).

Graphic Design and Printing Technology Diploma competency-based courses were developed by Kenya Institute of Education (KIE, 1998; 2002) and are implemented at the Kenya Polytechnic University College (KPUC) and the Buru Buru Institute of Fine Arts (BIFA). The two are the only tertiary institutions offering the KIE Graphic Arts Diploma courses. KPUC is a public institution, while BIFA is a private catholic church-sponsored institution.

1.1.6 Women and Graphic Arts

For centuries, women have played an integral part in the Graphic Communication Industry, mostly as consumers, item promoters and item promotional subjects. Consequently, the graphic communication industry is a conspicuous example of a male-dominated industry especially in

senior management and general employment (Cummings, 2011; Saskia et al., 2007). Advances in technology, world demographics and the breakdown of some barriers that women previously faced (Cummings, 2011), indicate that male and female biases found in learning conceptions and studying approaches (Severiens & Ten Dam, 1994) may be changing.

Enrolment figures in the Graphics Arts in Kenya in 2007 indicates that out of a population of 222 students only 50 (22.52%) were female when compared with a figure of 23 out of 130 in 1992 (GoK, 2007b). Significant improvement in female participation in the instructional process will determine their overall capacity for innovation and creativity, and suitability for future senior management employment (AAUW, 2010; Hermanussen & Booy, 2002; GoK, 2007a).

1.2 Problem Statement

Students' acquisition of the 21st century learning skills in Technical Education is a pressing need in several countries. Phenomenological research indicates that the students are key informants on future trends of quality of education. Ongoing research, utilising Approaches to Study Skills Inventory for Students (ASSIST) have identified and measured the quality of learning skills among some students in higher education. Long, (2000; 2003) found that first year engineering students adapting surface learning conceptions were potential dropout candidates. Richardson et al. (2007) established that Masters Students utilized deep studying approaches more often than the undergraduate students who wavered

between the surface and strategic orientations until third year. While Severiens and Ten Dam, (1994) established that TE female students more often adapted surface learning and studying approaches more than the men do.

However, Amutabi (2011) decries the rote and exam-oriented learning, rife at all tiers of education, in Kenya, indicating that the government's attempts to inculcate transformative learning among TE male and female student populace is futile. This lament lacks empirical evidence.

Technical education is crucial in providing 21st century transformative and globally competitive learning opportunities. The Technical training institutions, students, curriculum developers, implementers, evaluators, do not seem to be aware of the existent learning conceptions and the studying approaches among learners, which promote rote learning, which in turn affects the acquisition and substance of transformative learning.

That is, if the learning conceptions (surface and deep) and the studying approaches (surface, deep and strategic) existed in relatively equal or different forms among students, by year of study, and by gender, and whether or not they contributed to desired future qualities of learning cognitions. Apparently, identification and measurement of students learning conceptions (deep and surface) and studying approaches (surface, deep and strategic) though a relatively new education research phenomenon, is limited among TE students, in courses such as Graphic Arts, by year of study and gender.

1.3 Purpose of the Study

The purpose of the study was to empirically establish learning conceptions (surface and deep) and studying approaches (surface, deep and strategic), among students pursuing GA Technical Education, and explore any existing differences, if any, by year of study and by gender. The aim was to inform stakeholders, on what was not known about learning conceptions (surface and deep) and studying approaches (surface, deep and strategic) among students enrolled in the GA courses, based on the of year of study and gender.

1.4 Objectives of the Study

The specific objectives of the study were to:

- 1.4.1 Ascertain the different nine learning conceptions (categorized as surface (5 questions) and deep (4 questions)), by year of study (1st, 2nd and 3rd) among students enrolled in Technical Education GA courses.
- 1.4.2 Establish the different nine learning conceptions (categorized as surface (5 questions) and deep (4 questions)), among male and female students, enrolled in Technical Education GA courses.
- 1.4.3 Verify the different nineteen studying approaches (categorized surface (6 questions), deep (6 questions) and strategic (7 questions)), by year of study (1st, 2nd and 3rd) among students enrolled in Technical Education GA courses.

1.4.4 Determine the different nineteen studying approaches (categorized surface (6 questions), deep (6 questions) and strategic (7 questions)), among male and female students enrolled in Technical Education GA courses.

1.5 Hypotheses

The following hypotheses were tested:

Ho₁. There are no significant differences between year of study and learning conceptions (9 questions) in Technical Education GA courses with regards to:

- i) Surface learning conceptions: learning as reproducing knowledge;
and
- ii) Deep learning conceptions: learning as transforming taught material.

Ho₂. There are no significant differences between gender and learning conceptions (9 questions) in Technical Education GA courses with regards to:

- i) Surface learning conceptions: learning as reproducing knowledge;
and
- ii) Deep learning conceptions: learning as transforming taught material.

Ho₃. There is no significant difference between year of study and studying approaches (19 questions) in Technical Education GA courses with regard to:

- i) Six Surface studying approaches: related to lack of purpose, unrelated memorizing, syllabus boundness, fear of failure;
- ii) Six Deep studying approaches: related to seeking meaning, relating ideas, use of evidence and interest in ideas;
- iii) Seven Strategic studying approaches: related to organized studying, time management, alertness to assessment demands, achieving and monitoring effectiveness.

Ho₄. There is no significant differences between gender and studying approaches (19 questions) Technical Education GA courses with regard to:

- i) Six Surface studying approaches: related to lack of purpose, unrelated memorizing, syllabus boundness, fear of failure;
- ii) Six Deep studying approaches: related to seeking meaning, relating ideas, use of evidence and interest in ideas;
- iii) Seven Strategic studying approaches: related to organized studying, time management, alertness to assessment demands, achieving and monitoring effectiveness.

1.6 Significance of the Study

This research strengthens the body of knowledge available on the learning conceptions (surface and deep) and studying approaches

(surface, deep and strategic) by year of study and by gender in Technical Education Graphics Arts training. The study signifies extents that the students, curriculum developers, implementers and evaluators, inculcate quality learning conceptions and studying approaches that encourage, innovation and creativity, crucial to productivity, competitiveness, sustainable development and lifelong learning in TE Graphic Arts curriculum and workforce in Kenya. The research findings also enhance the small body of learning conceptions and studying approaches research theories in TE courses for the 2012 Global Monitoring Reports.

1.7 Limitations of the Study

The first limitation of the study is the design which did not involve a randomized controlled trial of the entire population of Technical Education GA trainees, therefore, systematic differences between two groups cannot be ruled out

The second limitation pertained to the validity problems associated with quantitative research in general and survey research in particular. Researchers (e.g. Entwistle et al., 2006; Lai & Chan, 2005) have stated that learning conceptions are hard to measure validly with survey scales alone. Validity of survey results could be seriously affected by problems like lack of self-awareness and social desirability. Hence qualitative research, especially which involves interviewing students linking learning conceptions and studying approaches to personal epistemologies should shed more light on learning.

A third limitation was related to the research design. Measuring students' existing learning conceptions and studying approaches, by year of study and male and female differences, only once provided little insight into the origin, the variability and the manipulability of the same.

A fourth limitation was that, although the survey was analyzed in terms of year of study and gender categories that were self-identified by the respondents, it is possible that responses would be a result of cultural, geographic, or ethnic background rather than the year of study characteristics. Further, this was an exploratory quantitative study; no generalizations can be made as to cause and effect.

A fifth limitation was that, the survey was completed within one week. The equal sized random sample of 120 (Male 90 and female 30) from the population of 278, was only taken from the students present on the research dates. If a particular student was absent on the day the survey was conducted, no attempt was made to contact that student to complete the survey. It is possible that the students who were absent on the days that the data were collected may have affected the results had they been in class and selected to take the survey.

1.8 Delimitations of the Study

The following was the delimitation of the study:

The study only concentrated on research discussing learning conceptions and studying approaches among students (by year of study and by gender) in higher education and technical education.

1.9 Assumptions of the Study

The following assumptions were made concerning the study:

- 1.9.1 The students had identifiable learning conceptions and study approaches in a naturalistic setting involving the actual content and settings that people learn with.
- 1.9.2 Learning conceptions and study approaches affect mastery of cognitive information gleaned from learning activities and students' experiences.
- 1.9.3 The respondents in the study would provide honest answers thus select choices of learning conceptions (surface and deep) and studying approaches (surface, deep and strategic) that truly characterize them.
- 1.9.4 Individuals differed in their preferred manner of learning relationships (deep/strategic versus surface).
- 1.9.5 The greater the processing of information during learning, the more would be retained and remembered.

1.10 Conceptual Framework of the Study

For many years, information on academic achievement and cognition in formal educational contexts has depended on effort of teachers. Research describing additional influences, such as individual student learning conceptions and studying approaches are surfacing. The conceptual framework conceptualizes students characteristics by (a) year of study (first year, second year and third year) of students in different branches of

Graphics Arts (Printing and Graphic Design); and (b) male and female students pursuing Graphics Arts (Printing and Graphic Design) courses through analyses of their existing learning conceptions and studying approaches to detect possible future orientations. The learning

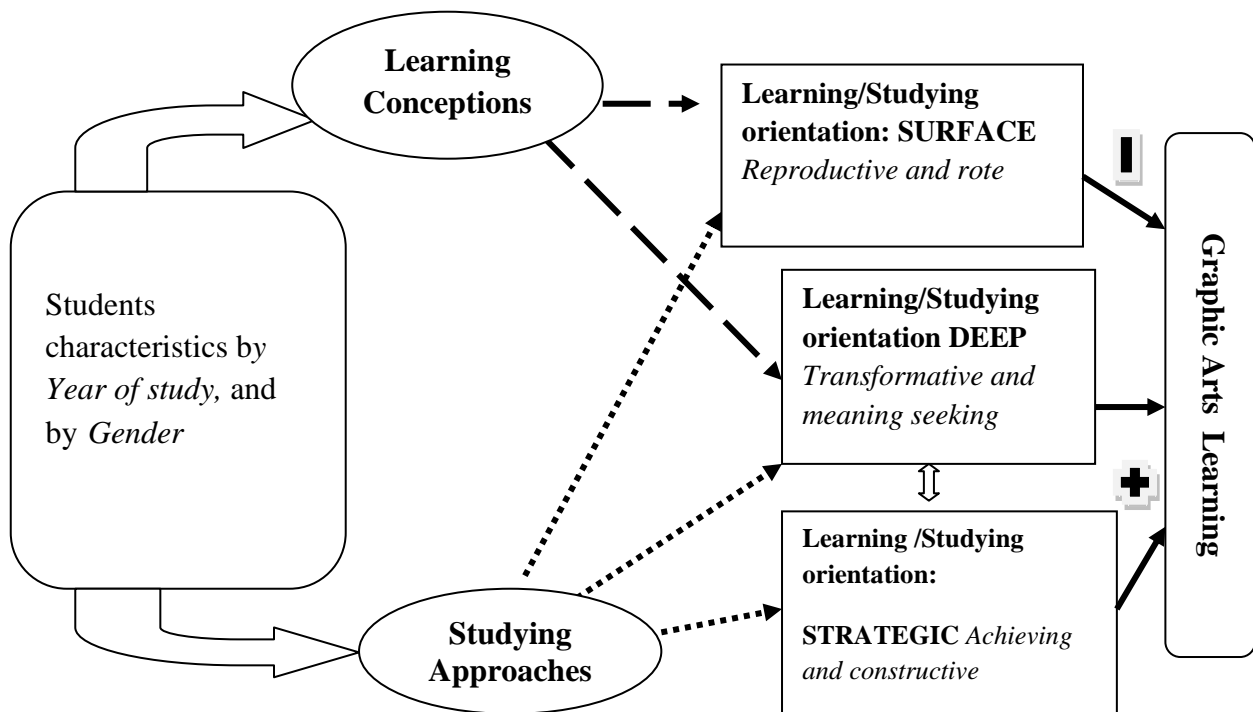


Figure 1.1: Conceptual Framework

Source: Author (2010).

Legend: The lines indicate the actual relationship between variables examined in this study, which have not been examined by other researchers in Graphic Arts Technical Education

conceptions and studying approaches characterized by the contrasts are distinguished as: surface, deep, and strategic and are the dependent variables in the conceptual framework. Entwistle et al. (2006) define surface learning as low understanding, lacks purpose, fears failure and leading to rote learning and memorization, without further future use. In contrast, deep learning is seeking meaning for oneself, inculcating interest in ideas, using evidence and relating ideas during learning, leading to transformative academic achievement. While, strategic

learning refers to organising one's studying, managing time, monitoring effectiveness of one's efforts, aware of the assessment demands, syllabus bound, and motivated to constructive academic achievement.

The independent variables: year of study and gender, have an impact on the dependent variables: learning conceptions and studying approaches, thus to some extent have an effect on students' academic achievement as depicted in figure 1.1. The framework using ANOVA and *t* test, attempts to identify the degree to which the independent variables contribute to the variance of the dependent variables. Essentially, the conceptual framework provides an excellent picture of the significant differences that GA Technical Education students may present in this study.

1.11 Definition of Operational Terms

Approach: refers to a broader meaning than the term “processing” to indicate an interactive relationship between the learner and the learning environment (Speth, Namuth, & Donald, 2007).

Curriculum: refers to the planned interaction of learners with instructional content, materials and resources, and processes for evaluating the attainment of educational objectives in technical education UNESCO UNEVOC (2001).

Graphic Arts (GA): refers to the crafts, industries and professions related to designing and printing on paper and other substrates (other surfaces such as walls etc. (Saskia, Galster, Kramer, Trang Le, Marz, Ragusa, Riede, Schneidar, Schütz, Stein, Zebic, Ziegler, Zöllkau, 2008).).

Gender: refers to the use of the term in accordance with guidelines in the 6th Publication Manual of the American Psychological Association (APA) in a cultural sense to refer to men and women as social groups (American Psychological Association, 2008).

Learning: refers to the processes of acquiring and integrating knowledge through a systemized process of instruction or organized experience in varying forms of knowledge, skill and understanding that the learner may use to apply in later situations and under conditions different from those of instruction (Entwistle, McCune & Tait 2006).

Learning conceptions: refers to the beliefs, experiences and understanding held by learners about learning (Anderson, 1995).

Studying; refers to:

1. Apply one's mind purposefully to the acquisition of knowledge or understanding of (a subject).
2. Read carefully.
3. Memorize.
4. Inquire into; investigate.
5. Examine closely; scrutinize.
6. Give careful thought to; contemplate: study the next move.
7. Apply oneself to learning, especially by reading.
8. Ponder; reflect.

Studying approaches: refer to the studying approaches discussed in the three studying approaches characterized by the three hierarchical contrasts, which are distinguished as: surface, deep and strategic.

- A surface approach involves a focus on memorizing course materials for the purposes of assessment and would be regarded as an undesirable way of studying in higher education.
- A deep approach to studying involves a focus on the underlying meaning of the course materials and would generally be regarded as a desirable way of studying in higher education.
- A strategic approach involves a focus on achieving the best results, regardless of whether this involves attention to the meaning of the course materials (Entwistle, McCune & Tait 2006).

Technical Education: refers to a range of programmes that impart specific occupational skills, knowledge and attitudes required in the world of work particularly in engineering and scientific disciplines for post-secondary level and lower tertiary level, officially recognised as non-degree programmes aimed at preparing technicians, para-professionals and other categories of middle level workers UNESCO UNEVOC (2001).

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter presents literature related to the study. The areas reviewed are learning conceptions and studying approaches concepts. The review also explores the aims of technical education and gender concerns. The chapter then concludes with a summary of the literature reviewed.

2.2. The Concepts of Learning Conceptions and Studying Approaches

2.2.1 Learning Conceptions

Felder and Brent (2005) in their study “Understanding Student Differences”, state, “Students have different levels of motivation, different attitudes about teaching and learning, and different responses to specific classroom environments and instructional practices. The more thoroughly instructors understand these differences, the better their chances of meeting the diverse learning needs of all their students. Three categories of diversity that have been shown to have important implications for teaching and learning are differences in students’ learning styles (characteristic ways of taking in and processing information), approaches to learning (surface, deep, and strategic), and intellectual development levels (attitudes about the nature of knowledge and how it should be acquired and evaluated). Felder and Brent’s (2005) article reviews models that have been developed for each of these

categories, outlines their pedagogical implications, and suggests area for further study (Felder & Brent, 2005:69) to include:

Characterizing students. Learning style profiles, orientation to study, and levels of intellectual development of engineering students should be assessed and analyzed. Differences in any of the three should be identified among (a) students at different levels of a single engineering curriculum, (b) students in different branches of engineering, (c) students at different types of schools (research-intensive and teaching-intensive, public and private, small and large), (d) engineering students and students in other disciplines, and (e) students and faculty.

This study intends to address the learning conceptions and studying approaches problem area, with Graphic Arts – (Printing and Graphic Design) replacing the engineering, by first understanding the concepts and contrasts therein and then reviewing related research.

2.2.1 Learning Conceptions Concept

According to Entwistle et al. (2006) and Marton and Säljö (1997) research models of contrast in learning conceptions include:

- a) A quantitative increase in knowledge;
- b) Memorising, making sure you remember things well;
- c) The acquisition of facts, methods, etc;
- d) Being able to use the information you have acquired;
- e) The abstraction of meaning of different things and experiences;
- f) Using all the experiences in life;
- g) An interpretative process aimed at understanding reality;
- h) Developing as a person; and
- i) Being able to relate with people better.

Items numbers a) - d) lie in the surface learning conception contrast, that indicates the learner who conceptualizes learning as reproducing knowledge and that the materials to be learnt do not need interpretation or transformation. Learning therefore, does not involve any challenging change (Anderson, 1995; Marton & Säljö, 1997; Valiente, 2008). This achievement is quantitative or accumulative and is viewed as a lower order level with generally less desirable qualitative characteristics.

The remaining five cover the deep learning conceptions that involve transforming previous knowledge and achieving personal understanding and development. The achievement is qualitative in nature (Anderson, 1995). According to Richardson et al. (2007) the deep learning conceptions contrast is more evident in the postgraduate students than in undergraduate students. While, studying the learning conceptions within a Chinese cultural context, Lai and Chan, (2005) found that the surface conceptions is useful in learning, especially for memorizing what has been understood, among 1st year pre-service teacher training students.

2.2.2 Studying Approaches Concept

There has been increasing criticism of the use of formal examinations in higher education (Brent & Felder, 2005; Learning and Skills Network, 2010). Nevertheless, where individual forms of learning and understanding have been actively sought, they suggest the importance of providing opportunities for bodies of knowledge to be integrated into personally meaningful, and enduring, patterns of learning and

understanding (Marton, Hounsell & Entwistle, 1984; Richardson et al., 2007). Evidence has accumulated to suggest, that the general approach to studying can be affected by examination format with fact-orientated multiple-choice or short-answer questions encouraging surface approaches and essay questions evoking deep approaches (Richardson et al., 2007)

Interviews on everyday studying drew attention to the pervasive influence of assessment procedures on learning and studying (Marton & Saljo, 1979). They suggested the need for an additional category - strategic approach - in which the intention is to achieve the highest possible grades by using organised study methods and good time-management (Entwistle & Ramsden, 1983). This approach also involves monitoring one's study effectiveness (Entwistle, McCune & Walker, 2000) and alertness to the assessment process, aspects which are akin to metacognitive alertness and self-regulation (Ferla et al., 2007).

Whereas the distinction/contrast between deep and surface approaches was derived from analyses which focused on extracting meaning from text, the strategic approach, together with its opposite - the apathetic approach (Tait & Entwistle, 1996) - indicate how students act in everyday study situations. They are, therefore, better described as approaches to studying. The idea of approaches to studying derive from Marton and Saljo's (1976, 1997) and Biggs (1979, 1987), ideas on contrasts deep to surface approaches, combined with Entwistle and Ramsden's (1983)

strategic approach, together with the work of Entwistle et al. (2006). It identifies the tendencies of students to adopt deep, surface and strategic contrasts to learning and studying.

The ASSIST inventory developed by Entwistle et al. (2006), uses a Likert technique for measuring the contrasts, which involves asking students to rate the extent of their agreement on a five-point scale with a series of related items that cover the aspects of a specific contrast. Summing these responses across items produces a scale score for each contrast. In this inventory, each main contrast (deep, surface and strategic) has been found to have conceptually distinct aspects (sub-scales) which are still related to the main approach. Table 2.1 depicts the sub-scales contained in the RASI.

Table 2.1: Sub-scales contained in the Revised Approaches to Studying Inventory.

Deep approach	Strategic approach	Surface approach
Seeking meaning	Organised studying	Lack of purpose
Relating ideas	Time management	Unrelated memorising
Use of evidence	Alertness to assessment demands	Syllabus-boundness
Interest in ideas	Achieving	Fear of failure
	Monitoring effectiveness	

Richardson, et al., 2007

The first two or three sub-scales in each approach are most consistently related to each other, and can be combined for most subject areas. Subsequent sub-scales are more likely to vary in their relationships across

different samples. Relationships thus need to be checked in the particular sample used for the study. Descriptions of the development and use of this particular version of the inventory are found in Entwistle, *et al.* (2006), Felder and Brent, (2005) Richardson, *et al.*, 2007. The surface, deep and strategic scales and subscales in the RASI (Richardson, *et al.*, 2007) are described as follows:

2.2.2.1. Surface Approach to Studying

This dimension also known as ‘surface apathetic’ and ‘instrumental’ in some publications has the following subscales:

Lack of purpose (*Sometimes separates out as a distinct aspect*): Often I find myself wondering whether the work I am doing here is really worthwhile. There’s not much of the work here that I find interesting or relevant. When I look back, I sometimes wonder why I ever decided to come here. I am not really interested in this course, but I have to take it for other reasons.

Unrelated Memorising: I find I have to concentrate on just memorising a good deal of what I have to learn. Much of what I am studying makes little sense: it's like unrelated bits and pieces. I am not really sure what's important in lectures, so I try to get down all I can. I often have trouble in making sense of the things I have to remember.

Fear of Failure (Motivational aspect): Often I feel I am drowning in the sheer amount of material we have to cope with. I often worry about whether I will ever be able to cope with the work properly. I often seem

to panic if I get behind with my work. Often I lie awake worrying about work I think I will not be able to do.

Syllabus-Boundness (*Does not contribute to the overall score effectively in all subject areas*): I tend to read very little beyond what is actually required to pass. I concentrate on learning just those bits of information I have to know to pass. I gear my studying closely to just what seems to be required for assignments and exams. I like to be told precisely what to do in essays or other assignments.

2.2.2.2. Deep Approach to Studying

Seeking Meaning: I usually set out to understand for myself the meaning of what we have to learn. When I am reading an article or book, I try to find out for myself exactly what the author means. I stop from time to time to reflect on what I am trying to learn from it before tackling a problem or assignment, I first try to work out what lies behind it.

Relating Ideas: I try to relate ideas I come across to those in other topics or other courses whenever possible. When I am working on a new topic, I try to see in my own view how all the ideas fit together. Ideas in course books or articles often set me off on long chains of thought of my own. I like to play around with ideas of my own even if they do not get me very far.

Use of Evidence: I look at the evidence carefully and try to reach my own conclusion about what I am studying. Often I find myself

questioning things I hear in lectures or read in books. When I read, I examine the details carefully to see how they fit in with what is being said. It is important for me to be able to follow the argument, or to see the reason behind things.

Interest in Ideas (Motivational aspect): Regularly I find myself thinking about ideas from lectures when I am doing other things. I find that studying academic topics can be quite exciting at times. Some of the ideas I come across on the course I find gripping. I sometimes get 'hooked' on academic topics and feel I would like to keep on studying them.

Monitoring Effectiveness (*Originally included in strategic, but now seen as more closely related to deep*): I go over the work I have done carefully to check the reasoning and that it makes sense. I think about what I want to get out of this course to keep my studying well focused. Before starting work on an assignment or exam question, I think first how best to tackle it. When I have finished a piece of work, I check it through to see if it really meets the requirements.

2.2.2.3. Strategic Approach to Studying

Organised Studying: I manage to find conditions for studying which allow me to get on with my work easily. I think I am quite systematic and organised when it comes to revising for exams. I am good at following up some of the reading suggested by lecturers or tutors. I usually plan out my week's work in advance, either on paper or in my head.

Time Management: I organise my study time carefully to make the best use of it. I am pretty good at getting down to work whenever I need to. I work steadily through the term or semester, rather than leave it all until the last minute. I generally make good use of my time during the day.

Achieving (*Motivational aspect*): It's important to me to feel that I am doing as well as I really can on the courses here. I feel that I am getting on well, and this helps me put more effort into the work. I put a lot of effort into studying because I am determined to do well. I don't find it at all difficult to motivate myself.

Alertness to Assessment Demands (*Loads with strategic in some studies, but now seen as a distinct aspect*): When working on an assignment, I am keeping in mind how best to impress the marker. I look carefully at tutors' comments on coursework to see how to get higher marks next time. I keep in mind who is going to mark an assignment and what they're likely to be looking for. I keep an eye open for what lecturers seem to think is important and concentrate on that.

2.3. Technical Education

Few technical education systems in Africa are set up to create lifelong learning opportunities for skills development that can meet the demands of new intensive knowledge economies (Konyuma, 2008). The need to continually review and rationalize the TE curriculum to ensure quality and relevance to the emerging challenges in society is emphasized in the *Declaration of the Decade for Education for Sustainable Development*

(UNESCO, 2009). Key competences required include problem identification and problem solving, critical thinking, innovation, reflection, creativity, learning to learn, risk-taking, collaboration, and entrepreneurship. The changes required in the delivery of education and training services cannot provide opportunities to students to acquire these skills unless the prevailing assessment /examination systems move away from only valuing rote learning and memorization (Amutabi, 2011; UNESCO, 2009).

In Kenya, various commissions and committees over the last forty years suggest varieties of initiatives for instituting a meaningful TE education system, but unfortunately, the implementation on the ground is less than satisfactory (GoK, 2007a). In 1999 *The Report of the Commission of Inquiry into the Education System of Kenya* (GoK, 1999), recognized TE as a linchpin to industrial development. Self-paced learning to meet individual learning styles was among the important options proposed in this report. Years later, industry observed that only twenty-three per cent (23%) displayed first-rate problem solving, critical and creative thinking skills in the *Rapid Appraisal on the Status of the Technical and Vocational Education and Training (TVET) in Kenya* report (GoK, 2003).

The importance of Technical Education (TE) student competence levels is also cited in various reports, policy papers and poverty reduction strategy papers (PRSPs). The documents include the *National Poverty Eradication Plan 1999-2015* (GoK, 1999), *Education for All Goals*

(UNESCO, 2000), and the *Economic Recovery Strategy for wealth and employment creation* (GoK, 2003a). To harness the deplorable situation in industry, noTable strategies outlined in the *Sessional Paper No.1 of 2005 of Kenya* included the renaming of Technical and Vocational Education and Training (TVET) to Technical, Industrial, Vocational Education and Training (TIVET) (GoK, 2005) so as to attract more learners to the industrial sectors. Pertinent was the provision of practical knowledge and skills that would enhance TE curriculum content and didactic design quality and relevance in industry (GoK, 2007a). The *Kenya Vision 2030* policy document (GoK, 2007a) supported by the Constitution of Kenya (GoK, 2010), argue for the alternative national TIVET curriculum changes on learning in the technical training institutions that will spur lifelong learning and sustainable development.

The unemployment scales of many developing nations' workforces are massive and the challenges they face are similar (Konyuma, 2008; Palmer, et al., 2007). According to the Economist (2009), Africa's growing population is its greatest asset as a demographic dividend. But there is nothing ineviTable about the ability to cash in on the demographic dividend, to create wealth and spur growth. For that to happen, Africa will have to choose the right learning policies and overcome its many problems. The Economist goes on to say that if a country fails to address those problems, then the demographic dividend could become a burden. Instead of busy people at work, there will be

restless, jobless young thugs; instead of prosperity there will be crime or civil unrest. Entwistle et al. (2006) argue that cues taken from the environment will impact on the youths' future learning conceptions and studying approaches.

Students turn down technical careers mostly due to the learning methodology and content in TE. According to a study conducted in Tanzania, rote learning methods and favouritism of male students by teachers were some of the major factors that contributed to women rejection of the TE subjects (Chege & Sifuna, 2006). It was clear that rote teaching or terrorist pedagogy that hinges on examination of performance and control of knowledge by the teacher could not promote transformative learning of either men or women.

2.3.1 Technical Education Graphics Arts (GA)

The numerous TIVET courses include Graphics Arts (GA) education for workers intending to join the GA industry sector all over the world. The technical programmes main objective is to inculcate skills that will be responsive and relevant to the country's human resources required for middle level jobs (KIE, 2002). GA, a rapidly changing and older ICT technological industry (Romano 2009; UNESCO, 2002), deals with creative and innovative production of printed products, for instance, posters, books, newspapers and tin and carton packaging (Farnand, 2009; Heidelberg, 2008; SFTCPPA, 1994; Saskia et al., 2008; UNESCO, 2002). Currently their skills are in great demand in the digital media creative

industry, where they produce animation for games, stories and films. It would have been preferable to get more literature on learning in GA Technical Education from Africa and Kenya, but it has been difficult to find relevant literature.

2.3.2 Women and Technical Education Graphics Arts

Attempts to address the women's plight in print media industry include the launch of a "Women in Print" initiative by Print Media Academy, Heidelberg, in Germany in April 2009. No demographic data on women participation at different levels of Graphic Arts and Communication training are available so far from Heidelberg. Neither Cummings (2000; 2011) at the Rochester Institute of Technology in the USA, nor Saskia, Galster, Kramer, Trang Le, Lukas, Marz, Ragusa, Riede, Schneider, Schütz, Stein, Zebic, Ziegler, and Zöllkau (2008), focus on gender based learning styles data in their national studies.

Cummings (2011), nonetheless, suggested that as the industry continued to change and the search for key personnel became more competitive, more women should pursue careers in all areas of Graphic Arts Communication. Gender Policy in Education in Kenya (Go, 2007), the MDGs and EFA initiatives prohibit discrimination based on race, gender, colour, or national origin. The law requires any institution receiving federal funds to maintain policies and practices that do not discriminate based on sex (AAUW, 2010). Low women's presence in TE fields is further exacerbated by the admission requirements that place a strong

emphasis on achievements in Science and Mathematics (Chege & Situma, 2006).

Table 2.2 indicates the enrolment of female students in Graphic Arts in 2007 in Kenya. The number has increased slowly to 56 in 2011.

Table 2.2: Enrolment in Kenyan National Polytechnics by Course, Gender, 2007

Course	Male	Female	Total	Staff	percentage Female	Teacher/ student Ratio
ICT	209	145	354	25	40.96	1:14
Chemical Technology	377	299	676	17	44.23	1:40
Health and Applied Sciences	1262	1918	3180	94	60.31	1:34
Business Studies	1070	837	1907	119	43.89	1:16
Mathematics, Surveying & Mapping	90	23	113	14	20.35	1:08
Building & Civil Engineering	743	211	954	86	22.12	1:11
Medical Engineering	161	5	166	21	3.01	1:08
Electrical / Electronic Engineering	1144	328	1472	69	22.28	1:07
Mechanical/ Automotive Engineering	1041	427	1468	90	29.09	1:16
Information & Liberal Studies	93	165	258	43	63.95	1:06
Institutional Management	835	231	1066	55	21.67	1:20
Graphic Arts	172	50	222	5	22.52	1:41
Instructor Training	34	19	53	6	35.85	1:09
Education	7	60	67	23	89.55	1:03
TOTALS	7238	4718	11,956	667	39.46	1:18

Research results for validation for the women who face challenges from what continues to be a male-dominated industry and are enrolled or employed in the field of Graphic Arts Communication is therefore urgent

2.4. Studies on Learning Conceptions and year of study

The literature review concentrated on surveys that considered the dependent variable factors in learning conceptions, such as: the surface learning as reproducing knowledge (beliefs) and deep learning as transforming learned materials (experience and understanding). Devlin (2002) stresses that along with the employability of graduates, recommendations that graduates should be able to think reflectively and practice lifelong learning is widely accepted as the important objectives of higher education in Australia, and in other western nations. Devlin (2002) argues the need for students to be the source of information, enabling them to be critical change agents of their learning conceptions, from accumulation and memorization of facts to meaning seeking and transformative learning. The students should not assume that their teachers will provide all the evaluation, feedback and guidance they need on their performance and on how to improve it, in clinical settings. The ultimate aims of this study were (1): to answer a central, simple question - do a group of first year students from one university hold perceptions of personal responsibility for their learning? and (2): meet two of the objectives of higher education in Australia: teaching students to think and to learn.

Devlin (2002) utilized a type of accidental sampling approach in this study obtaining a sample of 100 first-year university student undertaking at least one first year subject at the University of Western Sydney (UWS) in 1998. The participants' were undertaking a range of courses, most of which had a strong vocational focus. The age range of the participants was from 18 years to 52 years, with an average age of 21.9 years. Eighty-one of the participants were male and 19 were female. Ninety-six of the students were full-time students and 4 were part-time. A range of willing academic coordinators of first year undergraduate subjects helped with accessing potential participants. This process meant that the ultimate sample was not randomly selected as it resulted from working with whichever coordinators responded positively to the request and including whichever of their individual students volunteered, until the required sample size was obtained.

Devlin utilized the phenomenology methodology approach. An ASSIST questionnaire was distributed to 100 students in 1998. Information/consent forms and questionnaires were administered at the end of lectures timetabled in the morning of a day when students had both morning and afternoon classes over a period of a term. Potential participants were requested to bring the completed form and questionnaire to a specific lecture timetabled for the same afternoon where it was collected by the researcher. Their written responses provided information about their conceptions of learning, as well as both

direct and indirect indications of their perceptions of responsibility. Content and factor analyses were used to analyse the data.

Results indicated that students held perceptions of personal responsibility for their learning, but that their conceptions of learning (88%) were essentially quantitative in nature and 50% were classified at the lower levels of complexity. Hence, many of the participants in this study see learning as a quantitative exercise in accumulating facts and knowledge to be remembered and used in 'practice' within a particular industry or vocational area. Devlin poses that the teaching challenge was to change the way some students currently and usually learn, and not to see this as an impediment to teaching them.

The gaps noted are that the study concentrated first only on the first year students and their entry behaviour to give the teachers information that would enable them consider different delivery methods. Secondly, although data on male and females were obtained no information was gleaned from the statistics for further action.

Lai and Chan's (2005), literature findings suggest that conceptions of learning, achievement motivation and learning strategies are related but how they are related needs further examination. In the Lai and Chan's (2005) study, a questionnaire comprising three inventories to measure conceptions of learning, culturally oriented achievement motivation and learning strategies was administered to 251 pre-service teacher education students in Hong Kong. Analysis was conducted by testing a factor

analysis structural model on selected categories of conceptions of learning (learning as an increase in knowledge and learning as personal fulfilment), culturally oriented achievement motivation and learning strategies. Satisfactory goodness of fit index was obtained with the proposed model. Path analysis showed that the conception “learning as an increase in knowledge” was positively and significantly related to socially oriented achievement motivation, deep strategy and surface strategy.

The conception “learning as personal fulfilment” was positively and significantly related to individual oriented achievement motivation but negatively and significantly related to social oriented achievement motivation. Individual oriented achievement motivation was positively and significantly related to deep strategy but negatively and significantly related to surface strategy. Implications for learning and teaching showed that students utilized the surface approach due to a culturally oriented achievement motivation. Lai and Chan (2005), however express that it is vital for students to explore and broaden their hierarchical learning conceptions to be globally competitive. This research was on first-year students only. They, therefore, proposed exploration of other levels of study and gender differences and programme specific factors with respect to learning conceptions.

Ferla, Valcke and Schuyte (2008) used Vermunt's model of self-regulated learning as a conceptual framework. The aim was to contribute to the

development of finer grained models of higher education students' learning by (1) investigating causal relationships between three student cognitions which feature prominently in the research literature: self-efficacy, conceptions of learning and attributions for academic success and by (2) researching both the direct and indirect effects of these student cognitions on first-year university students' study strategies (Ferla et al., 2008). The entire population of freshmen (n=473) studying psychology, educational sciences, social work and welfare studies (261, 152 and 60 respectively) was the target and also the sample. The group consisted of 49 male and 424 female students. Ferla et al. (2008) research methodology included developing, respecifying, testing, and cross validating their learning conceptual model using path analyses. The questionnaire focusing on learning conceptions was administered two and half months after the start of the academic year. All participating students officially consented. Students' learning conceptions were determined with Likert four scales developed by the same authors (Ferla, Valcke, & Schuyten, submitted for publication). Exploratory factor analysis made clear that these four scales represent two learning conceptions (deep and surface) related to students' conceptions about understanding and memorizing.

Results from the study indicate that the final model demonstrates that learning conceptions influence all other variables and that the latter do not explain any of the variance in students' learning conceptions. Ferla et

al. (2008) model and results provide the conclusion that ‘Unsophisticated’ students equate learning strongly with memorizing and therefore adopt an externally regulated and surface oriented study strategy. However, this study strategy does not fit the expectations of the new learning environment in which they are expected to process much more learning material and to study more independently than they are used to. Some of these students realize this, which explains why they feel – temporarily or permanently – that their study process lacks direction, why they feel less efficacious and why they think their chances of passing exams strongly depend on luck. In contrast, ‘sophisticated’ students who equate learning with understanding are better equipped to deal with the challenges of their new learning environment. The latter is demonstrated by their greater total use of metacognitive and cognitive strategies. Ferla et al. (2008) results show that within an educational context learning conceptions are fundamental student cognitions since they directly and/or indirectly influence students’ self-efficacy, attributions for academic success, and study strategy and needs further investigations in second and third-years.

The achievement of high quality learning is important to all graduates, stresses Morris (2002), but has an extra relevance in vocational education, where the context of practice is continually changing and professions are continuously developing. However, although educators state that it is their hope and intention that graduates leave university with high quality

learning, research has found that such an achievement is uncommon. Students' conceptions of what the nature of 'learning' is have strong influences on the way they approach their learning and on the quality of their learning outcomes. From these findings, Morris (2002) observes that if educators in higher education are to provide students with educational experiences which foster achievement of high quality learning in students, one factor about which they need information is students' conceptions of the nature of learning, both when they enter university and as they progress through their courses. Morris' (2002) study aimed at redressing the lack of information, on the dynamics of student learning in physiotherapy, in order to provide educators with valuable insights, which can both be used to review the quality of learning achieved with current curricula and methods of course delivery. The information could also influence the development of new curricula, so that their design facilitates achievement of desired high quality learning outcomes. According to Morris (2002), data on entering student's learning conceptions could also be used to identify students whose conceptions are not in agreement with what the course is likely to expect of them, making them 'at risk' of failure. Appropriate support can then be provided for these new students.

2.5. Studies on Learning Conceptions among Male and Female Students

Action by governments, business and civil society to set targets for women's participation at all levels, and to gather and disaggregate data, is

needed (Africa Progress Panel 2010). The data contributes MDGs' achievement, as well as strengthen women's knowledge and exercise of their human rights UNESCO: IIEP (2010). However literature reviewed indicates that little consideration was given to the gender agenda.

The studies conducted on learning conceptions by Fuller (1999) discussed earlier, provides data from a sample of 279 students, comprising of 95 first year undergraduate Bachelor of Education students (48 males and 47 females), 116 fourth year Bachelor of Education students (18 males and 98 females) and 78 students in a training and development course (46 males and 32 females) (Fuller, 1999). . No significant differences associated with gender were identified in any of the research instruments because the study had no prior intention to segregate this information from the data collected.

Ferla, Valcke and Schuyte (2008) (discussed earlier) used Vermunt's model of self-regulated learning as a conceptual framework. The entire population of freshmen (n=473) studying psychology, educational sciences, social work and welfare studies (261, 152 and 60 respectively) was the target and also the sample. The group consisted of 49 male and 424 female students. Interestingly, no information is provided to indicate that significant differences were sought in terms of gender.

Devlin's study of 2002 had a sample of 100 first-year university student undertaking at least one first year subject at the University of Western

Sydney (UWS) in 1998. The participants' were: eighty-one males and 19 females. No information was gleaned from the statistics for gender segregated analysis.

Lai and Chan's (2005), study concentrated on first-year students only (both male and female). However no gender differences were studied. They, therefore, proposed exploration of other levels of study and gender differences and programme specific factors with respect to learning conceptions.

2.6. Studies on Studying Approaches by Year of Study

Richardson, Dawson, Sadlo, Jenkins, and Mcinnes (2007), hypothesis was that students in higher education adopt different approaches to studying, depending upon their perceptions of the academic quality of their courses and programmes, and both are likely to depend upon the nature of the curricula to which they are exposed. The study aimed at empirically establishing the perceptions of quality and approaches to studying were investigated in students taking pre-registration programmes in a school of health professions. Sample: The study targeted the four pre-registration programmes taught in the same school at an English university. Two of the programmes were 3-year undergraduate programmes with subject-based curricula, and two were 2-year entry-level masters' programmes with problem-based curricula. Richardson et al. (2007) target population consisted of all students who were in Stages 1 and 2 of each of the four programmes during the 2004–2005 academic

years. Data was collected from 351 students (268 undergraduates and 83 Masters Students). 34 out of 46 teachers were also surveyed with regard to their beliefs and intentions about teaching. The 36 items Course Experience Questionnaire (CEQ) and the 52 items Revised Approaches to Studying Inventory (RASI) version of the ASSIST by indicating their agreement or disagreement with a particular statement along a 5-point scale from 5 for 'definitely agree' to 1 for 'definitely disagree', were administered to the students within a single survey. The first author (who described himself as a researcher independent of the institution) and a research fellow administered them during regular classroom activities (Richardson et al., 2007). Cronbach's (1951) coefficient alpha was used to measure of the reliability of the scales in each of the instruments. Their construct validity was assessed by exploratory factor analysis using principal axis factoring. Nevertheless, both Cattell's (1966) scree test and the parallel analysis of 1000 random correlation matrices using O'Connor's (2000) program implied that just three factors should be extracted. Since the CEQ and the RASI had been administered within a single survey, it was then feasible to evaluate the relationship between the students' scores on the two instruments by means of a multivariate analysis of variance and by examining the correlation coefficients among the various scale scores.

Richardson et al. (2007) results indicated that the teachers on the two kinds of programme exhibited similar beliefs and intentions about

teaching. However, the students on the master's programmes produced higher ratings than did the students on the undergraduate programmes with regard to the appropriateness of their assessment, the acquisition of generic skills and the emphasis on student independence. The students on the master's programmes were also more likely to show a deep approach to studying and less likely to show a surface approach to studying than were the students on the undergraduate programmes. Overall, the students tended to obtain higher scores on the subscales measuring deep approach and strategic approach than on the subscales measuring surface approach. A separate multivariate analysis of variance showed that the difference between the undergraduate and the masters students explained 14.1% of the variation in their scores on the three major scales (Wilks' $\lambda=0.859$), $F(3, 265)=14.48$, $p < 0.01$. Univariate tests showed that the two groups obtained significantly different scores on deep approach, $F(1, 267)=27.88$, $p < 0.01$, and on surface approach, $F(1, 267)=18.78$, $p < 0.01$, but not on strategic approach, $F(1, 267)=0.97$, $p=0.32$.

Richardson et al. (2007) conclude that the CEQ and the RASI provide complementary evidence for use in research, in quality assurance and in quality enhancement. In comparison with subject-based curricula, problem-based curricula seem to enhance students' perceptions of their programmes and the quality of their learning. This study reveals that more research based information on problem-based curricula and how students in higher education conceptualise studying through different

experiences, would enable educators to develop relevant learning interventions. This research did not segregate the data and comparisons and distinctions by year of study, but by programmes.

Fuller (1999) investigated relationships between university students' conceptions of learning, their approaches to learning and their use of learning strategies in a particular unit of study. The study aimed at establishing evidence of strong relationship between these aspects of student learning, as evidence was limited, and confined to studies that have treated students as holding one particular conception of learning. Students from three different courses at a large metropolitan university in Western Australia formed the population. Data was obtained from a sample of 279 students, comprising of 95 first year undergraduate Bachelor of Education students (48 males and 47 females), 116 fourth year Bachelor of Education students (18 males and 98 females) and 78 students in a training and development course (46 males and 32 females) (Fuller, 1999). The training and development course consisted mainly of trainers from industry and business and teachers from colleges of technical and further education. 69 were undergraduates and 9 were graduate studying for a graduate diploma.

Data was collected from the students who consented to participate. The study method to obtain quantitative information about students' conceptions of learning, approaches to learning and use of learning strategies in two courses, namely; education and training and

development, utilized three instruments (Fuller, 1999). Reflections on Learning Inventory (RoLI) (Meyer & Boulton-Lewis, 1997), an instrument that contains 5 items on each of 10 scales relating to students' beliefs about the nature of learning, the nature of knowledge, the processes of learning, and indicators that learning has taken place. Students responded to each item on a five point scale, ranging from definitely agree (5) to definitely disagree (1). The second instrument was the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich, Smith, Garcia & McKeachie, 1991), an instrument containing 50 items relating to the major categories of learning strategies, was adapted for use in this study. The students responded to each item on a 7 point scale, ranging from very true of me (7) to not at all true of me (1). The third instrument which has bearing with this study was the Study Process Questionnaire (SPQ) (Biggs, 1987) having 7 items on each of the 6 subscales relating to the reported use of deep, surface and approaches to learning. Students responded to each item on a 5 point scale ranging from definitely agree (5) to definitely disagree (1). Procedure: All instruments were administered by the researcher during regular classes before the students began studying, in their first semester (Fuller, 1999).

The three instruments (RoLI, MSLQ and SPQ) were analysed using MANOVA analysis to indicate significant differences between the three groups on all the instruments scales (Fuller, 1999). The students were later allowed access to their results, but there is no way of knowing what

effect this feedback had on responses to the next questionnaire, or on students' actual learning behaviours as no follow up was planned. Results: MANOVA analysis indicated significant differences. Between groups were found on five of the six scales in the SPQ, suggesting that students in each group adopted quite different approaches to learning.

Fuller (1999) concluded that overall, the study produced little evidence of conceptions of learning being related in a consistent way to student approaches to learning, use of learning strategies, or academic achievement. The learning context appears to exert a stronger influence on learning than the beliefs about learning which students bring to this context and was important for further study. No comparison was conducted between the first, second and third year students to establish whether there are differences between the year of study. No technical education students were studied. No significant differences associated with gender were identified in any of the research instruments because the study had no prior intention to segregate this information from the data collected

Byrne, Flood and Willis (2009) studied through a comparative analysis of the studying approaches of students taking their first course in accounting at a United States and an Irish University. The data for this study was gathered from 204 students in the US and 309 in Ireland, using the Approaches and Study Skills Inventory for Students (ASSIST, 1997) which measures studying approaches on three dimensions: surface, deep

and strategic on a 5 point Likert Scale. Factor analysis reveals that while both samples favoured a strategic studying approach over the other approaches, the US students have a significantly higher score on the deep and strategic scales compared to the Irish students. Differences between the samples at the sub-scale level – such as the students’ intrinsic interest, time management and fear of failure – are reported. Finally, the study contextualizes the findings by analyzing variations in the learning environment of the two universities. However, differences by gender or by year of study were not established.

Rowe’s (2002) paper reports the results of a study using a short form version of the ASI (32-item form) to investigate the approaches to study, exhibited by 82 engineering students at the end of their first-year of higher education. Rowe (2002) states that originally, the SAL framework was developed by qualitative experimental investigations with campus-based students. However, following replication of the research with both campus-based and distance-learning students, the results do not appear to depend critically on the actual mode of course presentation. Rowe reports that the first-year students investigated exhibited the surface approach and recommended that further investigations be conducted among second and third-year students to explore if this trend persists.

Buckley, Pitt, Norton, and Owens’ (2010) project, examined the relationships between students’ approaches to study, conceptions of learning and judgments about the value of networked technologies. Their

aim was assess students' attitudes towards the use of networked technologies within a blended curriculum. The target population was 236, which are all first-year undergraduate Sport Studies students. 144 (61%) first-year students completed the survey. The data was collected at the beginning and end of the students' course first semester. In the first stage of the project the Nineteen students (6 male and 13 female) first-year students provided data by completing a set of 23 items Judgements about Networked Learning (JNL) (Goodyear et al., 2003) instrument, concerning their reflections on networked learning through a series of focus group interviews in an integrative study pre and post surveys, took part, divided into five focus groups (Buckley, et al., 2010).

Data were captured on a digital voice recorder and transcribed verbatim. Groups consisted of four or five students and focus group sessions lasted 30–40 minutes. 144 students then completed the 52-item Approaches and Study Skills Inventory for Students (ASSIST) (Entwistle et al., 2000) instrument. The ASSIST comprises three sections: 8 items designed to assess students' conceptions of learning; 36 items allowing the researcher to characterize students' self-reported approaches to study in terms of deep, strategic and surface/apathetic; and 8 items exploring students' preferences for different types of course and teaching.

Demographic data on students' experience, age and gender was also sourced. The second stage of the project focused on post-intervention analyses using the same instruments with an additional set of 17 items

exploring students' experiences of the course (Buckley, et al., 2010).. Pearson product-moment correlation coefficients were calculated to measure the association between scores on the JNL and the ASSIST. Analysis of Variance (ANOVA) and a T test were used to explore differences for age and gender, respectively, in scores on the JNL. The JNL data were analysed using inductive thematic analysis (Buckley, et al., 2010). These involved six stages: familiarization with the data; generating initial codes: searching for themes; reviewing themes; defining and naming themes; and finally producing the report. Emergent latent themes were linked with the data themselves within a constructionist epistemological framework.

The results indicate that while there was a statistically significant association between scores on the JNL with both the Reproducing ($r = 0.20$, $p < 0.05$) and Understanding ($r = 0.25$, $p < 0.01$) conceptions of learning, the degree of correlation was low. There was, however, a much higher, moderate degree of correlation between the two conceptions of learning ($r = 0.60$, $p < 0.01$) showing that a substantial proportion of this group of students did not display clear-cut differences in their conceptions of learning (Buckley, et al., 2010). The ASSIST scores showed significant positive associations between both deep and strategic approaches to study and students' perceptions of networked learning, and negative associations with a surface approach. Students were positive about the incorporation of technology but had some

concerns about the time needed to become sufficiently competent. They demonstrated a reflective approach and exhibited a broad view of the ways in which knowledge might be interpreted.

Buckley, et al. (2010) concluded that the online forum was viewed as a site where students could benefit from sharing of personal experiences. Further investigation on students' preferences for experiencing variation in their learning, particularly in relation to modes of delivery, was found necessary in facilitating different approaches to study. Recommendations: designing a blended curriculum was recommended that allowed the students to interact with technology as they pursued their regular studies (Buckley, et al., 2010). Though data was sourced from both male and female no further information is provided in terms of differences between them. No comparisons by year of study were carried out.

Hooijer's (2010) PhD study was a cross-sectional study among three consecutive cohorts from first-year students. The correlation between approaches to learning and study success of these students was analyzed. Approaches to learning were measured using the ASSIST questionnaire developed by Entwistle, Tait and McCune, (2000). Study success was measured in terms of the grades and credits for all first-time exams during one academic year. The qualitative analysis of the data revealed a significant relationship between the strategic approach to learning and study success. In addition, no correlations were found between the deep or surface approach to learning and study success among the students

when they were in third-year. Hooijer (2010) declares this as inconsistent with the broadly promoted idea that the deep approach to learning leads to the best study results and recommends more empirical research.

Interestingly Kember, Leung and McNaught (2008), found that it is important to demonstrate to those taking courses, for example, new teachers that approaches to studying have a relational nature – that they are influenced by the teaching and learning context. They conducted a workshop activity, based on the Revised Study Process Questionnaire. The sixty six workshop participants recorded their approaches to studying in two contexts: how they currently studied as postgraduate students, and how they studied in their most disliked undergraduate course.

Factor analysis of the results from this activity indicates that approaches to studying are markedly influenced by the teaching and learning environment. This provides a graphic demonstration to workshop participants of the importance of their teaching, and strong influence on the quality of studying of their students. The data from the activity give quantitative evidence of the relational nature of approaches to studying. Further evidence depicts a discipline effect operating with the nature of the typical teaching and learning environment with the arts, humanities and social sciences being more conducive to students cultivating a deep approach to studying. This study's intention was to establish if the Technical Education GA courses can also be affected by the nature of the discipline which is practically oriented.

2.7. Male and Female Student Studies in Studying Approaches.

Literature for review with gender concerns on learning conceptions and studying approaches were very limited. Richardson et al. (2007) Buckley, et al. (2010) and others only recorded demographic data , Other studies which were loosely related works, were Severiens and Ten Dam (1994), Lindblom-Ylänne and Lonka (1999) Hermanussen and Booy (2002), and Ogol (2000), warranting this current investigation.

Richardson et al. (2007) study had a population 351 students (268 undergraduates and 83 Masters Students). 34 out of 46 were teachers. No gender segregated data was sought. As earlier established in the learning conceptions literature review, Fuller (1999) did not carry out any gender related investigation among the 279 students, for his studies on studying approaches.

Buckley, et al. (2010) project, assessed 144 students' attitudes towards the use of networked technologies within a blended curriculum. However females are only mentioned during the pilot study which had nineteen students (6 male and 13 female) first-year students. No further extractions were segregated from the data of 144 first year students.

Severiens and Ten Dam (1994) reviewed research on gender and learning styles of students, 18 years and older, conducted after 1980. Curry's onion model (1983) was used to classify definitions of learning styles and to reconstruct the theoretical frameworks used. While there were gender differences between learning styles, research designs rarely

included learning contexts. The aim was to show the lack of investigation of the role of education in creating the differences in learning styles. The target population was 82 studies sourced from select databases, 60 authors with results from Kolb's Learning Style Inventory (LSI) and 22 authors with results from Entwistle's Approaches to Studying Inventory (ASI). The sample was 26 studies found with the necessary statistics available. However only six authors using the ASI preserved demographic data. The narrative review and quantitative meta-analysis methods were used on the two instruments (LSI and ASI) to determine the direction and magnitude of gender differences in various samples (Severiens and Ten Dam 1994).

On Entwistle's ASI a difference was found on the affective components of approaches to studying. Older women tended to be less abstract than older men, while younger women in the college environment were more abstract than younger men. Cluster analysis on the heterogeneous scales did not produce meaningful results (Severiens and Ten Dam 1994). This difference also appeared in the meta-analysis. In all these different settings, men were more often interested in the courses for the qualifications they offer. Women on the other hand, are more often interested in learning for learning's sake (Severiens and Ten Dam 1994). These sources studied various Science and Technology disciplines such as the Sciences and Computer Studies, excluding Technical Education.

Lindblom-Ylänne and Lonka (1999) concentrated on the study practices of advanced female medical students, and on how these are related to study success. All 67 participants were high achievers who had gone through a demanding selection process. The subjects completed a questionnaire concentrating on their study practices and conceptions of knowledge measured on a Likert 5-points scale. Individual ways of interacting with the learning environment were looked at in the light of interviews of 35 volunteer students. The results showed that students' individual study orchestrations were related to study success. It was concluded that dissonant study orchestrations may develop because of the mismatch between the demands of the learning environment and students' personal goal. The researchers feel that clarifying the meaning of the various concepts, highlighting the interrelationships between them, and considering the ways in which they may affect students' reactions to the learning environments they experience, whether powerful or not is not adequately researched.

Hermanussen and Booy (2002), fifteen year study, highlight the fact that the limited participation of girls in Technical Education has been approached too one-sidedly, more as an awareness problem in Netherlands. The conclusion made by Severiens & Ten Dam in 1994, that certain studying methods are more attractive to girls received further support in this research showing increasing degree, during the nineties on the possible differences between the way in which women and men

actually learn (Hermanussen & Booy, 2002:453). In higher technical education, the discussion expressly moved over to style and content of the education learning process, where the differences between (male and female) students should be taken into account. They therefore compiled a gender sensitive innovation curriculum list based on the research results from a list of 'success factors' as:

- broadly orientated teaching material (not one-sidedly technical);
- integrated teaching material (subject contents refer to each other, interdisciplinary problem solving);
- context rich subject material (related to professional practice);
- attention to technology applications;
- diversity in teaching and learning methods (project- and problem-based education);
- attention to differences between students (for example, learning styles) by teachers;
- improvement of atmosphere and customs at school and in groups (premises, study environment, teacher-student interaction and student interaction). (Hermanussen & Booy, 2002:453).

Ogol (2000) conducted a survey on perceptions of 36 TE female trainees and found that 85.7 % of them lacked TE quality academic and family background exposure. This scenario gave the girls a harder time in settling into TE courses, due to low previous academic achievements in the sciences and mathematics subjects. Majority of the girls enrolled in TE courses promptly changed to business courses as they did not focus on the sciences. The TE learning environment was also not conducive to female participation and did not complement actual work environments as it did not have adequate prerequisite learning resources. Ogol (2000) recommended further investigations into the curriculum instructional methods to boost female participation in Technical Education courses.

This review found that few attempts have been made to identify significant differences between gender and the learning conceptions and studying approaches in Technical Education GA in Kenya.

2.8. Summary of the Literature Review

So far, literature findings on learning conceptions and studying approaches are scant, on discourse on TE learning in Africa. The learning conceptions qualitative and quantitative studies were conducted using modified ASSIST questionnaires (Devlin, 2002; Fuller, 1999; Lai & Chan, 2005), meta-analysis using the ASSIST instrument and literature (Felder & Brent, 2005; Ferla, Valcke & Schuyte, 2008) and interviews (Morris, 2002). Most of studies concentrated on the first years (Devlin, 2002; Ferla, Valcke & Schuyte, 2008; Lai & Chan, 2005; Morris, 2002). According to Devlin (2002), generally, 1st year students hold perceptions of personal responsibility for their learning but are quantitative in nature and were at the lower levels of complexity.

Similarly, Ferla, Valcke and Schuyte (2008), stress that first-year students learning conceptions are fundamental since they directly or indirectly influence students self-efficacy, attributes to academic success and needs for investigations at the 2nd and 3rd year levels. While Fuller (1999) argues that there was little evidence that the learning conceptions of the 279 1st year, 4th year, and graduate students were consistent with the way they approach learning. The learning context appears to exert more

influence than the beliefs that the students bring to the context (Fuller, 1999).

In Hong Kong, Lai and Chan (2005) found that the 251 pre-service teacher education 1st year students, view learning, as progressive increase in knowledge, positively and significantly related to social oriented achievement motivation, deep strategy and surface strategy (due to a culturally oriented achievement motivation). The conclusion was that these students' learning conception was memorization with understanding. While Morris (2002), premise for data on 251 entering physiotherapy students' learning conceptions was that for young people entering higher education, increasing problems occur through study difficulties, drop out and failure, particularly during the first year. Felder and Brent (2005), in their study on engineering students, articulate the fact that, students have different levels of motivation, attitudes towards learning and different responses to specific classroom environments and instructional practices.

The studies that researched on the studying approaches utilised questionnaires to collect data (Buckley, et al., 2008; Byrne, et al., 2009; Kember, et al., 2008) Richardson, et al., 2007; Rowe, 2002) and were analysed quantitatively using factor analysis. Another data collection approach utilized was the cross sectional interviews and observations (Hooijer, 2010) analysed qualitatively. In Buckley, et al. (2008) study, the first-year 144 students in networked technologies were found to have

both deep and strategic approaches to study, demonstrated a reflective approach and exhibited a broad view of the ways that knowledge could be interpreted. Contrastingly the Byrne, et al. (2009), comparative analysis of 204 students in the US and 309 in an Irish University taking their first-year university course in accounting found that the students favoured a strategic studying approach over the other two approaches.

Felder and Brent (2005) established that students have different levels of motivation, attitudes towards learning and different responses to specific classroom environments and instructional practices. Similarly, Hooijer's (2010) cross sectional study of six student volunteers revealed that students do not build on the hierarchy of learning conceptions and studying approaches, but change due to examination demands and the other extrinsic motivations. Kember, et al. (2008) concur with Fuller (1999) in their study on 66 new students, pursuing graduate courses, as workshop participants through comments on current study teaching and learning vis-a-vis their undergraduate courses, that there is a discipline effect on the cultivation of a deep approach to learning. The Richardson, et al. (2007), hypothesis that students on the masters programmes were also more likely to show a deep approach to studying, and less likely to show a surface approach to studying than were the students on the undergraduate programmes was accepted. Rowe (2002) also reveals that the first-year engineering students exhibited the surface studying approach, at the end of the first-year course. These studies diagnosed

possible learning and studying orientations among first years mostly for further action.

There was paucity of literature on gender and learning conceptions or studying approaches prompting the researcher to review the few that discussed gender and learning collectively

Based on the information from the literature review, the following was concluded:

1. Technical Education is becoming more of a focal point in the developmental arena, and that, the emerging technologies facilitate the development and implementation of learning activities for students in tertiary institutions and require appropriate learning conceptions and studying approaches investigated by year of study.
2. Diverse students learning conceptions and studying approaches have an effect on the learning strategies adopted by learners, but that diversity is not proportionately represented in any technical education graphics arts literature on gender.

Restating the information from the literature review, it appears that GA technical education by year of study and by gender is underrepresented when looking at the learning conceptions and studying approaches studies. It is not known however, whether the GA technical education and the females are not proportionally represented solely due to technical education and gender or because they have different learning conceptions and studying approaches.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter describes the research methodology, study location, target population, sampling procedures, and sample size of Graphic Arts students from the public and private Graphic Arts training institutions in Kenya, offering the Graphic Arts curriculum developed by the Kenya Institute of Education. The chapter also describes the qualitative and quantitative data collection instruments, procedures, and analysis processes utilised in the study.

3.2 Research Design

The study adopted an exploratory quantitative and descriptive study design to determine and describe the learning conceptions and studying approaches (a relatively new phenomenon) that influence the GA students based on the Year of study (first-year, second-year and third-year) and male and female students, as literature reviewed showed paucity in the area.

A quantitative research design was chosen because “Quantitative research designs are well suited for collecting numerical data and stating hypotheses to be examined and research procedures specified on the outset” (Gay, Mills & Airasian, 2009:7). The research method was goal oriented, analytical, observational and deductive in nature.

3.3 Location of the Study

The only two technical training institutions, offering the KIE, Graphic Arts Diploma courses, namely; Kenya Polytechnic University College (KPUC) and Buru Buru Institute of Fine Arts (BIFA) offering national Graphic Arts courses, were the study's investigation locations, in Nairobi Province.

3.3.1 Kenya Polytechnic University College (KPUC) and Buru Buru Institute of Fine Arts (BIFA)

The Kenya Polytechnic University College (KPUC) was started as Kenya Polytechnic in 1961, and upgraded to a university college in 2007. The elevation was in line with the Government policy of creating opportunities for premier public national polytechnics to offer degree-level programmes while retaining their existing mandate, which is to provide human resource with the requisite innovative and technological skills. The institution is located in the Central Business District of Nairobi City, along Haile Selassie, Avenue , next to Post office, city square Nairobi Latitude 1° 16' 60S Longitude 36° 49' 0E. In 2009, the KPUC, established several schools one of which is the School of Art and Media, where the Graphic Arts courses are offered. The School's physical facilities include four large graphic design and four large printing classrooms, one photography studios, two computer laboratories, a joint library, a printing press unit, a pre-press room and staff offices. The infrastructure is rapidly improving as the status of the University takes shape.

Buru Buru Institute of Fine Arts (BIFA) is a leading Catholic-sponsored Fine Arts Institute, located in East lands, a suburb of Nairobi, Kenya. It is located east of the Central Business District in Buru Buru Phase III, Opposite Blessed Sacrament Catholic Church. BIFA was started in 1985 and officially opened in 1993. The institute's purpose is to assist the economically disadvantaged but creatively gifted students with an opportunity to further their studies at certificate and diploma levels.

There was recognition by the community that these youth were gifted and talented and only lacked opportunities to develop and express their talents. The talents identified were painting, drawing, ceramics, sculpture, graphics, textile design, multimedia craft and art history, leading to self-employment or formal employment. A three-year diploma course in Art & Design is offered. Today, BIFA also boasts of computer studies, interior and fashion design courses, added to the curriculum offered.

The institute's infrastructure includes two double-storey buildings, in which five large classrooms, a gallery, three lecturers' preparation rooms, and four administration offices. However, construction of the third phase consisting of an auditorium for the performing arts remains unaccomplished. Besides the two main buildings, BIFA also has two prefabricated workshops and a kiln on the compound for ceramics and sculpture. The Institute admits a minimum of 250 students, equally divided between the three years. Since inception, over 2000 students

have been trained. BIFA's vision is to ultimately have the Institute upgraded to a fully-fledged university.

3.4 Target Population

The study targeted two institutions which offer Graphic Arts Courses located in Nairobi City, the capital of the Republic of Kenya, between July and September 2011. The first institution was the Kenya Polytechnic University College (KPUC). It had a student population of 9424. Among them were 204 (36 females and 168 males), enrolled in the Graphic Arts Courses. The second institution was Buru Buru Institute of Fine Arts (BIFA). It had a student population of 256. Of these, 74 (20 females and 54 males), were enrolled in the Graphic Arts courses. The study therefore targeted a total population of 278 Graphic Arts students, comprising of 56 females and 222 males.

3.5 Sampling Design

3.5.1 Sampling Procedure

An equal size stratified random sampling procedure was adopted to ensure that equal identified quota or sub-groups in the population were accurately represented in the sample as they existed in the population. The desired sample size was 120 participants or roughly 40% of population of 278. The female quota was increased to 54% of the total 56, to ensure a sub-group of at least 30 female students was obtained. According to Gay, Mills and Airasian (2009) at least $n = 30$ observations

are required in each subgroup in order to have a significant level of $\alpha = .10$ and a statistical power of $.80$.

3.5.2 Sample size

The sample size was determined by considering several factors when conducting the ANOVA and independent *t*-test tests, therefore were calculated using the steps designed in Gay et al. (2009:128) for equal sized groups in stratified sampling:

- a. The target population of enrolled students in GA courses was 278 in the two technical training institutions (KPUC and BIFA);
- b. The desired sample size was 120 students (slightly more than 40%) from the 278 students. 40 students were considered from each year of study (of which 10 were female), so as to enable a good ANOVA comparison by year of study and enable the use of the *t* test for the male and female groups (Gay et al., 2009);
- c. The groups of interest were three sub-groups: GA Technical Training Institutions for observation; Students in 1st year, 2nd year and 3rd year of study in GA courses; and male and female students;
- d. The study required 120 (25% female and 75% male) students. Therefore for proportional representation 73% (88) of the sample was from KPUC, and 27% (32) were from BIFA. Eighty-eight students were therefore randomly selected from KPUC respondents, and thirty-two students from BIFA respondents.

- e. The 30 female students were randomly selected from 54% of the total 56 female students by class and by institutions based on the number enrolled in the two institutions.

Table 3.1 illustrates the sampling size institution, course and gender.

Table 3.1: Sample Size for the Study

Total per Institution	Course/Year	Target population n =278			Sample size n = 120			
		Male	Female	no. of students per year	Male	Female	Sample per year	
KPUC	Graphic Design First-years	24	2	26	13	2	15	
		21	4	25	11	4	15	
		46	8	54	11	4	15	
	Printing First-years	24	8	32	11	4	15	
		36	6	42	11	3	14	
		17	8	25	11	3	14	
	<i>Subtotal</i>	168	36	204	68	20	88	
	BIFA	Graphic Design First-years	14	6	20	6	4	10
			16	8	24	8	3	11
24			6	30	8	3	11	
<i>Subtotal</i>		54	20	74	22	10	32	
Total		222	56	278	90	30	120	

3.6 Data Collection Instruments

The researcher adopted and modified sections of the survey research questionnaire Approaches to Study Skills Inventory for Students Inventory (ASSIST), developed by Entwistle et al. (2006). The ASSIST enables prediction of futuristic learning orientations of students in higher education. The modifications made were on the structure of the questionnaire, and subdivided to address the research objectives. The researcher developed the following questionnaires to suit the subjects of the study:

- a. Students Learning Conceptions Questionnaire (SLCQ);
- b. Students Studying Approaches Questionnaire (SSAQ); and
- c. Observation Schedule (OS).

Details of the questionnaires were as follows:

a. Students Learning Conceptions Questionnaire (SLCQ)

This questionnaire consisted of eight questions relating to surface (reproductive) and deep (transformative) learning conceptions. Responses sought from the students used an opening question: What exactly do you think the term “learning” means to you? Questions were for example: Making sure you remember things well; or seeing things in a different and more meaningful ways. The responses were rated against a 5-point Likert scale ranging from VC= Very Close (5), QC= Quite Close (4), NC= Not so Close (3), RD= Rather Different (2) VD= Very Different (1). A line was added subsequent to the pilot test, to allow for comments by survey participants (See Appendix D).

b. Students Studying Approaches Questionnaire (SSAQ)

The Students Studying Approaches Questionnaire (SSAQ) questionnaire solicited data on the studying approaches preferred/used by students. It contained 18 questions, of which 6 related to deep (transformative), another 6 related to surface (reproductive) and 6 related to strategic (constructive) studying approaches. The questions were for example: Do you organize your study time carefully to make the best of it? The responses were rated against a 5-point Likert scale from VM= Very Much (5), M= Much (4), NM =Not Much (3), NA= Not at All (2), NS = Not Sure (1). A line was added subsequent to the pilot test, to allow for comments by survey participants (Appendix E).

c. Observation Schedule (OS)

The observation schedule developed by the researcher collected data on the infrastructure and learning materials in the selected GA technical training institutions (Appendix F). Specifically the observation schedule documented a brief history of the training institutions. It also documented the number of courses offered in the institution, the total number of students enrolled both male and female in the targeted population. It further established the suitability and adequacy of the GA teaching and learning materials in terms of the library, textbooks and course books. It also established the existence of equipment, classrooms and workshops in the two training institutions.

3.7 Piloting Study

Prior to the pilot study, the developed data collection instruments were examined by a statistician and subject matter expert for face validity of the content and were recommended for use without further adjustments. The questionnaires were then piloted with a small group of six TIVET Graphic Arts students from the participating institutions, who were excluded from further participation in the study. The participants completed the two questionnaires. The focus of the pilot study was to test the understanding of the survey instruments and further inform the researcher of questions which were not clearly understood. This yielded a qualitative examination of the instruments to ensure construct validity and that each question associated with a particular variable was relevant to that variable. This qualitative analysis also helped ensure that the three survey instruments were comprehensive in that there were enough questions to ensure adequate coverage of each specific variable and that the said coverage was thorough. Finally, this examination justified the differentiation in the questions addressing a specific variable.

3.7.1 Validity of the Three Research Instruments

The ASSIST survey questionnaire was domesticated into three questionnaires the SLCQ, SSAQ, and the OS. The questions in each domesticated instrument were subsequently evaluated for validity using content validity techniques.

Content validity is important because it is not possible to measure every topic in a content area, and yet there is need to make inferences about the test takers performance on the entire content area. For these reason experts in the topic carefully review the process used to develop the test as well as the test itself and then make a judgment about how well the items represent the intended content area (Gay et al., 2009:155).

The content validity data and language clarity were derived from the team of six TIVET Graphic Arts students and two university lecturers. No questions were dropped after the review as they appeared to return enough information, and were central enough to the primary purpose. The changes identified were as follows:

3.7.1.1. Validity of Students Learning Conceptions Questionnaire

The pilot study students and lecturers, found the language and structure to be clear in the existing eight questions. A new question number f, which asked for responses on: “using all the experiences in life” was added, as the students commented that they sourced facts from all sources including their personal experiences. The addition closely relates with the findings of Entwistle, McCune and Tait (2006) and Richardson et al. (2007), who state that there are differences in experiences, found among students in different years of studies in the Medical Sciences and the Business Studies respectively.

3.7.1.2. Validity of Students Studying Approaches Questionnaire

Apart from a few editorial errors in questions D 01 and T 06, the students and lecturers, found the language and structure to be clear in the 18 questions. A new question number T 04: do you “use of the internet as a source of knowledge?” was created after recommendations from the students and consultation of the two lecturers. The use of the computer and the internet are current learning and studying tools. The Printing and Graphic Design courses integrate various ideas and innovations from interaction with in adverts and other materials from the internet. The internet is currently the most strategic tool to source for information and cross reference in today’s global village.

Pask in 1976, first mooted this idea, but students did not appreciate it, as at that time they had not acquired computer skills (Speth et al., 2007). Question number D 04 was also improved to read, “Find yourself questioning things you hear in lectures or read in books or on the internet and added to the research questions in the strategic studying approaches sub-group.

3.7.1.3. Validity of Observation Schedule

The two external reviewers found the observation schedule, was valid, as it did not infringe on the institutions rights and privileges for collecting data on existing student population, infrastructure and learning and teaching materials.

3.7.2 Reliability of the Two Research Instruments

The two instruments on the Learning conceptions (8 items) and Studying Approaches (18 items) comprised a Likert 5-point rating scales for the total 26 questions. Content reliability of the instruments was tested using students who were not part of the sample. According to Gay et al, (2009:158), “Reliability is the degree which a test consistently measures whatever it is measuring. The more reliable a test is the more confidence there is that the scores obtained from the test are essentially the same scores that would be obtained if the test was re-administered to the same test takers at another time or with a different person”. It is especially appropriate when the test is very long, or when it is difficult to administer either the same test at two different times or two different forms to a group, and repeating the test can be costly (Gay et al., 2009; Mugenda & Mugenda, 2003).

The reliability coefficient of the instruments was calculated using the alpha coefficient as proposed by Cronbach’s (1951) in Entwistle et al. (2006), Gay et al. (2009), and Speth et al. (2008) as it generates a coefficient of internal consistency, ranging from 0 to 0.1 and was found suitable as the two questionnaire items had 5-point Likert scale scores, which was more than the dichotomous right- wrong scores. The formula was given as: α (Alpha) = $[n / (n-1)] \times [(S^2t - \Sigma S^2) / S^2t]$,

Where; α = estimated reliability of the test

n = number of test items

S^2t = variance of the whole test (standard deviation squared)

ΣS^2 = sum of the variance for all n items.

The reliability results were as follows:

3.7.2.1. Reliability of Students Learning Conceptions Questionnaire

The coefficient alpha generated a coefficient of internal consistency of .707 for the eight questions. The portability results were found to be suitable when compared to Long (2000), who had obtained .41 reliabilities for similar questions. This indicates that there are strong relationships between the 8 questions and what they are meant to test.

3.7.2.2. Reliability of Students Studying Approaches Questionnaire

The 18 studying approaches questions were divided into three groups of 6 questions related to: the surface, deep and strategic approaches.

The coefficient alpha generated a coefficient of internal consistency of .552 for the six questions in the surface category. The questions were found suitable when compared to Long (2000) of .51, and Sadler and Tsang (1998) of .59 in measuring the same reliabilities.

The coefficient alpha generated a coefficient of internal consistency of .641 for the six questions in the deep category and were found suitable when compared to Long (2000) of .59, and Sadler and Tsang (1998) of .67 in measuring the same reliabilities.

The coefficient alpha generated a coefficient of internal consistency .597 for the six questions in the strategic category and though found suitable

when compared to Long (2000) of .62, Sadler and Tsang (1998) of .73 and in measuring the same reliabilities.

The coefficients are within the range of $\alpha = 0.55$ to $\alpha = 0.83$, found by research studies using the earlier and longer versions of the ASSIST (Speth et al., 2008).

3.8 Data Collection Procedures

Prior to the actual data collection, official permission was obtained from the National Council of Science and Technology (Appendix A), to conduct the research in the selected institutions. The Kenyatta University School of Education, the Kenyatta University Postgraduate Board, and the KPUC and BIFA institutions also gave the necessary approval. The researcher administered the three data collection instruments on two different days as the institutions are in different locations within the city. A research assistant ensured that there were no missing pages. The two questionnaires were administered by the researcher in the lecture rooms, where the students had adequate space and could not discuss the contents of the questionnaires. The allocated times were one to two hour sessions, slotted between 9am and 11am, during a break prepared by the administrators at the two institutions.

Although all the 278 students had volunteered, only 120 students were randomly selected. The institutions class registration lists were used to tick off the students as they entered the research rooms until the desired

sample of 120 was attained by year of study and gender as indicated in Table 3.1 (88 from KPUC and 32 from BIFA).

The researcher advised the students, verbally on both the purpose of the study and the basis of their voluntary participation before they commenced on responding to the questionnaires. The written introduction question and instructions contained in the questionnaires took care of the ethical consideration. Each participant was afforded an opportunity to ask questions, if any, by the researcher. The questionnaires were collected immediately after the students completed answering them. No attempt was made to contact students absent from class on the day the research was conducted. The two observation schedule forms were completed immediately after the administration of the instruments.

3.9 Data Analysis Procedures

Quantitative data were analyzed using Microsoft Excel 2007 and SPSS version 17 statistical software. Before computing any descriptive statistics or proceeding with inferential statistical tests, the entire 120 data set was reviewed and screened for incorrect values if any and missing information. Demographic data was tabulated. As a first step in analysing the data, the mean scores and frequency counts for 120 respondents for each of the 28 questions were reviewed. This analysis indicated that in the learning conceptions and studying approaches questionnaires, the mean responses analysed using the ANOVA (by year of study) and the *t* test (by gender) to all questions tended to be consistently inclined towards

both surface and deep learning conceptions and surface and deep studying approaches, with a mean range of 3.2 to 4.25. Similarly, the factor analysis showed that the students created a paradigm of learning conceptions and studying approaches with strengths in the strategic approaches. In the two survey questionnaires, there were mean variations in responses to individual questions within the sub-sections by year of study and by gender.

Comments from the open-ended questions on these surveys were also reviewed and are included in Appendix G. The specific analytical tests used to evaluate each research questionnaire and specific questions are discussed in the following paragraphs.

3.9.1. Analysis of Data Derived From the Students Learning Conceptions Questionnaire

The “Students Learning Conceptions Questionnaire’s” nine (9) learning conceptions questions addressed the first and second objectives. The first and second objectives considered the independent variables: 1) Graphic Arts students by year of study (1st, 2nd and 3rd year) category and 2) the male and female students’ categories, respectively, and the nine dependent variables on learning conceptions. All survey questions used the following 5-point scale (5 being the highest):

Very Different	Rather Different	Not so Close	Quite Close	Very Close
1	2	3	4	5

The quantitative data were combined to form two contrasts of learning conceptions, surface learning conceptions (reproducing knowledge),

coded S, and deep learning conceptions (transformative knowledge), coded D as shown in Table 3.2.

Table 3.2. Scales and Sub-scales in the Students Learning Conceptions Questionnaire

Scale	Questionnaire item	Sub-scale	Code
Surface reproducing knowledge	Getting on with the things you have got to do.	A quantitative increase in knowledge.	S
	Building up knowledge by acquiring facts and information (surface).	The acquisition, of facts, methods, etc.	S
	Making sure you remember things well.	Memorising, making sure you remember things well.	S
	Being able to use the information you have acquired.	Being able to use the information you have acquired.	S
Deep transformative knowledge	Understanding the new materials for yourself.	The abstraction of meaning of different things and experiences.	D
	Using all the experiences in life.	Using all the experiences in life.	D
	Seeing things in a different and more meaningful way.	An interpretative process aimed at understanding reality.	D
	Developing as a person.	Developing as a person.	D
	Being able to relate to people better.	Being able to relate to people better	D

Adapted from Entwistle et al. (2006)

The responses were analysed for the percentages, mean scores and the frequencies. A mean score was computed for each question and an overall histogram was created. In addition, a histogram was created for each of

the sub-sections relating to two contrasts of prototypical learning conceptions questions numbers (a, c, d, g) surface (reproducing knowledge), while the remaining five questions (b, e, f, h, i) covered a view of deep (learning as ‘transforming’ knowledge) as described by Entwistle et al. (2006). The mean score was used to indicate how many deviations above or below the mean of the score.

ANOVA was used to determine the significance of the learning conceptions among Graphic Arts students, by year of study. An ANOVA compares several means by comparing two different estimates of variance (Gay et al., 2009). The test was performed for each of the nine questions in the survey. The significance value of 0.10 and above determined if the null hypothesis was to be accepted or rejected.

The significant differences among male and female students were also determined using a *t* test for each of the nine questions. A two-sample *t* test, also known as an independent samples *t* test, tests whether the difference in means of one variable in two groups of respondents is significantly different from zero. A *t* test is appropriate when there is one independent variable with two categorical values and one dependent variable measured a numeric scale (Gay et al., 2009). The significance value of 0.10 and above determined if the null hypothesis was to be accepted or rejected.

Factor analysis was also conducted to identify groups of items that bore student broad relationships patterns in the learning conceptions. Data is presented using Tables, figures and graphs for clear visual impressions. In addition, a review of open-ended comments and individual questions did not provide any reason to believe that survey results were based on flawed assumptions.

3.9.2. Analysis of Data Derived From the Students Studying Approaches Questionnaire

The second research questionnaire was the “Students Studying Approaches Questionnaire” (Appendix E), which had 19 questions. The third and fourth objectives considered the independent variables 1) Graphic Arts students different years of study: first, second and third-year category, and 2) male and female students category. Responses to 19 questions in the survey instruments obtained from the following 5-point scale (5 being the highest) provided the quantitative data:

Not Sure	Not at All	Not Much	Much	Very Much
1	2	3	4	5

Table 3.3. provides an overview of the deep, strategic and surface studying approaches scales and corresponding descriptive sub-scales that were used to develop the questionnaire. The 19 questions were coded, scored and summed up into the three groups shown in Table 4.2, deep (transformative and meaning orientation) coded D, surface (reproducing orientation) coded S and strategic (constructive and achieving orientation) studying approaches coded T.

Table 3.3 Scales and Subscales in the Students Studying Approaches Questionnaire Coding

Scale	Subscale	Content	Code
Surface Approach	Lack of purpose	Uncertainty about the usefulness and appropriateness of the (choice in) learning	S 05 S 06
	Unrelated memorising	Memorizing without understanding what and why	S 02 S 03
	Syllabus-boundness	Focusing on the minimum requirements in a course	S 04
	Fear of failure	Uncertain about ability to cope with the study load	S 01
Deep Approach	Seeking meaning	Learning for personal meaning and understanding	D 01 D02
	Relating ideas	Linking what is learned to other courses and previous knowledge	D 03
	Use of evidence	Critically assessing the validity of what is being learned	D 04 D 05
	Interest in ideas	Learning as an exciting and gripping activity	D 06
Strategic Approach	Organised studying	Learning in a systematic and planned manner	T 01 T 02
	Time management	Disciplined learning which is evenly spread out	T 03
	Refers to internet sources for information	Being alert to diverse sources of information	T 04
	Alertness to assessment demands	Being alert at what the teachers expect and value	T 05
	Achieving	Striving for a good result	T 06
	Monitoring effectiveness	Frequent and systematic checking on progress	T 07

Adapted from Entwistle et al., 2006.

The mean scores indicated how many deviations above or below the mean of the scores standard normal curve. Graphs, figures and Tables present the analyzed data.

In addition, a review of open-ended comments and individual questions did not provide any reason to believe that survey results were based on flawed assumptions.

The ANOVA ascertained if there were any significant differences in 19 studying approaches questions among the Graphic Arts Students. The significant differences among male and female students were also determined using the *t* test in the 19 studying approaches questions. The significance value of 0.10 determined if the null hypothesis was to be accepted or rejected. Data reduction was conducted and analysed using factor analysis with the Eigen value of one as proposed by studies conducted by Entwistle et al. (2006) and Long (2001), to describe relationships between variables in ways that could show broad patterns in the studying approaches.

3.9.3. Observation Schedule

The observation schedule developed by the researcher collected data on the infrastructure and learning materials in the selected GA technical training institutions (Appendix F). Specifically the observation schedule documented a brief history of the training institutions. It also documented the number of courses offered in the institution, the total number of students enrolled both male and female in the targeted population, the

classrooms and other related infrastructure. However, actual analysis on the suitability and adequacy of the GA teaching and learning materials, textbooks and course books was not conducted as the exercise was unwieldy and beyond the scope of the study and is recommended for further research.

3.10 Logistical and Ethical Considerations

The approved work plan and budget concerning the necessary logistics were taken care of prior to the actual data collection. The Kenyatta University School of Education, the Kenyatta University Postgraduate Board, National Council of Science and Technology and the KPUC and BIFA institutions gave the necessary approval. For ethical consideration, consent from the participating respondents was sought in writing before commencement of the data collection (Appendices A, B and C).

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF FINDINGS

4.1. Introduction

The purpose of the study was to explore and empirically establish the differences in learning conceptions (surface and deep) and studying approaches (deep, strategic and surface), by year of study and gender, among students pursuing GA Technical Education. Results of the study indicated that while there were statistically significant differences with respect to a few of the questions in the survey, overall it cannot be said that there is a significant difference in learning conceptions and studying approaches in Graphic Arts TE based courses by year of study or gender. However, the learning conceptions and the studying approaches established contributed to a quality of learning that was overly strategic (constructive, but time bound) and not deep (transformative and lifelong). A comparison of the responses in the current research to information from previously published surveys could not be made directly because previous research on Technical Education in general and Graphic Arts specifically is limited.

4.1.1. Demographic Data

In this study, the educational level was kept relatively equal by selecting the participants to be surveyed from students enrolled in two technical training institutions and taking the three (3)-year Graphic Arts Diploma courses only. A survey was conducted with a sample of 120 students (90

males and 30 females) from a target population of 278 students taking Graphic Design and Printing Technology at Diploma level at the Kenya Polytechnic University College and Buru Buru Institute of Fine Arts in Nairobi, Kenya, in September 2011. The results of this survey were analysed using year of study and gender as independent variables, and learning conceptions and the studying approaches questions as dependent variables.

Table 4.1 presents the demographic data obtained from the Graphic Arts courses that two institutions offer and the gender distribution at the two institutions

Table 4.1: Demographic Data

Gender	Institution			
	BIFA		KPUC	
	Frequency	Percentage	Frequency	Percentage
Female	10	31.3	20	29.4
Male	22	68.7	68	70.6
Total	32	100	88	100

The 120 First, Second and Third year Graphic Arts students were respondents to these questionnaires were forty (40) per year of study. There were 90 males and 30 females. The female students were only thirty in number as they were fewer in enrolment. Their initial sample size was 15, but this was purposefully increased to thirty, 10 females per year of study, as 15 is too small a number to be statistically significantly compared with another group (Gay et al., 2009). The average age across the classes and gender was 22 years.

4.2. Learning Conceptions among Students in the Graphic Arts Courses by Year of Study

The first objective was to ascertain the different nine learning conceptions [categorized as surface (5 questions) and deep (4 questions)], by year of study (1st, 2nd and 3rd) among students enrolled in Technical Education GA courses. Presented in this section therefore is information on means, frequencies and ANOVA on the learning conceptions (Likert five-point scale scores) obtained from the data collected based on the year of study. Gender differences are discussed later.

4.2.1. Mean, mode and median of Learning Conceptions among Students in the Graphic Arts Courses by Year of Study

The mean score results are presented in Table 4.2 for the surface learning conceptions and the Table 4.3 for deep learning conceptions. Table 4.2 presents the mean responses for surface learning conceptions questions (a) to (d) by year of study and compares the overall mean, median and modal responses to each question. The mean responses for the first-years varied from 3.00 to 4.68, a range of 1.68, while the mean for the second-years varied from 2.83 to 4.75, a range of 1.92. The mean responses for the third-years varied from 2.90 to 4.75, a range of 1.85. Comparing first and second-years, the second-years had a lower mean score and a larger range. The second and third-years had higher sets of means and larger ranges.

Table 4.2: Mean Responses to Questions (a) to (d) in Surface Learning Conceptions by Year of Study (n=120)

Question number	Mode	Median	Mean Response			Overall Mean (n=120)
			1st Year (n=40)	2nd Year (n=40)	3rd Year (n=40)	
a) Getting on with the things you've got to do.	4.00	3.00	3.00	2.82	2.90	2.91
b) Building up knowledge by acquiring facts and information.	5.00	5.00	4.67	4.75	4.75	4.73
c) Making sure you remember things well.	4.00	4.00	3.60	3.80	3.67	3.69
d) Being able to use the information you've acquired.	5.00	5.00	4.55	4.47	4.40	4.48
Total Mean Average			3.95	3.96	3.93	3.95

Comparing the total means by year of study indicates no large mean difference, as third-years have mean of 3.93, followed by first-years at 3.95, then second-years 3.96. Lower mean scores responses are considered more favourable towards the questions and higher scores are less favourable.

Table 4.3 summarizes the mean responses for deep learning conceptions questions (e) to (i), by year of study and compares the overall mean, median and mode responses to each question. The mean responses for the

first-years varied from 3.73 to 4.28, a range of .55. The mean responses for the second-years varied from 3.38 to 4.30, a range of .92. The mean

Table 4.3: Mean Responses to Questions (e) to (i) in Deep Learning Conceptions by Year of Study (n=120)

Question number	Overall		Mean Response			Overall Mean (n=120)
	Mode	Median	1st Year (n=40)	2nd Year (n=40)	3rd Year (n=40)	
d) Understanding new material for yourself.	4.00	4.00	3.95	3.75	4.05	3.92
e) Seeing things in a different and more meaningful way.	4.00	4.00	3.73	3.48	3.83	3.68
f) Using all your experiences in life.	4.00	4.00	3.83	4	3.95	3.93
g) Developing as a person	5.00	5.00	4.28	4.3	4.48	4.35
h) Being able to relate to people better	5.00	4.00	3.78	3.38	3.95	3.7
	Mean total average		3.91	3.78	4.05	3.91

responses for the third-years varied from 3.83 to 4.48, a range of .65. Comparing first and second-years, the second-years had a lower mean score of 3.78, and a larger range. The third-years and first-years had higher sets of means and smaller ranges.

4.2.2. The frequency responses of Learning Conceptions among Students in the Graphic Arts Courses by Year of Study

The frequencies of the responses are presented for the surface learning conceptions in Figure 4.1. On an overall basis questions (a) through (d), the second-years tended to choose 'quite close' more often than the first

or third-years. Approximately, 1/3 of the first and second-year responses were ‘quite close’, indicating that the second-years utilized the surface conceptions more than the other two groups. Question (c) had no response in the ‘very close’ category, indicating that though the responses were high, the students did not consider ‘being able to remember things well’ a major issue. Question (d) on the other hand had over 50% responses in the ‘very close’ category indicating that majority of the students were keen on using the information they had acquired.

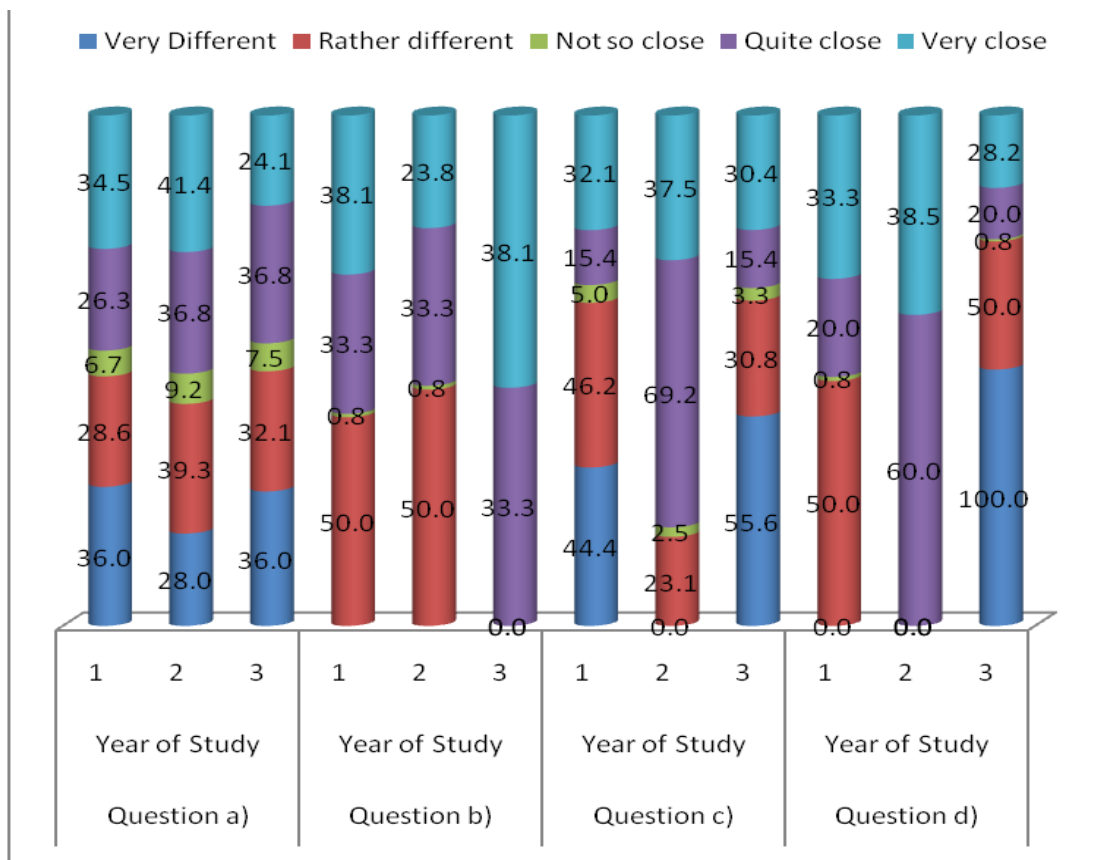


Figure 4.1: Frequency of responses to surface learning conceptions by year of study

Moving from question (a) to (d), the responses moved towards the same direction (‘quite close’ to ‘very close’). The higher number of favourable responses tended to be from the second and third-years especially for

questions (b) and (c). Second-years had the highest response related to ‘making sure you remember things well’. Overall, it appears that the second-years had greater preference for the surface learning conceptions. A visual analysis of Figure 4.2 indicated some similarity of questions (e) through (i) with questions (a) through (d), as some questions in this sub-section show a large number of ‘very close’ and ‘quite close’ responses. Unlike the surface learning conceptions where there was only one question with no ‘very close’ response, for questions (e) through (i) only the first-years returned no ‘not so close’ responses in questions (f) and (g).

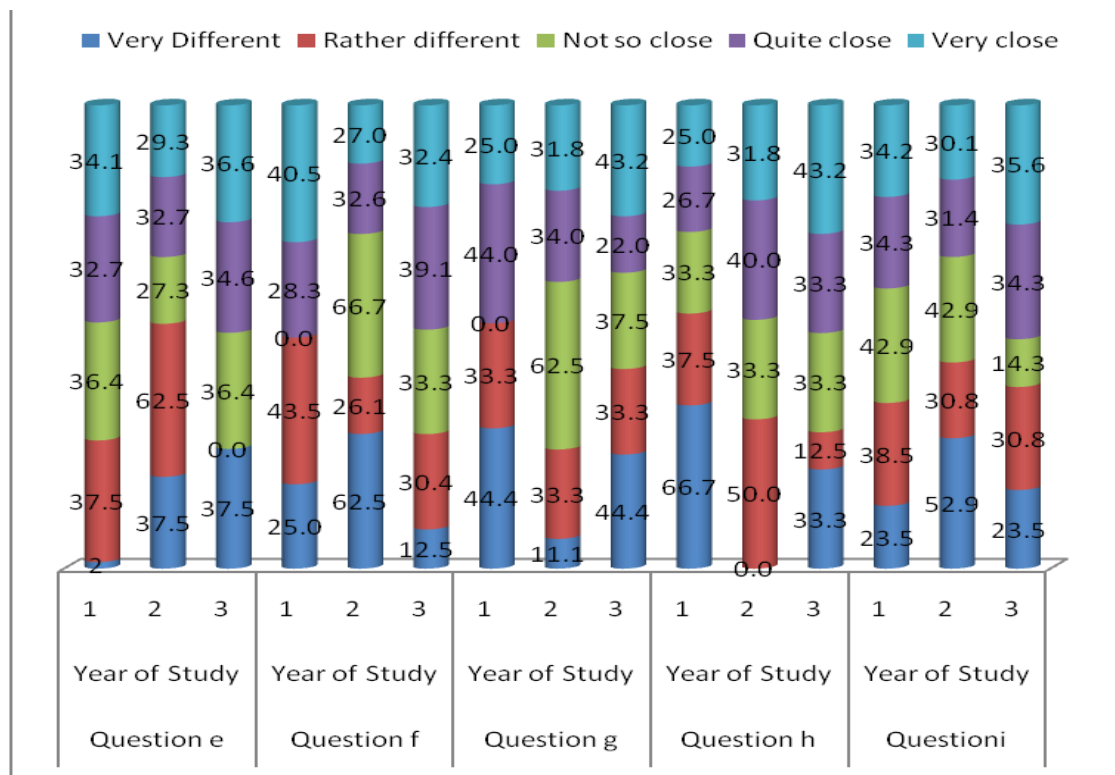


Figure 4.2: Frequency of responses to deep learning conceptions by year of study

Question (i) appeared to have the greatest variation in responses. Overall, all three groups showed less than 25% disagreement with the questions in this sub-section and over a 40% agreement. This is a more favourable

response pattern as majority of respondents feel quite strongly inclined to deep learning conceptions.

4.2.3. The ANOVA results of Learning Conceptions among Students in the Graphic Arts Courses by Year of Study

For the purposes of the ANOVA test, the null hypothesis emanating from this objective was:

There are no significant differences between year of study and learning conceptions in Technical Education GA courses with regard to:

- i) surface learning conceptions: learning as reproducing knowledge;
- ii) deep learning conceptions: learning as transforming taught material.

Table 4.4 summarizes the ANOVA results for questions (a) to (d).

Table 4.4: Questions (a) to (d) summary of ANOVA results of surface learning conceptions by year of study (n = 120)

Question number	<i>F</i> value	<i>p</i> value	Is Difference significant?	Post hoc test results (lower/higher mean)
a) Getting on with the things you've got to do	.156	.856	No	
b) Building up knowledge by acquiring facts and information	.210	.811	No	
c) Making sure you remember things well	.294	.746	No	
d) Being able to use the information you've acquired	.349	.706	No	

No entry is shown in the *post hoc* results column as no *p* value was significant enough to reject the hypothesis for the questions. Lower mean scores responses are considered more favourable towards the questions and higher mean scores are more unfavourable. Table 4.5 summarises the ANOVA results for question (e) through (i).

Table 4.5: Question (e) to (i) summary of ANOVA of Deep Learning Conceptions results by Year of Study (n = 120)

Question number	<i>F</i> value	<i>p</i> value	Is Difference significant?	Post hoc test results (lower/higher mean)
e) Understanding new material for yourself.	.71	.49	No	
f) Seeing things in a different and more meaningful way.	.79	.45	No	
g) Using all your experiences in life.	.23	.80	No	
h) Developing as a person.	.45	.64	No	
i) Being able to relate to people better.	.35	.71	No	

No significant differences were found between the years of study in the deep learning conceptions questions. A review of the visual data provided in the graphs provided additional insights for consideration. While there was no significant mean difference shown between the three groups, all

responses showed a positive attitude towards deep learning. When the same conceptions were analysed later by gender, significant differences were found as the females showed stronger favour towards some of the deep learning conceptions.

4.3. Learning Conceptions among Male and Female Students in Graphic Arts Diploma Courses

The second objective was to establish the different nine learning conceptions [categorized as surface (5 questions) and deep (4 questions)] among male and female students, enrolled in Technical Education GA courses. The mean, frequencies and the *t*-test were utilized to establish the differences in learning conceptions by gender, based on a five-point Likert scale.

4.3.1. Mean, Mode and Median results of Learning Conceptions among Male and Female Students in Graphic Arts Diploma Courses

The surface and deep learning conceptions mean score results are presented in Tables 4.6 and 4.7 respectively. The first four questions of the survey, relate to the beliefs associated with surface learning conceptions. These questions asked the respondents their beliefs in relation to: a quantitative increase in knowledge; memorizing, that is, making sure they remember things well; acquisition, of facts, methods, etc; and basically being able to use the information they have acquired. Table 4.6 summarises the mean responses for questions (a) through (d) by gender.

*Table 4.6: Mean responses to questions (a) through (d)
Surface Learning Conceptions by Gender (n=120)*

Question number	Overall			Mean Response	
	Mode	Median	Mean	Male n= 90	Female n=30
a) Getting on with the things you've got to do	4	3	2.91	2.84	3.10
b) Building up knowledge by acquiring facts and information	5	5	4.73	4.70	4.80
c) Making sure you remember things well.	4	4	3.69	3.58	4.03
d) Being able to use the information you've acquired	5	5	4.48	4.51	4.37
Total mean average				3.91	4.05

Comparison of the mean, median and mode for the first four questions lead to the expectation of a certain direction of skew and the expectation that the skew will not be always in the same direction. This was further analysed as the individual questions were reviewed. Table 4.7 summarizes the mean responses for questions (e) through (i), and provides a comparison of the overall median and mode responses for the same questions. The females have a higher mean of 4.17 compared to the males at 4.04. A comparison of the mean, median and mode for the data

for questions (e) through (i), indicates that some skewness should be expected.

Table 4.7: Mean responses to questions (e) through (i), deep learning conceptions by gender (n=120)

Question number	Median	Mode	Mean response		
			Male n= 90	Female n=30	Overall n=120
e) Understanding the new material for yourself.	4.00	4.00	3.91	3.93	3.92
f) Using all the experiences in life.	4.00	4.00	3.57	4.00	3.79
g) Seeing things in a different and more meaningful way	4.00	4.00	3.89	4.03	3.96
h) Developing as a person	5.00	5.00	4.30	4.50	4.40
i) Being able to relate to people better	4.00	5.00	4.51	4.37	4.44
Total Mean average			4.04	4.17	4.11

4.3.2. Frequency Response results of Learning Conceptions among Male and Female Students in Graphic Arts Diploma Courses

For each of the nine questions in the survey, data were gathered in order to look at the both the actual mean and the related strength of the respondents' attitudes about a question, and determine if a significant difference in the means existed. Questions (a) through (d) were further compared by sorting responses by gender and counting responses for each category on the five-point Likert scale. The responses of this comparison are shown in figure 4.3. An initial visual analysis based on Figure 4.3 indicated that: On an overall basis for questions (a) to (d), a slightly higher percentage 50% "rather different" of the responses were obtained

from the females especially in question (b) which focused on building up knowledge by acquiring facts and information.

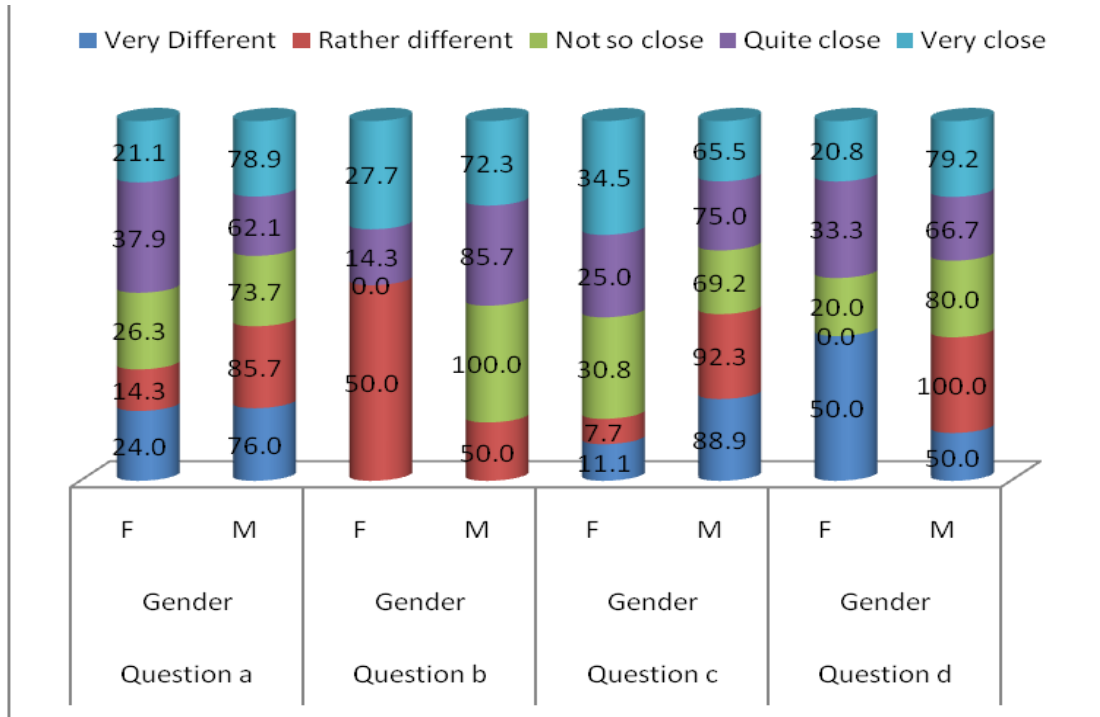


Figure 4.3: Frequency of responses to surface learning conceptions by gender ($n = 120$)

Responses to individual questions varied with the responses to some questions being more favourable than others. The direction of that movement was however similar for both males and females. None of the questions showed a pattern in which females were strongly favourable and males strongly unfavourable, or vice versa. Due to the fact that the individual questions showed far more variation in the tendency to agree or disagree with question than the overall picture of surface learning conceptions would indicate, individual questions as well as the overall results were analysed using the t -test.

Questions (e) through (i) were further compared by sorting by gender and counting the responses for each category on the five-point Likert scale.

The results of this comparison are shown in Figure 4.4.

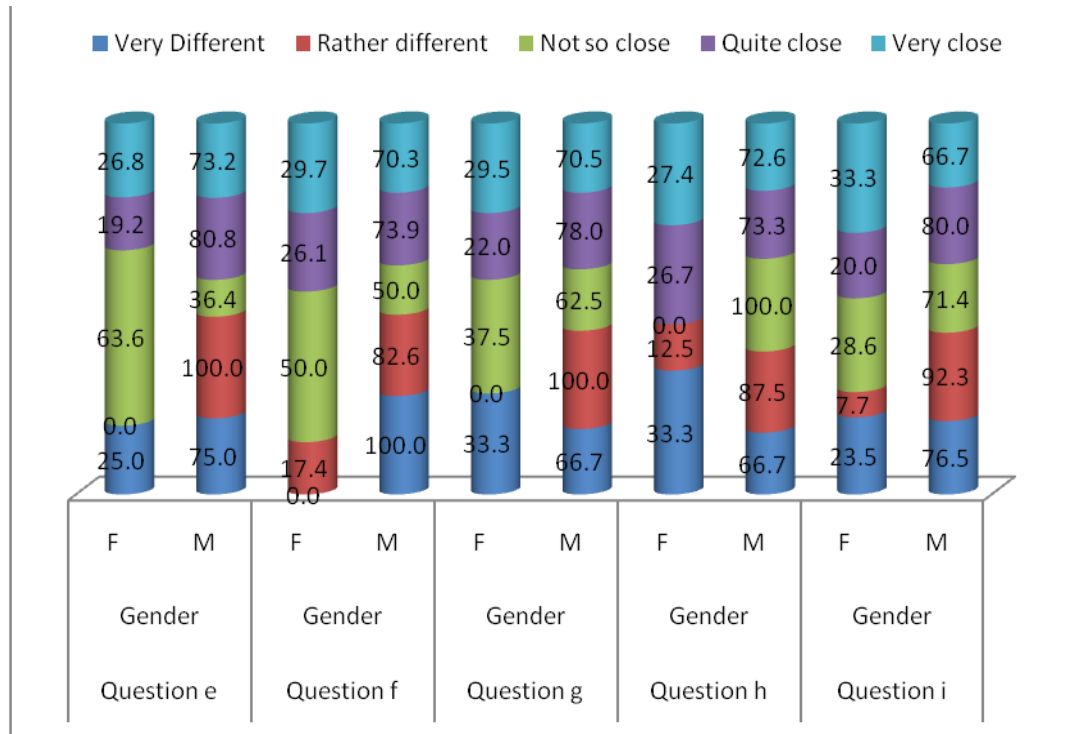


Figure 4.4 Frequency of responses to deep learning conceptions by gender (n=120)

On an overall basis for questions (e) through (i), a slightly larger percentage of females than males disagreed with the questions in this subsection of the survey. The largest proportion of responses was in the ‘not so close’ category. The next largest proportion was in the ‘quite close’ category and the smallest proportion was in the ‘rather different’ category, with the females not selecting this response in question (e) and (g). Responses to individual questions varied considerably with the responses to some questions being more favourable or unfavourable than others. The direction of that movement, however, was similar for both males and females. Question (i) showed a pattern that indicated strongly

favourable male response. None of the other questions showed a pattern in which female responses were strongly favourable and male responses were strongly unfavourable and vice versa.

4.3.3. The *t*-test findings of Learning Conceptions among Male and Female Students in Graphic Arts Diploma Courses

The second objective considered the independent variable: male and female students and the dependent variables: learning conceptions in GA Technical Education courses. For analysis purposes, the second objective was stated as a null hypothesis as follows:

Ho₂. There is no significant difference between gender and learning conceptions in Technical Education GA courses with regard to:

- i) Surface learning conceptions: reproducing knowledge; and
- ii) Deep learning conceptions: transforming knowledge.

Table 4.8 provides the overall mean results of the *t* test in Learning Conceptions questions among GA students by gender for questions (a) through (d). Results of the independent samples *t* test for the 4 surface learning conceptions items studied indicated *p* was less than .10 in question c). For this question, the null hypothesis was rejected because the probability of obtaining the test result if the null hypothesis was true was less than 1 in 10. Survey question (c) was included in the learning conceptions questionnaire as of the surface learning conceptions. The question asked respondents to indicate the degree of their agreement or disagreement with the question: ‘making sure you remember things well’.

Lower mean scores are considered more favourable towards the questions and higher scores are less favourable.

Table 4.8: Question (a) through (d) summary of t test results on surface learning conceptions by gender (n =120)

Question Number	Mean Males n=90	Mean Females n=30	Mean Difference	t value	p < .10 value	Is Difference significant
a) Getting on with the things you've got to do.	2.84	3.10	.256	.867	.661	No
b) Building up knowledge by acquiring facts and information.	4.70	4.80	.100	.798	.217	No
c) Making sure you remember things well	3.57	4.03	.456	1.862	.019	Yes
d) Being able to use the information you've acquired.	4.51	4.36	-.144	-.857	.893	No
Total Mean average	3.91	4.08				

Question (c) of the survey was stated as follows: ‘making sure you remember things well’. Figure 4.5 shows the frequency and Figure 4.6 compares the mean response to question (c).

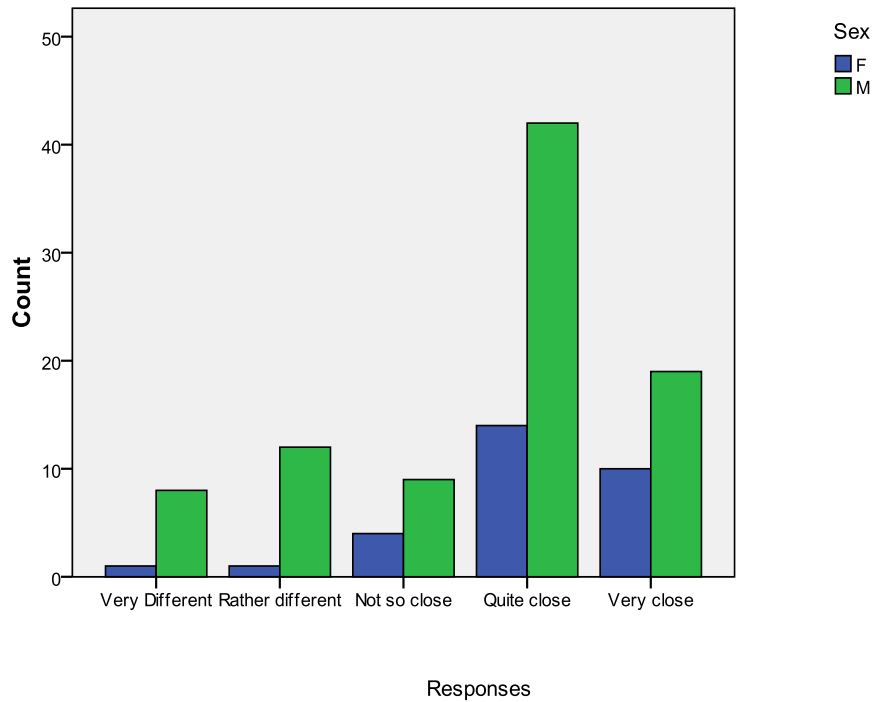


Figure 4.5 Frequency of “making sure you remember things well” by gender ($n=120$: female =30, male = 90)

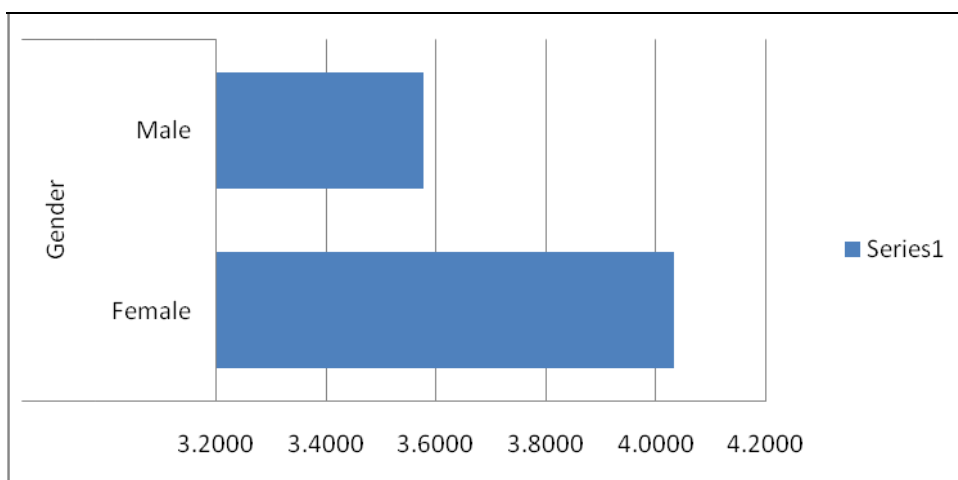


Figure 4.6 Mean of “making sure you remember things well’ by gender ($n=120$: female =30, male = 90)

Considering all respondents who completed the survey, the mean response for question (c) was 3.69. The mean response for males was 3.58 and that for females 4.03. The t score for question (c) was 1.86, and the probability of obtaining these results was .019. The t test results

indicate that there is a significant difference in the mean scores for male and females with regard to this question and the results support rejecting the hypothesis that there is no difference between men and women with regard to the belief that “making sure you remember things” contributes to learning. Figure 4.5 illustrates that the frequency distribution was skewed to the left and followed some basic pattern for both male and female respondents.

Table 4.9 provides the overall mean results of the t test in Deep Learning Conceptions questions among GA students by gender.

Table 4.9: Question e) through i) summary of t test results for deep learning conceptions by gender (n=120).

Question number	Mean Males n=90	Mean Females n=30	Mean difference	t value	$p < .10$ value	Is mean difference significant?
e. Understanding the new material for yourself	3.93	3.91	.02222	.092	.916	No
f. Using all the experiences in life	4.00	3.57	.43333	1.619	.004	Yes
g. Seeing things in a different and more meaningful way	4.03	3.89	.14444	.574	.890	No
h. Developing as a person	4.50	4.30	.20000	.931	.242	No
i. Being able to relate to people better	4.37	4.51	.40000	1.315	.283	No
Total Mean average	4.17	4.04				

Results of the independent samples t test for the 5 deep learning conceptions studied indicated p was less than .10 in questions (e). For those questions, the null hypothesis was rejected because the probability of obtaining the test result if the null hypothesis was true was less than 1 in 10. Survey question (f) 'using all the experiences in life.' was included as part of the deep learning conceptions.

The question (f) of the survey was worded as follows: 'using all the experiences in life.' Figure 4.7 shows the frequency of the responses and Figure 4.8 compares mean responses to question (f). Considering all the respondents who completed the survey, the mean response for question (f) was 3.68. The mean response for the females was 4.00, and the mean response for males was 3.57. The modal response for this question was 4.

The t score for question (f) was 1.619 and the probability of obtaining such results was .004. The t test results indicate that there is a significant difference in the mean scores for males and females in regard to this question, and the results support rejecting the hypotheses that there is no difference between men and women with regard to the question that using all experiences contribute to better understanding in the learning process. The mean scores for this question were also the lowest in the deep learning conceptions.

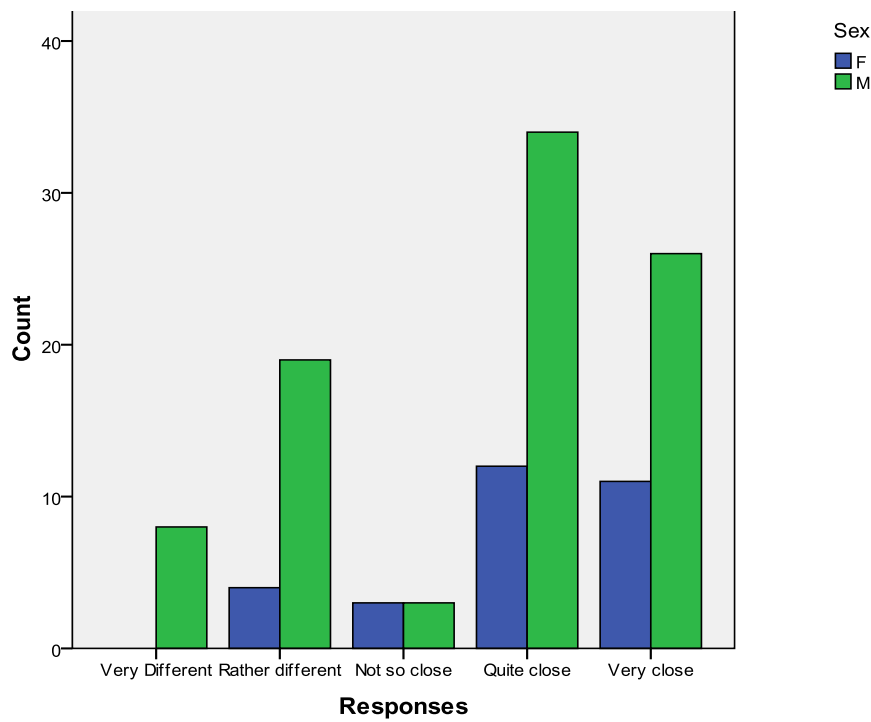


Figure 4.7 Frequency of “using all the experiences in life” by gender (n=120: female =30, male = 90)

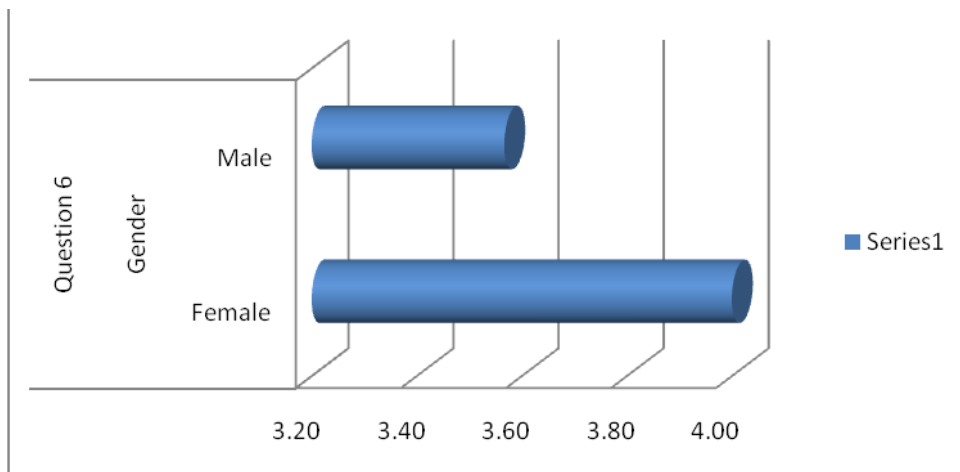


Figure 4.8: Mean of “using all the experiences in life” by gender (n=120: female =30, male = 90)

4.4. Studying Approaches among Students in the Graphic Arts Diploma Courses by Year of Study

Verifying the different nineteen studying approaches (categorized surface [6 questions), deep (6 questions) and strategic (7 questions)], by year of study (1st, 2nd and 3rd) among students enrolled in Technical Education GA courses, was the third objective. The questions were analyzed using means, frequencies and a one way analysis of variance (ANOVA).

4.4.1 Mean, Mode and Median Findings

Table 4.10 summarises the mean responses for surface studying approaches questions S 01 through to S 06 by year of study and compares the overall mean, median and mode responses to each question.

Table 4.10: Mean responses to questions S 01 through to S 06 by year of study (n =120)

Question number	Overall		Mean Response by year of study			
	Median	Mode	Mean	1st Year (n=40)	2nd Year (n=40)	3rd Year (n=40)
S 01. Often have trouble in making sense of things I have to remember	4.00	5.00	3.41	3.13	3.60	3.50
S 02. Find that there's not much of the work here that you find interesting or relevant	2.00	4.00	2.86	2.93	2.58	3.08
S 03. Find much of what you are studying making little sense more like it's like unrelated bits and pieces	4.00	5.00	3.75	3.63	4.10	3.53
S 04. You feel overwhelmed by the sheer amount of material you have to cope with	5.00	5.00	4.33	4.33	4.35	4.33
S 05. Not really sure what's important in lectures, so you try to get down all you can	3.00	1.00	2.95	2.90	2.93	3.03
S 06. Often worry about whether you will be able to cope with the work properly	4.00	4.00	3.58	3.53	3.50	3.70
Mean average				3.41	3.51	3.53

The mean responses for first-years varied from 2.90 to 4.33, a range of 1.43, while the mean for second-years varied from 2.58 to 4.35, a range

of 1.77. The mean responses for the third-years varied from 3.03 to 4.33, a range of 1.30. The third-years had a slightly higher set of means than both the first and second-years, and a slightly lower variation of the range. Table 4.11 summarises the mean responses for questions D 01 through D 06 by year of study and compares the overall mean, median and mode to each question.

Table 4.11: Mean responses to question D 01 through D 06 by year of study (n =120)

Question number	Overall			Mean Response by year of study		
	Median	Mode	Mean	1st Year (n=40)	2nd Year (n=40)	3rd Year (n=40)
D 01. Try to find out for yourself exactly what the author means when reading an article or a book	2.00	1.00	2.48	2.60	2.55	2.28
D 02. First try to work out what lies behind it before tackling a problem or an assignment	4.00	4.00	3.77	3.88	3.70	3.73
D 03. Try to see in your own mind how all the ideas fit together when you are working on new topic	4.00	5.00	3.99	4.00	3.98	4.00
D 04. Find yourself questioning things you hear in lectures or read in books or on the internet	4.00	5.00	3.67	3.80	3.58	3.63
D 05. Find ideas in textbooks or articles often setting you off on long chains of thought of your own	4.00	5.00	4.05	4.08	4.10	3.98
D 06. Examine details carefully to see how they fit in with what's being said when you read	5.00	5.00	4.21	4.13	4.25	4.25
Total Mean average				3.75	3.69	3.65

The deep studying approaches are addressed in questions D 01 through to D 06. Question D 01 to D 06 were designed to examine differences in studying approaches regarding the preference for the meaning seeking, relating ideas, use of evidence and interest in ideas. The mean responses for first-years varied from 2.60 to 4.13, a range of 1.53. The mean responses for second-years varied from 2.55 to 4.25, a range of 1.70. The mean responses for third-years varied from 2.28 to 4.25, a range of 1.97.

Questions T 01 to T 07 dealt with studying issues in relation to constructive use of time and discipline. Table 4.12 summarises the mean responses for question T 01 to T 07 by year of study and compares the overall mean, median and mode responses to each question.

Table 4.12: Mean responses to questions T 01 through to T 07 by Year of Study (n=120)

Question number	Overall			Mean Response by Year		
	Mean	Mode	Median	1st Year (n=40)	2nd Year (n=40)	3rd Year (n=40)
T 01. Organize time systematically when it comes to revising for exams?	3.48	4.00	4.00	3.48	3.55	3.43
T 02. Work steadily throughout term or semester, rather than leave it all until the last minute	3.92	4.00	4.00	3.83	4.13	3.80
T 03. Quick at getting down to work whenever you need to	4.17	4.00	4.00	4.45	4.03	4.03
T 04. Often refers to knowledge sourced from the internet	3.86	4.00	5.00	3.90	4.05	3.63
T 05. Put lots of effort into studying because you are determined to do well	4.35	5.00	5.00	4.18	4.30	4.58
T 06. Don't find it difficult to motivate yourself	4.02	4.00	5.00	4.05	4.05	3.95
T 07. Organize your study time carefully to make the best use of it	3.98	5.00	5.00	3.78	4.13	4.03
Total Mean average				3.95	4.03	3.92

The mean responses for first-years varied from 3.48 to 4.45, a range of .97. The mean responses for the second-years varied from 3.55 to 4.30, a range of .75. The mean responses for third-years varied from 3.43 to 4.58, a range of 1.15. In contrast to the previous subsections of the survey, the size of the range showed less variation between the three groups, and the third-years had the lowest set of means, the first-years had the middle and the second-years had the highest set.

4.4.2 Frequencies

Questions S 01 through to S 06 were further compared by sorting by year of study and counting the responses for each category on the five-point scale. Responses were ‘Very Much’, ‘Much,’ Not Much, ‘Not At All’ and ‘Not Sure’. The results of this comparison are shown in Figure 4.9.

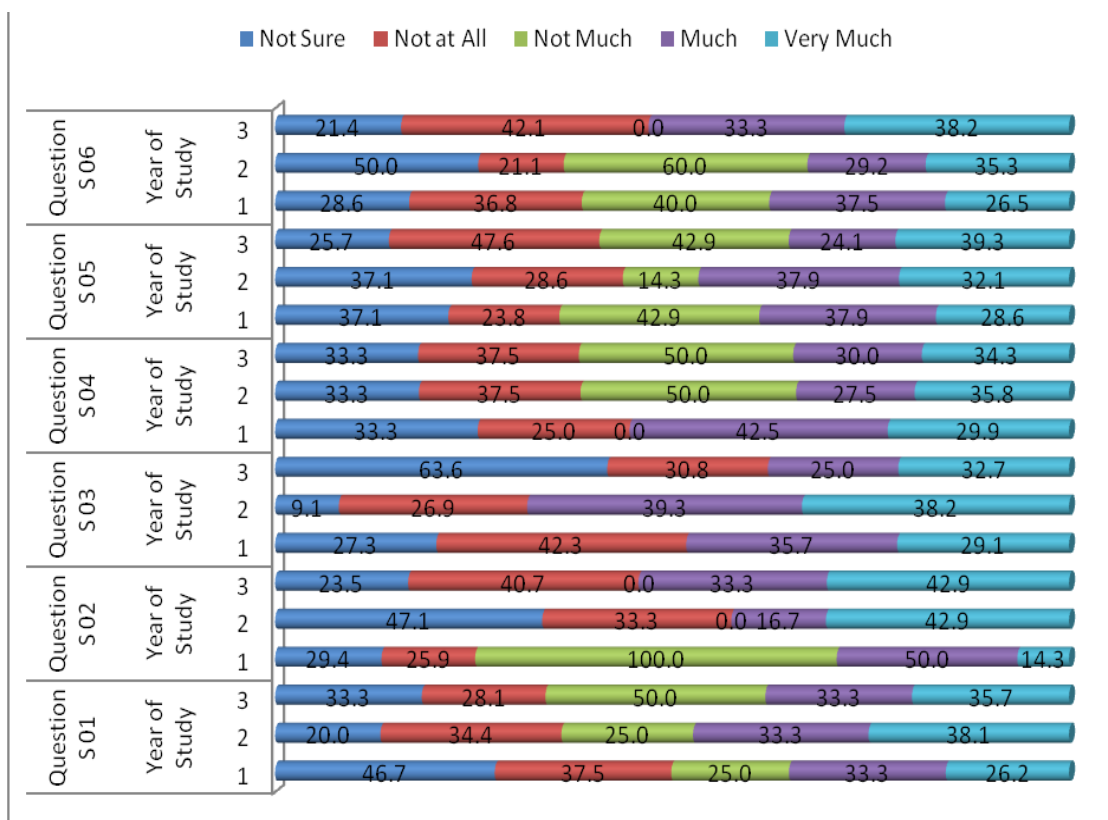


Figure 4.9: Frequency of responses to surface studying approaches question by year of study.

An initial visual analysis based on Figure 4.9 indicated that unlike questions S 01 through to S 06, some of questions have very limited neutral responses from the ‘not much’ category. Questions S 01 and S 06 seem to have the greatest variations among the students by year of study. S 04 appears to have the fewest variations. The strongest unfavourable choice seems to be in number S 02 and S 05. The strongest favourable choice seems to emanate from question S 04.with more than 85% respondents by year of study.

Questions D 01 through D 06 were further compared by sorting by year of study and counting the responses for each category on the five-point scale. Responses were ‘Very Much’, ‘Much,’ Not Much, ‘Not At All’ and ‘Not Sure’. The results of this comparison are shown in Figure 4.10.

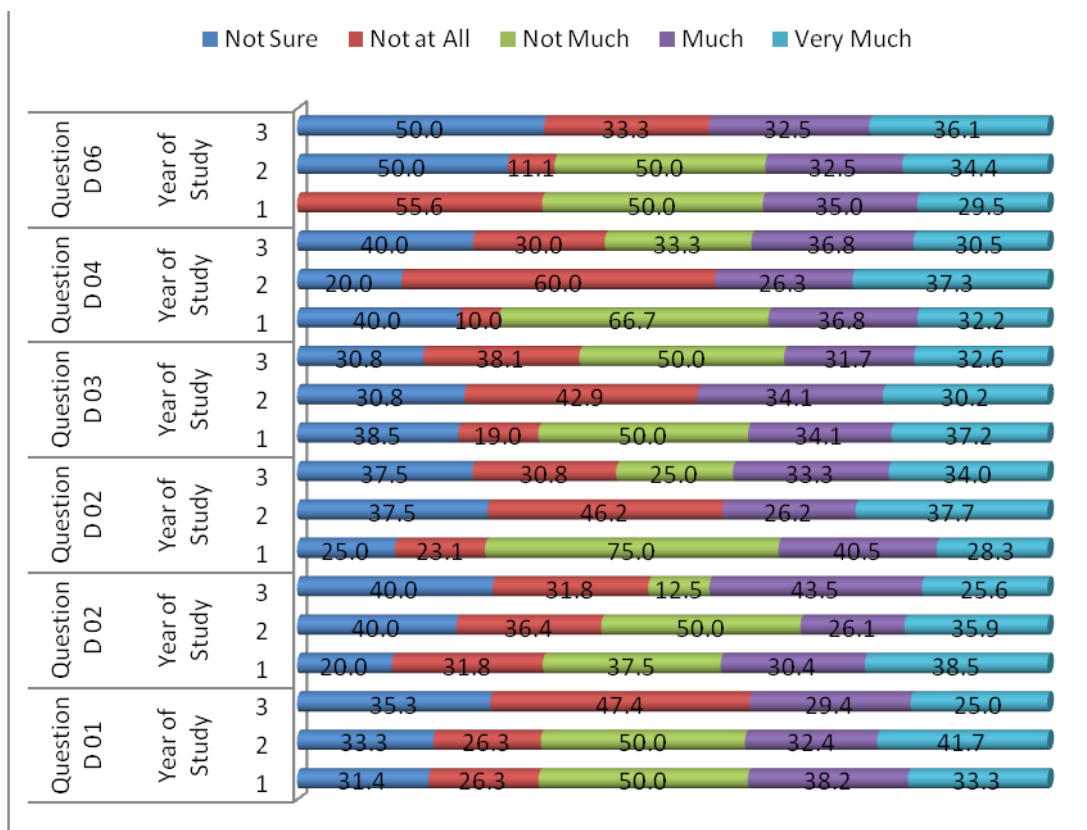


Figure 4.10: Frequency of responses to deep studying approaches by year of study.

An initial visual analysis based on Figure 4.10 indicated that on an overall basis for questions D 01 through D 06, the first and third-years tended to choose 'not much' more often than the second-years. Approximately $\frac{1}{4}$ of the first and second-year responses were in the 'not much', 'not at all' and 'not sure' category. Some individual questions had 25% to 40% responses in the very much category from the three groups. Over 30% of all the three groups' responses in question D 01 was 'not sure'. The third-years led in the 'not sure' category by 35%. The highest number of favourable responses for some of the questions was from the second-year students and others from the third-years. The first-years twice had the highest number of favourable responses. The second-years had the highest favourable responses in the area examining details D 01. The first-years had the highest favourable response on reflection, and tied with the second-years in relating ideas and use of evidence. Overall, the second -years were more favourable to the deep studying approaches.

Questions T 01 through to T 07 were further compared by sorting by year of study and counting responses per category on the five-point scale. Responses are 'Very Much', 'Much,' Not Much, 'Not At All' and 'Not Sure'. The results of this comparison are shown in Figure 4.11. An initial visual analysis based on Figure 4.11 indicates that on an overall basis for questions T 01 to T 07, there was a consistent pattern of agreement with each question. In contrast to the previous two sub-sections in which neutral responses for some questions were in the 30% to 40% range,

neutral responses to questions T 01 to T 07 do not appear to exceed approximately 15%. For all the questions in the section on strategic studying approaches, both the mode and median were between 4 and 5. This was reflected in a frequency distribution that was skewed strongly to the left in every question in this section.

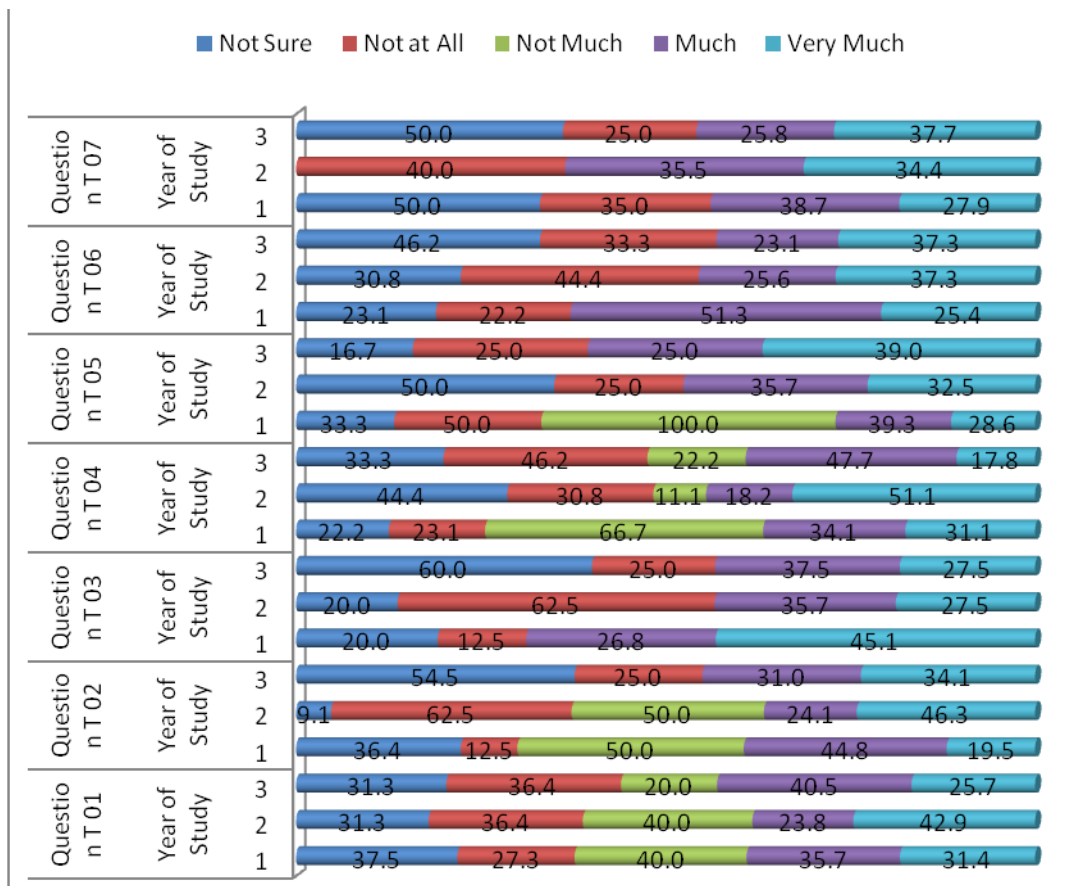


Figure 4.11: Frequency of responses to Strategic Studying Approaches by year of study

4.4.3. ANOVA Findings

For purposes of the ANOVA test, research objective three was stated as a null hypothesis as follows:

Ho₃. There is no significant difference in studying approaches among students in Technical Education GA courses by year of study with regards to:

- i. Surface studying approaches: related to lack of purpose, unrelated memorizing, syllabus boundness, fear of failure;
- ii. Deep studying approaches: related to seeking meaning, relating ideas, use of evidence and interest in ideas;
- iii. Strategic studying approaches: related to organized studying, time management, alertness to assessment demands, achieving and monitoring effectiveness.

The survey sample size was large enough in the three groups to be included in the ANOVA. The three groups compared in this test are the first-years, the second-years and the third-years. Appendix J depicts the results of ANOVA on the surface, deep and strategic studying approaches by year of study. The studying approaches hypothesis was not rejected. Table 4.13 presents a summary of the number of questions for which the null hypothesis was rejected by subsection in the research objective on studying approaches by year of study.

Table 4.13: Summary of ANOVA results for studying approaches by year of study (n = 120)

Subsection of survey	Total number of questions	Questions for which null hypothesis was rejected	Percentage rejected	Mean by Year of study		
				1st Year (n=40)	2nd Year (n=40)	3rd Year (n=40)
Surface approach	6	0	0	3.41	3.51	3.53
Deep approach	6	0	0	3.75	3.69	3.65
Strategic approach	7	0	0	3.95	4.03	3.92
Total	19	0	0			
Total Mean Average				3.70	3.74	3.70

In summary, the mean scores for each of the sub-sections indicated that all the respondents were least favourable towards the surface studying approaches and were generally favourable with the deep studying approaches. They were most favourable towards the strategic studying approaches. The mean total of the second-years could be deemed as leading in the strategic approach as shown in Table 4.13.

4.5. Studying Approaches among Male and Female Students in Graphic Arts Diploma Courses

The fourth objective was to determine the different nineteen studying approaches [categorized surface (6 questions S01 to S06), deep (6 questions D 01 to D 06) and strategic (7 questions T 01 to T 07)], among male and female students enrolled in Technical Education GA courses.

The mean, frequencies and the independent *t*-tests were used to analyse the data.

4.5.1. Mean of responses Studying Approaches among Male and Female Students in Graphic Arts Diploma Courses

Questions S01 to S06 dealt with questions related to the surface approach to studying. Table 4.14 summarises the mean responses for question S01 to S06 obtained by counting responses for each category on the Likert five-point scale. A lower mean response is considered more favourable than a higher mean. The surface studying approaches focused on rote learning that was more quantitative in nature than qualitative.

Table 4.14: Mean Responses to Questions S 01 to S 06 by gender(n=120: female =30, male = 90)

Question number	Median	Mode	Mean Response		
			Female n=30	Male n= 90	Overall n=120
S 01. Often have trouble in making sense of things I have to remember	4.00	5.00	3.73	3.30	3.52
S 02. Find that there's not much of the work here that you find interesting or relevant	2.00	4.00	2.97	2.82	2.90
S 03. Find much of what you are studying making little sense more like it's like unrelated bits and pieces	4.00	5.00	3.97	3.68	3.83
S 04. You feel overwhelmed by the sheer amount of material you have to cope with	5.00	5.00	4.57	4.26	4.42
S 05. Not really sure what's important in lectures, so you try to get down all you can	3.00	1.00	3.30	2.83	3.07
S 06. Often worry about whether you will be able to cope with the work properly	4.00	4.00	3.77	3.51	3.64
Mean average			3.72	3.40	3.56

Questions D 01 to D 06 were designed to explore the question of whether or not a difference exists between males and females who practise deep studying approaches in order to acquire transformative knowledge. Table 4.15 summarises the mean responses for the questions D 01 through D 06. The male had a higher mean than the female students especially in areas such as finding new ideas by themselves and scanning textbooks for novel ideas.

Table 4.15: Mean responses to questions D 01 through D 06 by gender (n=120: female =30, male = 90)

Question number			Female	Male	Overall
	Median	Mode	n=30	n= 90	n=120
D 01. Try to find out for yourself exactly what the author means when reading an article or a book	2.00	1.00	2.93	2.32	2.48
D 02. First try to work out what lies behind it before tackling a problem or an assignment	4.00	4.00	3.83	3.74	3.77
D 03. Try to see in your own mind how all the ideas fit together when you are working on new topic	4.00	5.00	3.70	4.09	3.99
D 04. Find yourself questioning things you hear in lectures or read in books or on the internet	4.00	5.00	3.63	3.68	3.67
D 05. Find ideas in textbooks or articles often setting you off on long chains of thought of your own	4.00	5.00	3.90	4.10	4.05
D 06. Examine details carefully to see how they fit in with what's being said when you read	5.00	5.00	4.03	4.27	4.21
Total Mean average			3.67	3.70	

Questions T 01 through T 07 were designed to explore the question of whether or not a difference exists between males and females in the strategic studying approaches and if there was a difference, whether that difference was a general one or specific to certain strategic studying sub-variables. Table 4.16 summarises the mean responses for questions T 01 through T 07.

Table 4.16: Mean responses to strategic studying approaches by gender (n=120: female =30, male = 90)

Question number	Mean Response				
	Median	Mode	Female n=30	Male n= 90	Overall n=120
T 01. Organize time systematically when it comes to revising for exams	4.00	4.00	3.50	3.48	3.49
T 02. Work steadily throughout term or semester, rather than leave it all until the last minute	4.00	4.00	3.83	3.94	3.89
T 03. Quick at getting down to work whenever you need to	4.00	4.00	4.33	4.11	4.22
T 04. Often refers to knowledge sourced from the internet	4.00	5.00	3.93	3.83	3.88
T 05. Put lots of effort into studying because you are determined to do well	5.00	5.00	4.57	4.28	4.43
T 06. Don't find it difficult to motivate yourself	4.00	5.00	4.10	3.99	4.05
T 07. Organize your study time carefully to make the best use of it	5.00	5.00	3.90	4.00	3.95
Total average mean			4.02	3.95	3.99

4.5.2 Frequencies of responses to Studying Approaches among Male and Female Students in Graphic Arts Diploma Courses

A review of Table 4.14 and an initial visual analysis of Figure 4.12 indicated that frequencies in the answers to questions S01 to S06 tended to be moderate and consistent indicating that the students surveyed have a moderate preference to the use of the surface studying approach. This was true for both males and females. While ‘not much’ responses were few, females tended to have a lower percentage of ‘not much’ responses than males. The mode for males and females combined for questions S 01 to S 06 was 5, 4, and 5,5,1,4. The mode for males only or females only for the same questions was also the same in each case.

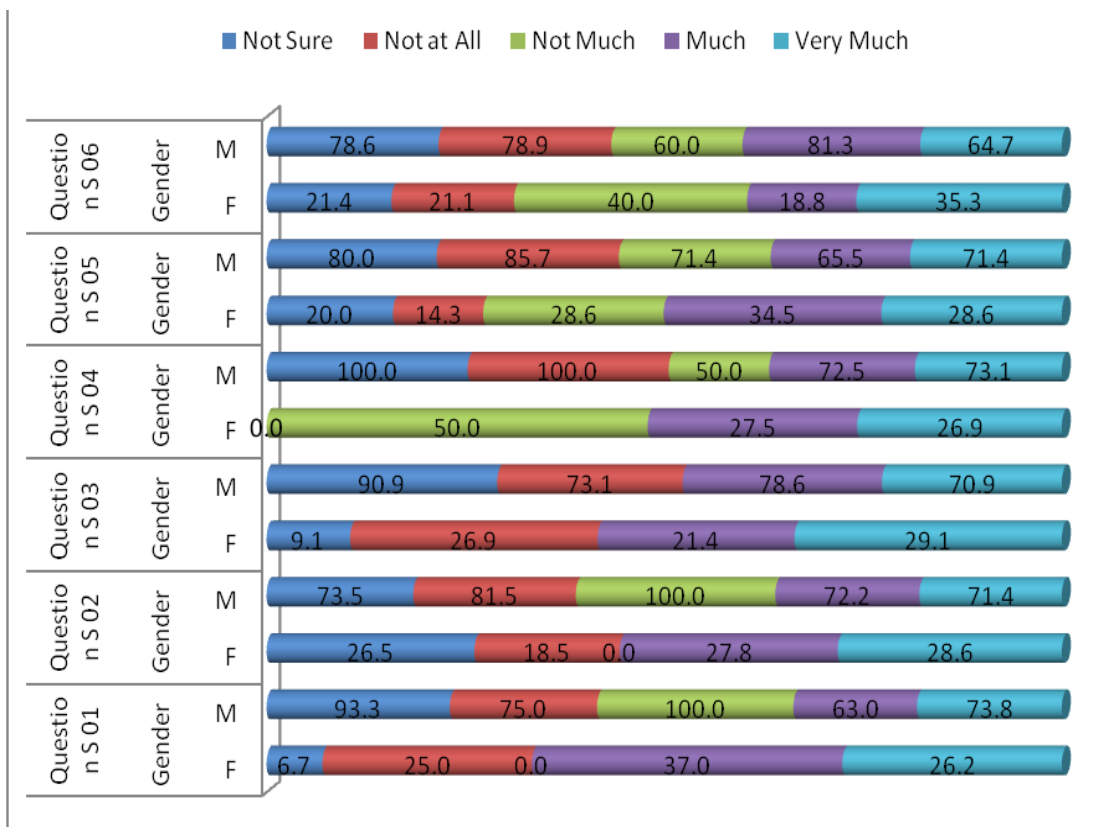


Figure 4.12 Frequency of responses to surface studying approaches by gender ($n=120$: female =30, male = 90)

Questions D 01 through D 06 were further compared by sorting by gender and counting responses for each category on the five-point scale. The results of this comparison are shown in Figure 4.13. As can be seen by reviewing the mean scores for questions D 01 through D 06 and examining Figure 4.13, responses to questions D 01 through D 06 were fairly favourable towards deep studying approaches among both the male and female students in GA technical education.

A review of Table 4.15 and an initial visual analysis of Figure 4.13 indicated that apart from question D 01, answers to questions D 02 through D 06 tended to be positive and consistent, indicating that the

students surveyed have a strong positive attitude towards studying. This held true for both male and female students. While disagree responses

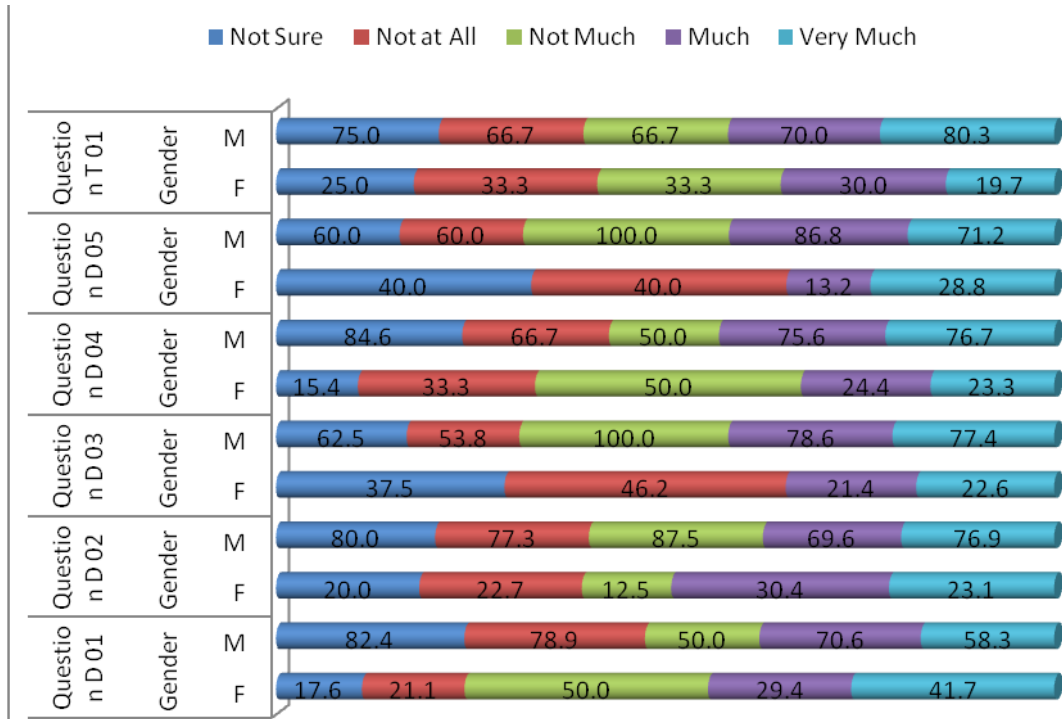


Figure 4. 13: Frequency of responses to deep studying approaches by gender (n=120: female =30, male = 90)

were minimal, females tended to have a lower mean responses than the males. The mode for males and females in the questions D 01 through D 06 was 1, 4, and 5,5,5,5 for each of the questions.

Questions T 01 through T 07 were further compared by sorting by gender and counting responses for each category on the five-point scale. The results of this comparison are shown in Figure 4.14. As can be seen by reviewing the mean scores for questions T 01 to T 07 and examining Figure 4.16, responses to questions T 01 to T 07 were consistently favourable towards students’ preferences for the strategic approach to

studying. A review of Table 4.16 and an initial visual analysis of Figure 4.14 indicated that answers to questions T 01 through T 07 tended to be

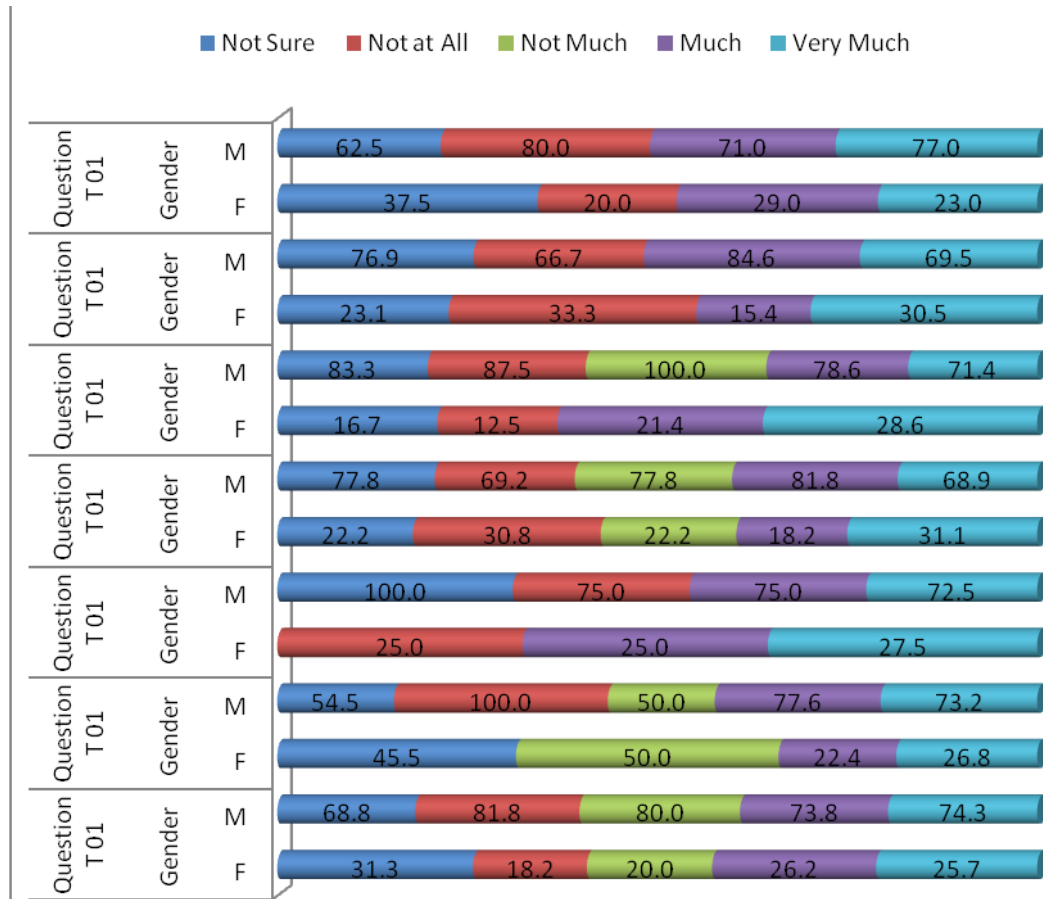


Figure 4.14: Frequency of Responses to Strategic Studying Approaches by Gender (n=120: female =30, male = 90)

positive and consistent, indicating that the students surveyed have a strong positive attitude towards strategic studying which is constructive and beneficial. While ‘not sure’, ‘not at all’ and ‘not much’ responses were minimal, females tended to have a lower percentage of ‘not at all’ responses. The mode for males and females for each question was 4,4,4,5,5,5,5. The mode for males only or females only was also similar for the same questions.

4.5.3 Independent *t*-test of Studying Approaches among Male and Female Students in Graphic Arts Diploma Courses

For analysis purposes, the Objective Four was stated as a null hypothesis as follows:

Ho₄. There is no significant difference between gender and studying approaches Technical Education GA courses with regard to:

- i) Surface studying approaches: related to lack of purpose, unrelated memorizing, syllabus boundness, fear of failure;
- ii) Deep studying approaches: related to seeking meaning, relating ideas, use of evidence and interest in ideas;
- iii) Strategic studying approaches: related to organized studying, time management, alertness to assessment demands, achieving and monitoring effectiveness.

The survey sample was large enough in the two groups (female and male) to be tested using the *t* test. A *t* test was performed for each of the 19 questions in the studying approaches survey. The findings of the overall studying approaches survey by gender are reported first. An alpha value of .10 was selected before performing the *t* test. The alpha value was higher than the traditional social science value of .05, as this was an exploratory study and it was deemed worthwhile to increase the power so that potentially important differences would not be bypassed. Prior to performing the *t* test, Levene's test for equality of variances was performed. In the studying approaches survey, Levene's test indicated that questions S01, S04, D 03 and D 05 had a $p < .10$. The test was

constructed so that the negative values of the t test, if any, indicate that the mean female response was higher than the male response.

At a glance, the results of the independent sample t test for the 19 questions indicated p was less than .10 for questions S01, S 04. D 03, and D 05, had a $p < .10$. For these questions, the null hypothesis was rejected because the probability of obtaining the test results if the hypothesis was true was less than 1 in 10.

Table 4.17 presents a summary of the number of questions for which the null hypothesis was rejected by subsection of the research questions.

Table 4.17: Summary of t test results for research objective 4, studying approaches by gender (n=120: female =30, male = 90)

Sub-section of survey	Total number of questions	Questions for which null hypothesis was rejected	Percentage rejected	Mean by gender	
				Female n=30	Male n= 90
Surface studying approach	6	2	33.3	3.72	3.40
Deep studying approach	6	2	33.3	3.67	3.70
Strategic studying approach	7	0	00.0	4.02	3.95
Total	19	4	66.6		
		Total Mean average		3.80	3.68

Survey questions S 01 and S 04 were part of the surface (rote) studying approach questions of the questionnaire. Survey questions D 03 and D 05 were part in the deep (transformative) studying approach questions of the

questionnaire. For example, Question D 03 asked the respondents to indicate the extent to which they utilized the question: ‘try to see in your own mind how all the ideas fit together when you are working on new topic?’

In all four cases in which the null hypothesis was rejected, females more strongly agreed with the questions being made than did the males. For all three sub-sections however, the mean difference between the males (3.68) and females (3.80) was shown to be significant relatively few times in comparison to the number of questions asked by sub-section. Table 4.17 illustrates the summary mean scores for each of the sub-sections which indicates that respondents were generally favourable towards the questions on mean seeking and relating ideas in studying deep approaches (female mean was 3.67 and males was 3.70), and most favourable towards the questions on constructive strategic studying approaches (females mean was 4.02 and males was 3.95).

For questions T 01 to T 07 in the study, there was no significant difference between the male and female responses. The four questions showing a significant difference indicated that female respondents were more favourable towards the questions, such as, that they would be willing to ‘try out new ways of putting ideas together when working on a new topic’, more strongly than males and that females would be more receptive to being guided on the quantity of work that they expected to complete within the course duration. There were no significant

differences in relation to all the strategic approaches questions, 66.7% of the deep studying approach questions and 66.7% of the surface approach questions.

Considering all the respondents who completed the survey, the mean response for question S 01 was 3.41. The mean response for males was 3.30 and the mean response for females was 3.73. The t score for question 01 was 1.377 and the probability of obtaining these results was .009. The

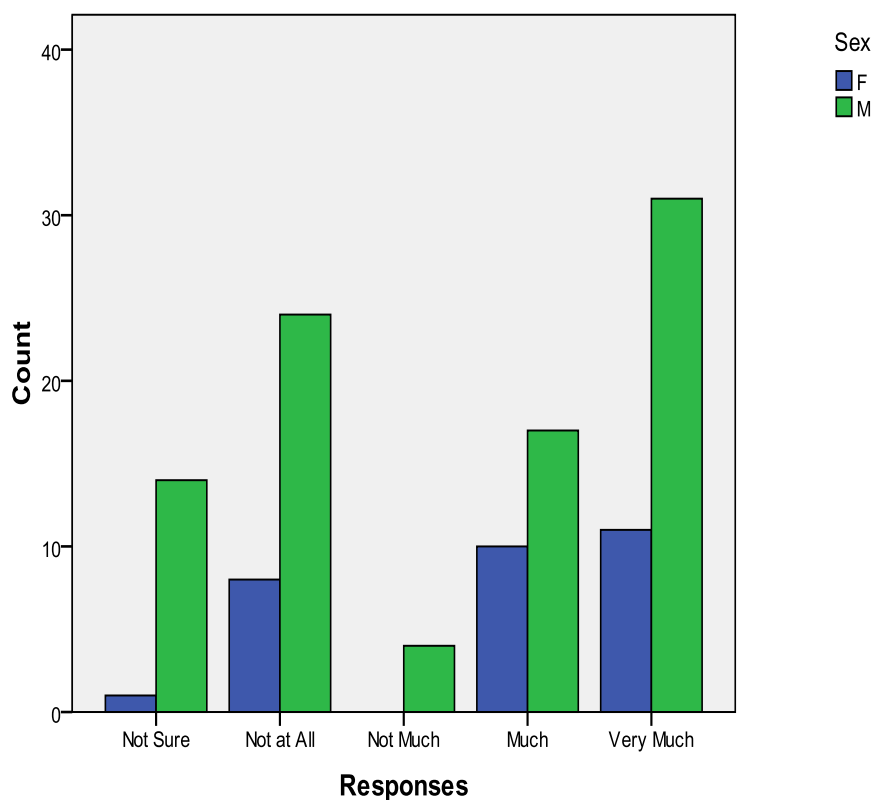


Figure 4.15: Frequency of “often have trouble in making sense of things I have to remember” by gender (n=120: female =30, male = 90)

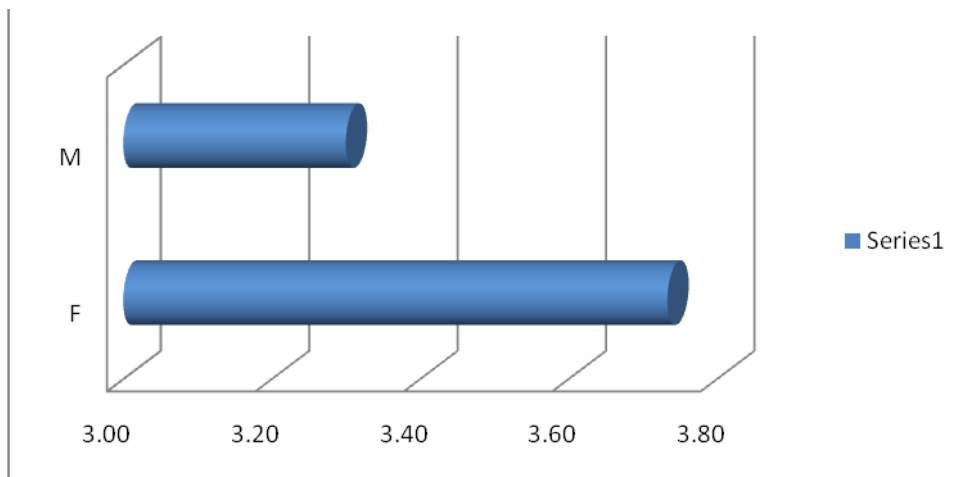


Figure 4.16: Mean of “often have trouble in making sense of things I have to remember” by gender (n=120: female =30, male = 90)

t test results indicate that there is a significant difference in the mean scores for males and females in regard to this question, and the results support rejecting the hypothesis that there is no significant difference between men and women in ‘having trouble to make sense of things that they have to remember’ while studying.

Question S 04 was worded as follows: to what extent do ‘you feel overwhelmed by the sheer amount of material you have to cope with’. Figure 4.17 shows the frequency of responses to this question and Figure 4.18 compares the mean response to this question.

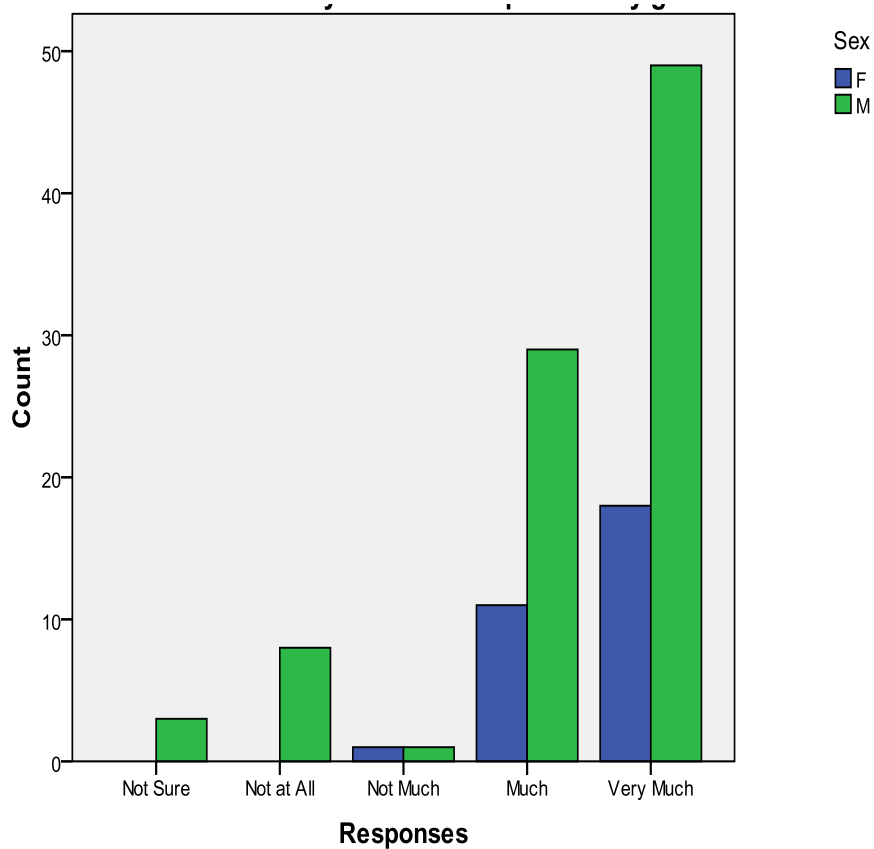


Figure 4.17: Frequency of “you feel overwhelmed by the sheer amount of material you have to cope with” by gender (n=120: female =30, male = 90)

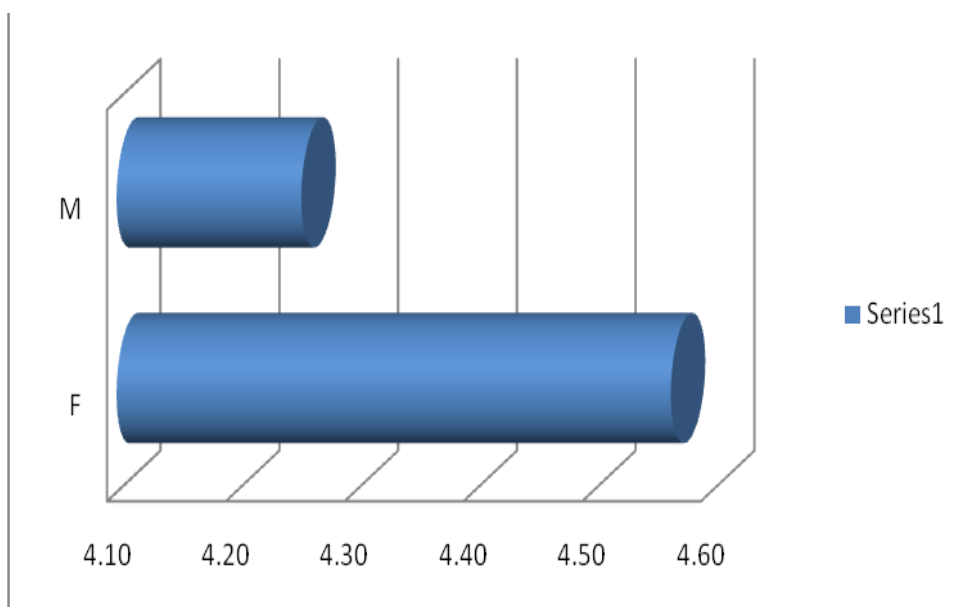


Figure 4.18: Mean of “you feel overwhelmed by the sheer amount of material you have to cope with” by gender (n=120: female =30, male = 90)

Considering all the respondents who completed the survey, the mean response for question S 04 was 4.33. The mean response for the females

was 4.56, while that for the males was 4.25. The t score for question S 04 was 1.511, and the probability of obtaining these scores was .028. The t test results indicate that there is a significant difference in the mean scores for males and females in regard to ‘finding that they feel overwhelmed by the sheer amount of material they have to cope with’ in their studying as noted in skewness towards the response ‘very much.’

Question D 03 was worded as follows: to what extent do you ‘try to see in your own mind how all the ideas fit together when you are working on new topic?’. Figure 4.19 shows the frequency of responses to this question. Figure 4.20 compares responses to question D 03.

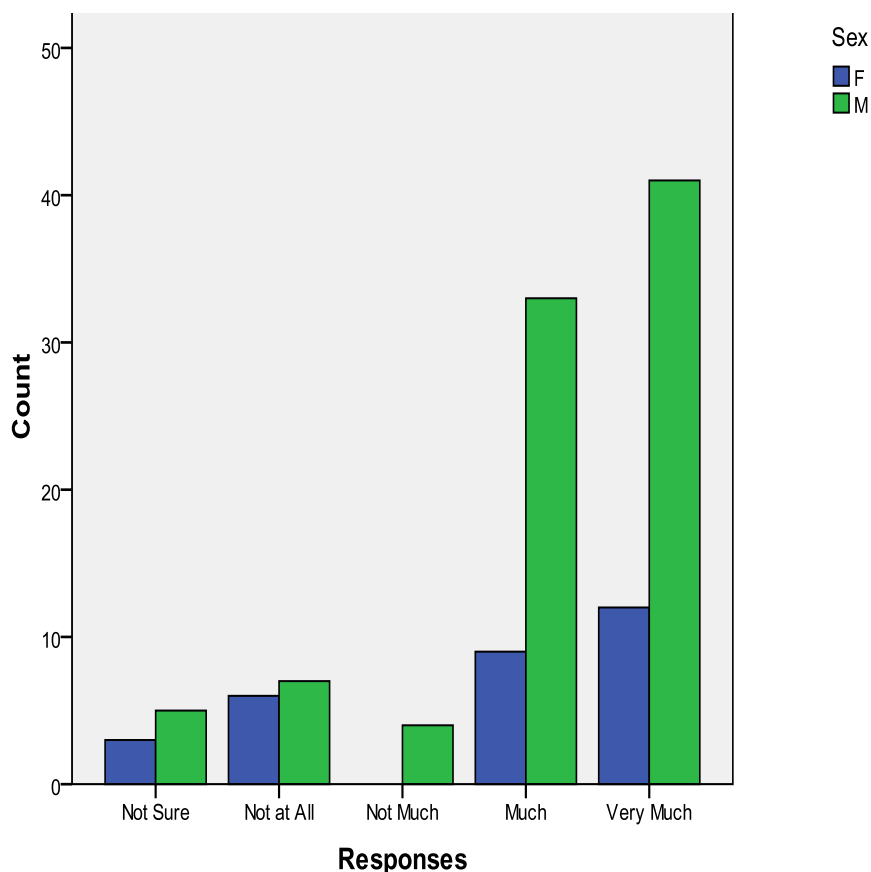


Figure 4.19: Frequency of “try to see in your own mind how all the ideas fit together when you are working on new topic” by gender (n=120: female =30, male = 90)

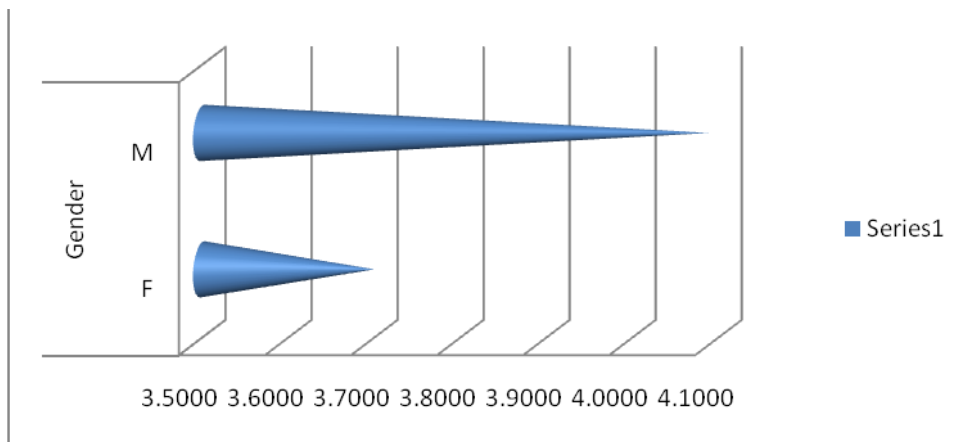


Figure 4.20: Mean of “try to see in your own mind how all the ideas fit together when you are working on new topic” by gender ($n=120$: female =30, male = 90)

Considering all the respondents who completed the survey, the mean response for question D 03 was 3.99. The mean response for males was 4.09 and that for females was 3.70. The t score for question 3 was -1.504 and the probability of obtaining these results was .019. The t test results indicate that there is a statistically significant difference in the mean scores for males and females with regard to this question and the results support rejecting the hypothesis that there is no difference between men and women in ‘trying to see in your own mind how all the ideas fit together when working on a new topic’. The negative t test score indicates that females were more favourable towards the question than the males. In other words, females tended to agree more strongly than males that they would be willing to ‘try out new ways of putting ideas together when working on a new topic’. The responses of both males and females are skewed to the left, indicating that they enjoyed trying out new ways of putting ideas together, which is a useful creative thinking.

Question D 05 was worded as follows: to what extent do you “find ideas in text books or articles often setting you off on long chains of thoughts of your own?” Figure 4.21 shows the frequency of responses to this question while Figure 4.22 compares mean responses to this question.

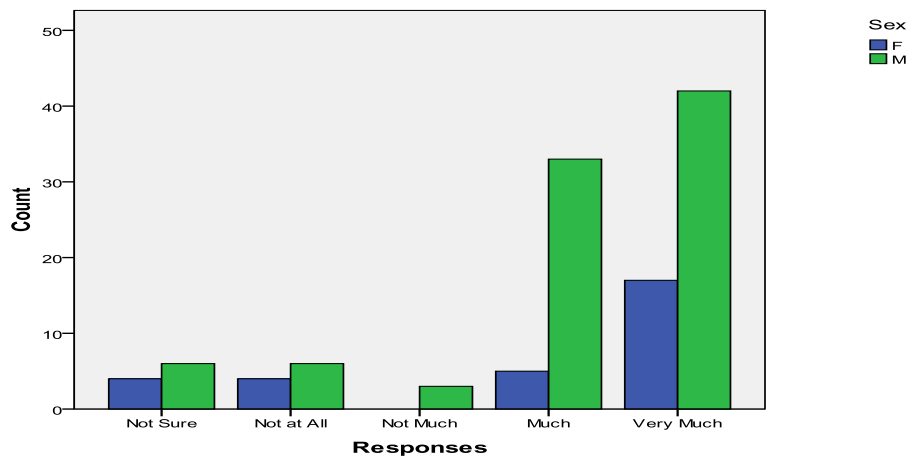


Figure 4.21: Frequency of “find ideas in text books or articles often setting you off on long chains of thoughts of your own” by gender (n=120: female =30, male = 90)

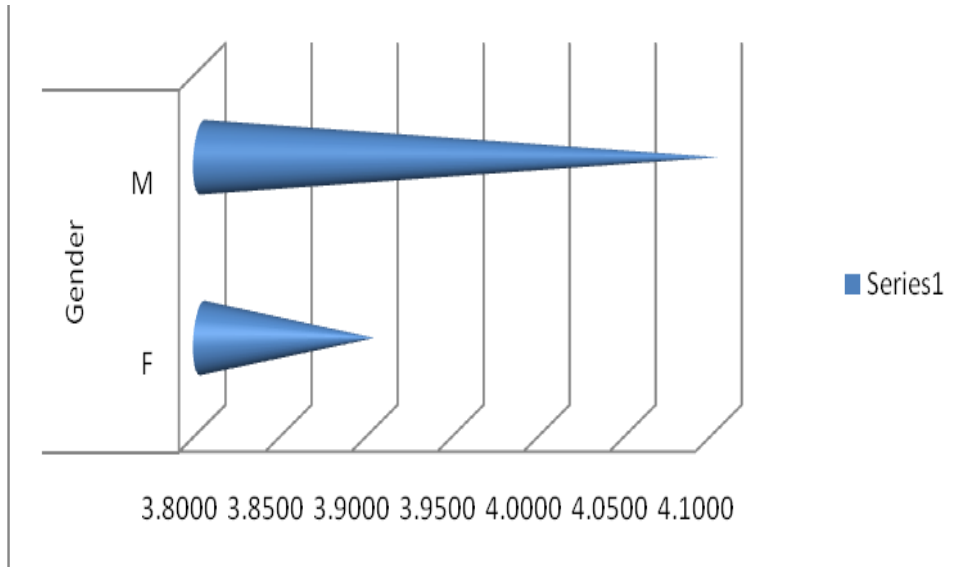


Figure 4.22: Mean of “find ideas in text books or articles often setting you off on long chains of thoughts of your own” by gender (n=120: female =30, male = 90)

Considering all respondents who completed the survey, the mean response for question D 05 was 4.05. The mean response for females was 3.90 and that for males was 4.10. The t score for question D 05 was $-.746$

and the probability of obtaining these results was .012. The t test results indicate that there is a statistically significant difference in the mean scores for males and females with regard to this question, and the results support rejecting the hypothesis that there is no difference between men and women in finding ideas in textbooks or articles setting one off on long chains of personal thoughts.

The negative t test score indicates that females were more favourable towards the question than males. In other words, females tended to agree with this question more strongly than males that they 'find ideas in textbooks or articles set them off on long chains of personal thought'.

4.6. Factor Analysis

4.6.1 Factor analysis of the 9 Learning Conceptions Questions

Factorability of the 9 Learning Conceptions was examined as recommended by Entwistle et al. (2006). This brought forth the differences and similar variations in the relationships between the learning conceptions variables, that different students exhibited when studied. The principal component analysis of the GA students learning conceptions revealed three factors which are displayed in Table 4.18. The minimum amount of data for factor analysis was satisfied with a final sample size of 120 (using listwise deletion), with over 8 responses per variable.

Table 4.18: The principal component analysis of learning conceptions for GA students (N= 120)

Learning Conceptions	Component		
	1	2	3
a) Getting on with the things you've got to do	.634	.000	-.292
b) Building up knowledge by acquiring facts and information.	.166	.180	.784
c) Making sure you remember things well	.500	.145	.312
d) Being able to use the information you've acquired	.509	.367	.103
e) Understanding new material for yourself.	.452	-.467	.185
f) Seeing things in a different and more meaningful way.	.059	.780	-.336
g) Using all your experiences in life.	.693	.121	.158
h) Developing as a person	.589	-.375	-.290
i) Being able to relate to people better	.743	.018	-.209

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

The factor structure shows greater overlaps between the deep and surface creating three separate combinations defined now as Component 1 (deep/surface), Component 2 (deep) and Component 3 (surface). Loadings less than 0.4 are not considered in the new combinations. The extraction method reordered them and combined the questions in terms of strengthens noted in the responses as follows:

- i. In component 1 (deep/surface): 'Getting on with the things you've got to do'.634 + 'Making sure you remember things well' .500 + 'Being able to use the information you have acquired' .509 + 'Understanding the new material for yourself' .452 + 'Seeing things in a different and more meaningful way' .693 + 'Developing as a person' .589 + 'Being able to relate to people better' .743 +

- ii. The following formed component 2 : ‘Using all the experiences in life’.780 + ‘Understanding the new material for yourself’ -.467 ;
and,
- iii. The third component 3 was: ‘Building up knowledge by acquiring facts and information’ .784

It is important to note that no out of range values were identified and there were no missing data as Table 4.18 shows.

Several well recognized criteria for the factorability of a correlation were used. First, 8 out of 9 items correlated at least .3 with at least one other item, suggesting reasonable factorability. Second, the Kaiser-Meyer-Olkin measure of sampling adequacy was .701, above the recommended value of .6, and Bartlett’s test of sphericity was significant ($\chi^2 (36) = 135.71, p < .001$). The diagonals of the anti-image correlation matrix were all over .5, apart from one which was .42, supporting the inclusion of each item in the factor analysis.

Finally, the communalities were all above .4 (see Table 4.19), further confirming that most items shared some common variance with other items. Given these overall indicators, factor analysis was conducted with all 9 items.

Table 4.19: Factor loadings and commonalities based on a principal components analysis with varimax rotation for 9 items from the learning conception questionnaire (n = 120)

no	initial	Extraction		
		1st Year (n=40)	2nd Year (n=40)	3rd Year (n=40)
Surface and Deep learning Conceptions				
a) Getting on with the things you've got to do	1.000	.425	.583	.776
b) Building up knowledge by acquiring facts and information.	1.000	.716	.610	.750
c) Making sure you remember things well	1.000	.444	.539	.626
d) Being able to use the information you've acquired	1.000	.636	.427	.656
e) Understanding new material for yourself.	1.000	.490	.714	.627
f) Seeing things in a different and more meaningful way.	1.000	.794	.671	.904
g) Using all your experiences in life.	1.000	.708	.700	.463
h) Developing as a person	1.000	.591	.579	.627
i) Being able to relate to people better	1.000	.567	.666	.695

Principal components analysis was used because the primary purpose was to identify and compute composite learning conception scores for the underlying factors. The initial Eigen values showed that the first factor explained 28.1 % of the variance, the second factor 13.0 % of the variance and 12.3% explained the third factor (Table 4.20). The three factor solution, which explained 53% of the variance, was preferred, because of its previous theoretical support. The ‘levelling off’ of Eigen values on the scree plot (Figure 4.23), was after three factors and therefore was not difficult to support.

Table 4.20: Total Variance of the Learning Conceptions Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance Cumulative %		Total	% of Variance Cumulative %		Total	% of Variance Cumulative %	
a)	2.527	28.076	28.076	2.527	28.076	28.076	2.139	23.765	23.765
b)	1.170	13.004	41.080	1.170	13.004	41.080	1.498	16.646	40.411
c)	1.108	12.308	53.388	1.108	12.308	53.388	1.168	12.977	53.388
d)	.977	10.850	64.238						
e)	.841	9.349	73.587						
f)	.726	8.065	81.652						
g)	.692	7.684	89.336						
h)	.530	5.886	95.222						
i)	.430	4.778	100.000						

Extraction Method: Principal Component Analysis.

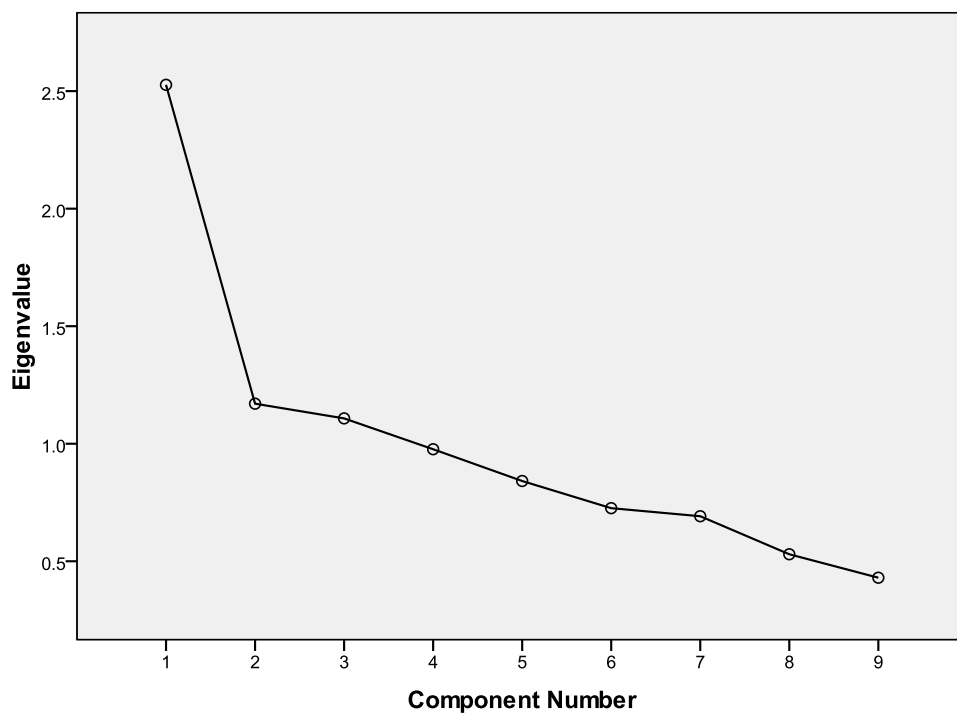


Figure 4.23: Scree plot of Learning Conceptions of Graphic Arts Students showing three factor solution

There was little difference between the varimax and oblimin solutions, thus both solutions were examined in the subsequent analyses before deciding on a varimax rotation for the final solution.

4.6.2 Factor Analysis of the Studying Approaches.

Factorability of the studying approaches was also performed. This brought forth the similarities and differences in the relationships between the different studying approaches that different students exhibited in their responses. The factorability is analysed through the sub-sections:

- i) Surface studying approaches: related to lack of purpose, unrelated memorizing, syllabus boundness, fear of failure;
- ii) Deep studying approaches: related to seeking meaning, relating ideas, use of evidence and interest in ideas;
- iii) Strategic studying approaches: related to organized studying, time management, alertness to assessment demands, achieving and monitoring effectiveness.

4.6.2.1 The Surface Studying Approach

The six items were subjected to factor analysis and the commonalities established to be in two components. The factor structure shows greater overlaps in component 1, which combined two positive factors with three negative factors: ‘Often have trouble in making sense of things I have to remember’ .606 + ‘Find much of what you are studying making little sense more like it's like unrelated bits and pieces’ -.656 +

Table 4.21: Surface studying approaches Component Matrix^a

	Component	
	1	2
Surface studying approaches		
S 01. Often have trouble in making sense of things I have to remember	.606	.291
S 02. Find that there's not much of the work here that you find interesting or relevant	-.656	.062
S 03. Find much of what you are studying making little sense more like it's like unrelated bits and pieces	.776	.193
S 04. You feel overwhelmed by the sheer amount of material you have to cope with	.389	.674
S 05. Not really sure what's important in lectures, so you try to get down all you can	-.583	.639
S 06. Often worry about whether you will be able to cope with the work properly	-.476	.369

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

‘Find that there's not much of the work here that you find interesting or relevant’ .776 + ‘Not really sure what's important in lectures, so you try to get down all you can’ -.583 +; and, ‘Often worry about whether you will be able to cope with the work properly’ -.476.

Component 2 had: ‘You feel overwhelmed by the sheer amount of material you have to cope with’ .674 + ‘Not really sure what's important in lectures, so you try to get down all you can’ .639. The principal component analysis of the GA students’ surface studying approaches extracted six components (displayed in bold loadings less than 0.4 are not considered) in Table 4.22. It shows that the responses had commonalities.

Table 4.22: Factor loadings and commonalities based on a principal components analysis with varimax rotation for 6 surface questions from the studying approaches questionnaire (total N = 120)

no	Surface Studying question	approaches	initial	Extraction		
				1st Year (n=40)	2nd Year (n=40)	3rd Year (n=40)
S 01.	Often have trouble in making sense of things I have to remember	1.000	.549	.783	.689	
S 02.	Find that there's not much of the work here that you find interesting or relevant	1.000	.585	.636	.691	
S 03.	Find much of what you are studying making little sense more like it's like unrelated bits and pieces	1.000	.567	.825	.630	
S 04.	You feel overwhelmed by the sheer amount of material you have to cope with	1.000	.643	.764	.765	
S 05.	Not really sure what's important in lectures, so you try to get down all you can	1.000	.611	.762	.696	
S 06.	Often worry about whether you will be able to cope with the work properly	1.000	.561	.744	.793	

4.6.2.2 The Deep Studying Approach

The deep studying approach research questions were subjected to factor analysis and the commonalities established to be in two components as shown in Table 4.23.

The factor structures show greater overlaps in component one. Component one consisted of : ‘Try to find out for yourself exactly what the author means when reading an article or a book’-.587 + ‘First try to work out what lies behind it before tackling a problem or an assignment’ .595 + ‘Try to see in your own mind how all the ideas fit together when

Table 4.23: Deep studying approaches Component Matrixa

Deep studying approaches question	Component	
	1	2
D 01. Try to find out for yourself exactly what the author means when reading an article or a book	-.587	.303
D 02. First try to work out what lies behind it before tackling a problem or an assignment	.595	.219
D 03. Try to see in your own mind how all the ideas fit together when you are working on new topic	.690	-.115
D 04. Find yourself questioning things you hear in lectures or read in books or on the internet	.403	.797
D 05. Find ideas in textbooks or articles often setting you off on long chains of thought of your own	.378	-.551
D 06. Examine details carefully to see how they fit in with what's being said when you read	.558	.025

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

you are working on new topic' .690 + 'Find yourself questioning things you hear in lectures or read in books or on the internet' .403 + and + 'Examine details carefully to see how they fit in with what is being said when you read'.558. In component 2 a positive 'find yourself questioning things you hear in lectures or read in books or on the internet' .797 was also interestingly combined with a negative 'find ideas in textbooks or articles often setting you off on long chains of thought of your own' -.551. The factor loadings and commonalities were found to be greater than 0.4 in all the items as shown in Table 4. 24.

Table 4.24: Factor loadings and commonalities based on a principal components analysis with varimax rotation for Deep 6 questions from the Studying Approach questionnaire (total N = 120) by year of study

Deep Studying Approaches question	initial	Extraction		
		1st Year (n=40)	2nd Year (n=40)	3rd Year (n=40)
D 01. Try to find out for yourself exactly what the author means when reading an article or a book	1.000	.625	.776	.555
D 02. First try to work out what lies behind it before tackling a problem or an assignment	1.000	.624	.699	.640
D 03. Try to see in your own mind how all the ideas fit together when you are working on new topic	1.000	.429	.675	.750
D 04. Find yourself questioning things you hear in lectures or read in books or on the internet	1.000	.519	.699	.839
D 05. Find ideas in textbooks or articles often setting you off on long chains of thought of your own	1.000	.696	.747	.469
D 06. Examine details carefully to see how they fit in with what's being said when you read	1.000	.496	.735	.701

4.6.2.3 The Strategic Studying Approach.

The strategic studying approach items were subjected to factor analysis (Table 4.25) and factor loadings selected were those above .4. The components were established to be in three components.

Component 1 consisted of: 'Work steadily throughout term or semester, rather than leave it all until the last minute'.558 + 'Quick at getting down to work whenever you need to' .593 + 'Organize your study time carefully to make the best use of it'. 462 + 'Organize your study time carefully to make the best use of it' .573. And a negative of 'organize time systematically when it comes to revising for exams' -.531.

Component 2 combined: 'Organize time systematically when it comes to revising for exams'.536 + 'often refers to knowledge sourced from the internet'.590 + 'Don't find it difficult to motivate yourself' .714.

Component 3 was: 'put lots of effort into studying because you are determined to do well' .644 + combined with two negatives 'quick at getting down to work whenever you need to' - 410 + 'organize your study time carefully to make the best use of it' -. 536.

Table 4.25: Component Matrixa of Strategic Studying Approaches

Strategic Studying Approaches Questions	Component		
	1	2	3
T 01. Organize time systematically when it comes to revising for exams.	-.531	.536	-.057
T 02. Work steadily throughout term or semester, rather than leave it all until the last minute	.558	-.147	.225
T 03. Quick at getting down to work whenever you need to	.593	.215	-.410
T 04. Often refers to knowledge sourced from the internet	.369	.590	.303
T 05. Put lots of effort into studying because you are determined to do well	.462	.046	.644
T 06. Don't find it difficult to motivate yourself	.092	.714	-.166
T 07. Organize your study time carefully to make the best use of it	.573	-.116	-.536

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

The factor loadings and commonalities were found to be greater than 0.4 in all the items as shown in Table 4.26. Second years had the highest loadings and compares well with the findings in strategic studying mean scores analysis.

Table 4.26: Factor loadings and commonalities based on a principal components analysis with varimax rotation for 7 strategic items from the studying approaches questionnaire (total N = 120)

Strategic Studying Approaches	initial	Extraction		
		1st Year (n=40)	2nd Year (n=40)	3rd Year (n=40)
T 01. Organize time systematically when it comes to revising for exams?	1.000	.609	.794	.605
T 02. Work steadily throughout term or semester, rather than leave it all until the last minute	1.000	.477	.827	.740
T 03. Quick at getting down to work whenever you need to	1.000	.516	.639	.646
T 04. Often refers to knowledge sourced from the internet	1.000	.689	.763	.778
T 05. Put lots of effort into studying because you are determined to do well	1.000	.581	.802	.631
T 06. Don't find it difficult to motivate yourself	1.000	.475	.856	.504
T 07. Organize your study time carefully to make the best use of it	1.000	.654	.650	.682

The findings depicted in Tables 4.22, 4.24 and 4.26 resonate well with the findings in Table 4.13 which show that the students were least favourable towards the surface studying approaches and generally favourable towards the deep studying approaches and were most favourable towards the strategic studying approaches. The high factor loadings especially in

the columns for the second-year responses indicate that they are the leading proponents for the strategic studying approaches, followed by the first-years and then the third-years.

Table 4.27 displays the principal components analysis that was used because the primary purpose was to identify and compute composite studying approaches scores for the underlying factors. The initial Eigen values showed that the first factor explained 21.8 % of the variance, the second factor 10.0 % of the variance, and 6.7% explained the third factor and 6.4% explained the fourth factor, 5.95% explains the fifth factor while 5.59% explains the sixth factor. The six-factor solution, which explained 57% of the variance, was preferred, because of its previous theoretical support. The 'levelling off' of Eigen values on the scree plot (Figure 4.25), was after six factors and therefore was not difficult to support. This finding also illustrates that the students' responses are aligned towards one direction indicating a common learning mode.

Table 4.27: Total Variance in the studying Approaches Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.147	21.827	21.827	4.147	21.827	21.827
2	2.064	10.865	32.692	2.064	10.865	32.692
3	1.283	6.750	39.443	1.283	6.750	39.443
4	1.221	6.426	45.868	1.221	6.426	45.868
5	1.130	5.947	51.815	1.130	5.947	51.815
6	1.063	5.593	57.408	1.063	5.593	57.408
7	.991	5.217	62.625			
8	.935	4.921	67.546			
9	.908	4.781	72.327			
10	.758	3.987	76.314			
11	.677	3.561	79.875			
12	.627	3.300	83.175			
13	.603	3.171	86.346			
14	.519	2.729	89.076			
15	.463	2.439	91.515			
16	.444	2.336	93.852			
17	.429	2.259	96.111			
18	.401	2.112	98.223			
19	.338	1.777	100.000			

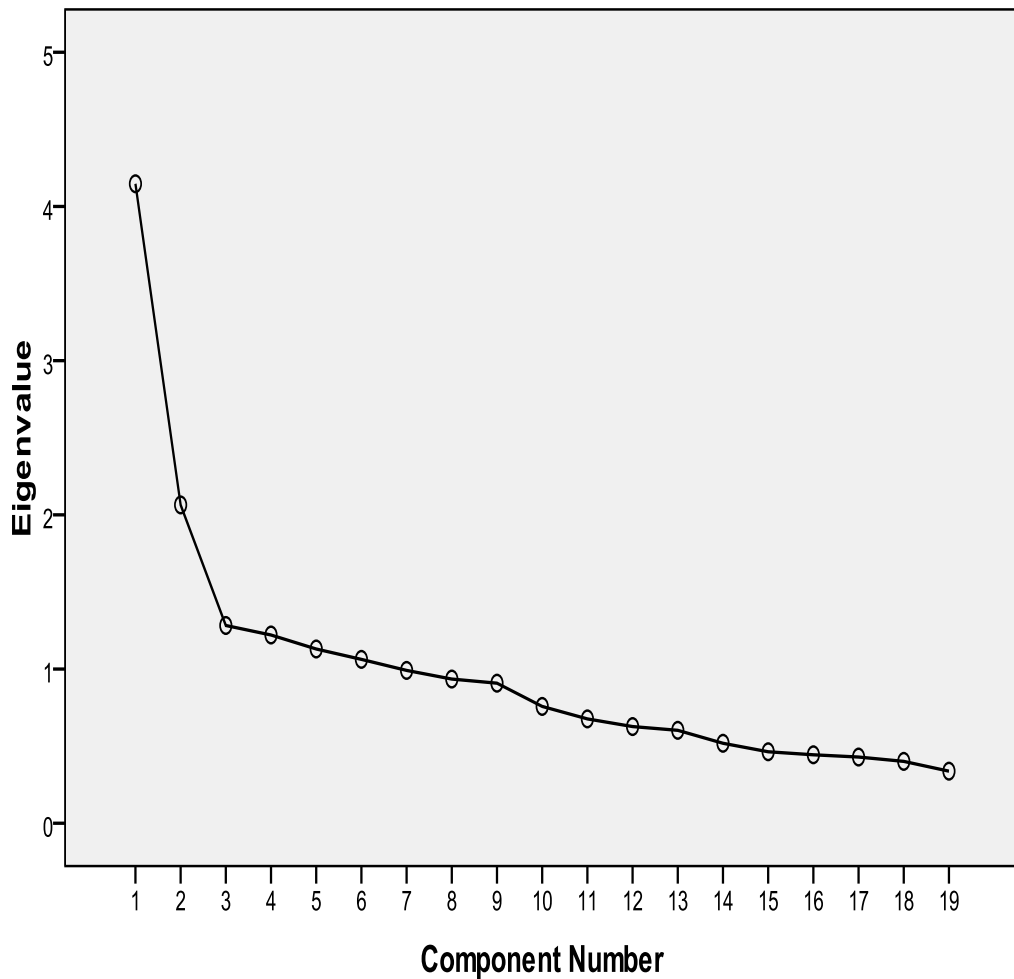


Figure 4.24: Scree plot of studying approaches of graphic arts students showing six factor solutions

Comparison Summary by year of study and by gender

As a final review of the data gathered from the research, a comparison was made between the learning conceptions and studying approaches results obtained from the year of study and gender. The results for the learning conceptions are summarized in Table 4.28. Two items were found to have significant differences when tested by gender. These were question (c) in the surface learning conceptions and question (f) in the deep learning conceptions. Females were found to be more favourable to the two questions.

Table 4.28: Overall comparison between independent variables in learning conceptions

Question	Year of study	Gender	Question subject
a. Getting on with the things you've got to do	No	No	A quantitative increase in knowledge.
b. Building up knowledge by acquiring facts and information.	No	No	The acquisition, of facts, methods, etc.
c. Making sure you remember things well	No	Yes	Memorising, making sure you remember things well
d. Being able to use the information you've acquired	No	No	Being able to use the information you have acquired.
e. Understanding new material for yourself.	No	No	The abstraction of meaning of different things and experiences.
f. Seeing things in a different and more meaningful way.	No	Yes	Using all the experiences in life.
g. Using all your experiences in life.	No	No	An interpretative process aimed at understanding reality.
h. Developing as a person	No	No	Developing as a person.
i. Being able to relate to people better	No	No	Being able to relate to people better

The overall comparison between independent variables results for the surface, deep and strategic studying approaches are summarised in Table 4.29. Again, the females, were found to be more favourable towards the questions.

Table 4.29: Overall comparison between independent variables in studying approaches

Question	Year of study	Gender	Question subject
S 01	No	Yes (F)	Uncertain about ability to cope with the study load
S 02	No	No	Memorizing without understanding what and why
S 03	No	No	Memorizing without understanding what and why
S 04	No	Yes (F)	Focusing on the minimum requirements in a course
S 05	No	No	Uncertainty about the usefulness and appropriateness of the (choice in) learning
S 06	No	No	Uncertainty about the usefulness and appropriateness of the (choice in) learning
D 01	No	No	Learning for personal meaning and understanding
D 02	No	No	Learning for personal meaning and understanding
D 03	No	Yes (F)	Linking what is learned to other courses and previous knowledge
D 04	No	No	Critically assessing the validity of what is being learned
D 05	No	Yes (F)	Critically assessing the validity of what is being learned
D 06	No	No	Learning as an exciting and gripping activity
T 01	No	No	Learning in a systematic and planned manner
T 02	No	No	Learning in a systematic and planned manner
T 03	No *	No	Disciplined learning which is evenly spread out
T 04	No	No	Being alert at what the teachers expect and value
T 05	No	No	Striving for a good result
T 06	No	No	Frequent and systematic checking on progress
T 07	No	No	Striving for a good result

Note: M = Male, F = Female,

4.7. Discussion

It is important to understand that learning conceptions and studying approaches are not static, they however relatively serve as indicators of how learners conceptualise learning and acquire studying approaches in response to their learning environment.

4.7.1. Discussion of ANOVA and Mean for Learning Conceptions by Year of Study findings

Results of the ANOVA for the 9 Learning Conceptions among 120 GA students by year of study (40 students in each) are attached as Appendix H. The 9 questions analysed using the ANOVA, indicated p was not less than .10 for any of the questions. Thus the null hypothesis was not rejected in any of the questions as shown in Table 4.30.

Table 4.30: Summary of ANOVA and Mean for Learning Conceptions by Year of Study (N = 120)

Subsection of survey	Total number of questions	Questions for which null hypothesis was rejected	Mean by Year of study		
			1st Year (n=40)	2nd Year (n=40)	3rd Year (n=40)
Surface Learning	4	0	3.95	3.96	3.93
Deep learning	5	0	3.91	3.78	4.05
	Average Total Mean by Year of Study		3.93	3.87	3.99

The mean differences with respect to year of study were found to be statistically insignificant between the three years of study. A comparison of the mode for these questions and a review of the visual data in the graphs provided additional insights for consideration.

An overall review indicates that more than 70% of students in the different years of study have a high opinion towards the surface learning conceptions, as all the frequency distribution graphs in questions (a) through (d), are strongly skewed to the left. The students' opinions reflect the social phenomena in TE that mastery of the task is important and time and energy are devoted to memorizing. The students are therefore able to replicate tasks. In essence, it shows that the students fit into a culture.

4.7.2. Discussion on *t* test and Mean for Learning Conceptions by Gender findings

The modal response for both males and females for questions (a) to (d) was similar 4,5,4,5. Very few respondents felt that learning was not being able to use the information that you have acquired, and most felt that they had to build up knowledge by acquiring facts and information. Overall, there is more favour towards the surface learning conceptions which however does not automatically translate to the students being rote learners.

The modal response for both male and female for question (i) was multimodal selecting scale 4 and 5 responses. On questions (e) through (h), the mode for both males and females was the same 4,4,4,5 in that order. Very few respondents disagreed with the question 'developing as a person' to be an important deep learning conception. Overall, there was less disagreement with the questions in learning as transforming knowledge through the experiences and understanding. The favourable view does not necessarily translate into permanent experiences and

understanding as learning changes with different contexts. Table 4.31 presents a summary of the number of questions for which the null hypothesis was rejected by subsection in the research Objective 2. In both the cases in which the null hypothesis was rejected, females more strongly agreed with the questions being made more than did males. Though the mean for the females is higher at 4.08, for the two subsections, the mean difference, between the males and females was

Table 4.31: Summary of t test results for differences in Learning Conceptions by gender (n=120: female =30, male = 90)

Subsection of survey	Total number of questions	Questions for which null hypothesis was rejected	Percentage rejected	Mean by Gender	
				Males n=90	Females n=30
Surface learning	4	1	25	4.08	3.91
Deep learning	5	1	20	4.09	3.85
Total mean average				4.08	3.88

shown to be significant relatively few times in comparison to the number of questions asked. In summary, mean scores for each of the subsections indicated that the respondents were generally favourable towards both the surface learning conceptions and the deep learning conceptions.

These results indicate that though the females had higher means in both the surface and deep learning conceptions confirming what Severiens & Ten Dam, (1994) had established, the females were more inclined to both reproducing knowledge as well as transforming knowledge more than the males, indicating that there is an improvement in the females' deep

orientations. Social networking seems to be evident as the females are able to express themselves as well as male students.

4.7.3. Discussion on ANOVA and Mean for Studying Approaches by Year of Study findings

Results of the ANOVA for the 19 questions in relation to research objective 3, studied nearly indicated p was less than .10 for only question T 03 in the strategic studying approaches sub-section where $p = .10$.

4.7.3.1 Surface Studying Approaches

Table 4.32 summarises the ANOVA results for S 01 to S 06. An entry was shown in the post hoc test column only if the p value was significant enough to reject the null hypothesis for the question.

Table 4.32: Questions S 01 to S 06 summary of ANOVA results for surface studying approaches by year of study (n=120)

Question number	F value	p value	Is Difference significant?	Post hoc test results (lower/higher mean)
S 01. Often have trouble in making sense of things I have to remember	1.120	.330	No	
S 02. Find that there's not much of the work here that you find interesting or relevant	1.119	.330	No	
S 03. Find much of what you are studying making little sense more like it's like unrelated bits and pieces	1.818	.167	No	
S 04. You feel overwhelmed by the sheer amount of material you have to cope with	.009	.992	No	
S 05. Not really sure what's important in lectures, so you try to get down all you can	.781	.460	No	
S 06. Often worry about whether you will be able to cope with the work properly	.254	.776	No	

Lower mean scores are considered more favourable towards the questions and higher scores less favourable. The mean difference with respect to year of study was not found to have significant statistical differences in the three groups. In all the cases where there were mean differences, the first-years tended to have lower means (3.41) than the second-years (3.51) and third-years (3.53).

4.7.3.2 Deep Studying Approaches

The mean difference with respect to year of study was not found to have statistical differences in the three groups in the deep studying approaches subsection. The third-years mean was 3.65, second-years 3.69 and the first-years had the highest with 3.75. Lower mean scores are considered less favourable towards the questions and higher scores are more favourable. A comparison of the mode for these questions and a review of the visual data in the graphs provided some additional insights.

The mode of responses by the three groups for the 6 questions was 1, 4, 5,5,5,5, indicating that most of the students had a positive stance towards the deep studying approaches, apart from question D 01. The frequency graphs for questions D 02 through D 06 showed that the students' responses were skewed to the left. A moderate percentage of neutral responses for some questions were noted. This could have been due to some of the students not understanding the instructions even when having had both verbal and written directions.

Table 4.33 summarises the ANOVA results for question D 01 to D 06. An entry is shown in the *post hoc* test column only if the *p* value was significant enough to reject the null hypothesis for the question.

Table 4.33: Question D 01 to D 06 summary of ANOVA results for deep studying approaches by year of study (n=120)

Question number	<i>F</i> value	<i>p</i> value	Is Mean Difference significant?	Post hoc test results (lower/higher mean)
D 01. Try to find out for yourself exactly what the author means when reading an article or a book	.532	.589	No	
D 02. First try to work out what lies behind it before tackling a problem or an assignment	.445	.428	No	
D 03. Try to see in your own mind how all the ideas fit together when you are working on new topic	.005	.995	No	
D 04. Find yourself questioning things you hear in lectures or read in books or on the internet	.282	.755	No	
D 05. Find ideas in textbooks or articles often setting you off on long chains of thought of your own	.107	.899	No	
D 06. Examine details carefully to see how they fit in with what's being said when you read	.183	.833	No	

4.7.3.3 Strategic studying approaches

Table 4.34 summaries the ANOVA results for T 01 to T 07. An entry is shown in the *post hoc* test column only if the *p* value was significant

enough to reject the null hypothesis for the question. Higher mean scores are considered more favourable towards the questions and lower scores less favourable. The mean difference with respect to year of study could have been found to have significant statistical differences in only one question T 03, relating to ‘quick at getting down to work whenever you need to’, $p = .10$, though subsequent post hoc testing did not identify the difference between the two groups as being significant.

Table 4.34: Questions T 01 to T 07 summary of ANOVA results of strategic studying approaches by year of study (n=120)

Question number	<i>F</i> value	<i>p</i> value	Is Difference significant?	Post hoc test results (lower/higher mean)
T 01. Organize time systematically when it comes to revising for exams?	.077	.926	No	
T 02. Work steadily throughout term or semester, rather than leave it all until the last minute	.898	.410	No	
T 03. Quick at getting down to work whenever you need to	2.351	.100	No	Second and Third/First
T 04. Often refers to knowledge sourced from the internet	1.202	.304	No	
T 05. Put lots of effort into studying because you are determined to do well	1.343	.265	No	
T 06. Don't find it difficult to motivate yourself	.074	.929	No	
T 07. Organize your study time carefully to make the best use of it	.723	.487	No	

In four cases where there were mean differences, the third-year students tended to have lower means than the second and first-years, while the second-years tended to have higher means in five cases. In the strategic

studying approaches, the second-years led with a mean of 4.03, followed by first-years with a mean of 3.95 and last were the third-years with 3.92.

While only one question nearly showed a significant mean difference between the years of study, all questions showed a strong positive attitude in relation to strategic studying approaches. A comparison of the responses from question D 03 (trying to see in your own mind how the ideas fit together when working on a new topic) to question T 06 shows that in the students' opinions, they all put effort and initiative in their studying. Third-years had the lowest set of mean scores for the strategic studying approaches section, first-years the next lowest and the second-year students the highest. In comparison, responses by the third-year students in the first two sections of the survey showed a wider range and the lowest mean. Question T 05 received the highest mean responses from the third-years. It is possible that this opinion with regard to putting a lot of effort into studying because you are determined to do well corresponds with question D 06 on carefully examining details to see how they fit with what is being said when reading.

4.7.4. Discussion on Mean and *t* test results for Studying Approaches by Gender findings

4.7.4.1 Surface studying approaches

The mean difference with respect to gender was found to be significant in questions S 01 and S 04 of the surface studying sub-section relating to 'often have trouble in making sense of things that I have to remember'

and 'you feel overwhelmed by the sheer amount of material you have to cope with'. Table 4.35 summarises the *t* test results for questions S 01 through S 06. Lower mean scores are considered more favourable towards the questions and higher scores are unfavourable.

Table 4.35: Summary questions surface studying approach t test results for gender (n=120: female =30, male = 90)

Question number	Female n=30	Male n= 90	Mean Difference	<i>t</i> value	<i>p</i> value	Is Mean Difference significant ?
S 01. Often have trouble in making sense of things I have to remember	3.73	3.30	.433	1.377	.009	Yes
S 02. Find that there's not much of the work here that you find interesting or relevant	2.96	2.82	.144	.445	.428	No
S 03. Find much of what you are studying making little sense more like it's like unrelated bits and pieces	3.96	3.67	.288	.944	.208	No
S 04. You feel overwhelmed by the sheer amount of material you have to cope with	4.56	4.25	.311	1.511	.028	Yes
S 05. Not really sure what's important in lectures, so you try to get down all you can	3.30	2.83	.466	1.396	.439	No
S 06. Often worry about whether you will be able to cope with the work properly	3.76	3.51	.255	.892	.869	No
Total Mean average	3.72	3.40				

While only two questions showed a significant mean difference between males and females, all questions showed a slight negative attitude in relation to the surface studying approaches. A comparison of the responses from question S 01 through S 06 shows that the males had lower mean responses in all the questions. It is possible that the male respondents felt that this studying approach was neither constructive nor reliable, especially when it leads to unrelated memorizing. This concurs with Severiens & Ten Dam (1994).

4.7.4.2 Deep studying approaches

While only two questions showed a significant mean difference between male and females, all questions showed strong positive reaction in relation to the deep studying approach, which leads to transformative learning (Table 4.36). A comparison of the responses from question D 01 to D 06, shows that in summary, the mean difference with respect to gender was found to be statistically significant in question D 03 ‘try to see in your own mind how all the ideas fit together when you are working on new topic’, and D 05 ‘find ideas in textbooks or articles often setting you off on long chains of thought of your own’ of the deep studying approaches questions. A review of the visual data in the graphs provided some additional insights for consideration. Students made concerted efforts in the deep studying approaches, but there was need to reflect on and improve the practice.

Table 4.36: Summary questions t test results for deep studying approach by gender (n=120: female =30, male = 90)

Question number	Female n=30	Male n= 90	Mean difference	t value	p value	Is mean difference significant?
D 01. Try to find out for yourself exactly what the author means when reading an article or a book	2.93	2.32	.611	1.940	.593	No
D 02. First try to work out what lies behind it before tackling a problem or an assignment	3.83	3.74	.089	.348	.271	No
D 03. Try to see in your own mind how all the ideas fit together when you are working on new topic	3.70	4.09	-.389	- 1.504	.019	Yes
D 04. Find yourself questioning things you hear in lectures or read in books or on the internet	3.63	3.68	-.044	-.150	.818	No
D 05. Find ideas in textbooks or articles often setting you off on long chains of thought of your own	3.90	4.10	-.200	-.746	.012	Yes
D 06. Examine details carefully to see how they fit in with what's being said when you read	4.03	4.27	-.233	- 1.044	.864	No
Total Mean average	3.67	3.70				

The mean difference of the questions except question D 01 and D 02 was negative, indicating that for the students in this particular research, females more often wanted to obtain transformative education and training. The two questions that the males responded less positively than females were 1 and 2. It is possible that the male respondents felt that these were not important areas just yet.

4.7.4.3 Strategic Studying Approaches

Table 4.37 summarises the results of the *t* test results for question T 01 to T 07, and indicates that the mean difference with respect to gender was not found to be significant in any of the questions in the strategic studying approaches. A review of the visual data in the graphs provided some additional insights for consideration.

While all responses showed that the students had a strong positive attitude towards strategic studying approaches, questions T 02 and T 07 show that the females favoured those particular strategic studying approaches

A comparison of the mean responses from S 01 through S 06 to questions T 02 and T 07 shows that there is more preference for the strategic studying approaches by both male and female students. The means for only two questions were negative, indicating that for the students in this study, the females were more willing to undertake their studies in a steady and organized manner.

Table 4.37: Summary questions t test results for strategic studying approach by gender (n=120: female =30, male = 90)

Question number	Female n=30	Male n= 90	Mean difference	t value	p value	Is mean difference significant?
T 01. Organize time systematically when it comes to revising for exams?	3.50	3.47	.022	.074	.847	No
T 02. Work steadily throughout term or semester, rather than leave it all until the last minute	3.83	3.94	-.111	-.435	.196	No
T 03. Quick at getting down to work whenever you need to	4.33	4.11	.222	1.030	.485	No
T 04. Often refers to knowledge sourced from the internet	3.93	3.83	.100	.379	.573	No
T 05. Put lots of effort into studying because you are determined to do well	4.56	4.27	.288	1.226	.117	No
T 06. Don't find it difficult to motivate yourself	4.10	3.98	.111	.393	.437	No
T 07. Organize your study time carefully to make the best use of it	3.90	4.00	-.100	-.353	.807	No
Total Mean average	4.02	3.95				

Making reference to the summary in the introduction, all four cases in which the null hypothesis was rejected, females more strongly agreed with the questions being made than did the males. For all three sub-sections however, the total mean difference between the males (3.68) and females (3.80) was shown to be significant relatively few times in comparison to the number of questions asked in the sub-sections.

4.7.5 Open-ended comments

Open-ended comments indicated that the surface learning orientation were common in the topics in general learning, as reported in the survey and were not just for the purpose of Graphic Arts.

In terms of insights for college lecturers, a few open-ended comments indicated that to the respondents some of the lecturers were routine in their approach to teaching, when they taught the historical background and growth of certain equipment used in Graphic Arts. As one comment indicated, *“some irrelevant topics in some subjects should be dropped. They are there and are taking a lot of time yet they do not assist in any way in future i.e. in typography naming parts of a typewriter yet it does not exist in the market today”*. The lecturers need to be sensitive to such reactions and ensure that historical background information taught is to enable the learners not to reinvent the wheel. The concepts are to enable the learners to acquire critical thinking and reflection skills in academics, and that they should not only be seen to achieve if they performed well in the theories, more than the practicals. From the open-ended comments, it

was realized that innovation and creativity demanded by the practical assignments, which the students loved, took more time to accomplish, leaving the students with little time to concentrate on the theoretical perspectives of what they were being taught. The comments are listed in Appendix G.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This chapter presents the research results summary, conclusions and recommendations.

5.2. Summary of Results of the Study

This research was conducted at two technical training institutions offering Graphic Arts courses using 120 students. It was expected that by studying this particular group, highlights of any differences in responses might result from the different studying methods employed by students at different years of study or by gender. Alternatively, due to lack of strategic desire, the different learning and studying orientations employed by students could hinder the development of appropriate learning and studying skills.

5.2.1 Summary of findings on learning conceptions, by year of study among students in Technical Education GA courses results.

Research Objective 1 looked at the differences in learning conceptions by year of study among students in Technical Education GA courses to show where the students were towards learning as:

- i) surface (reproducing knowledge) characteristics:
 - a. Getting on with the things you've got to do;
 - b. Building up knowledge by acquiring facts and information;
 - c. Making sure you remember things well; and
 - d. Being able to use the information you've acquired.

- ii) deep (transforming taught material) characteristics:

- e. Understanding new material for yourself;
- f. Seeing things in a different and more meaningful way;
- g. Using all your experiences in life;
- h. Developing as a person; and,
- i. Being able to relate to people better.

The overall mean for the learning conceptions was 3.93. The second-year had the lowest mean, below the overall mean in the learning conception (3.87) and the third years had highest learning conception mean (3.99) while the first-years had mean score of 3.93. In summary, mean scores for each of the sub-sections indicated that majority of the respondents had inclinations favourable towards both surface and deep learning conceptions questions. This indicates that the students in general held a strategic inclination in their learning conceptions. Appendix J summarises the ANOVA results for those sub-sections. The results of the ANOVA for the 9 questions studied, had no mean significant differences in learning conceptions, as found in the responses by year of study (the first, second and third-year).

5.2.2 Summary of findings on learning conceptions among male and female students in Technical Education GA course

Research Objective 2 looked at the differences in learning conceptions, by gender among students in Technical Education GA courses, to show where the male and female students were towards learning as:

- i) surface (reproducing knowledge) characteristics:
 - a. Getting on with the things you've got to do;
 - b. Building up knowledge by acquiring facts and information;
 - c. Making sure you remember things well; and
 - d. Being able to use the information you've acquired.

ii) deep (transforming taught material) characteristics:

- e. Understanding new material for yourself;
- f. Using all your experiences in life;
- g. Seeing things in a different and more meaningful way;
- h. Developing as a person; and,
- i. Being able to relate to people better.

In summary, mean scores for each of the subsections indicated that the respondents were generally favourable towards the surface learning conceptions ($f = 4.08$ and $m = 3.91$) but females were more favourable towards the deep learning conceptions ($f = 4.09$ and $m = 3.88$).

Results of the independent samples t test for the 9 learning conceptions studied indicated p was less than .10 in questions (c) and (f). Survey question (c) asked respondents to indicate the degree of their agreement or disagreement with the question (c): learning means: ‘making sure you remember things well’. A significant difference was established at $p < .019$. A significant difference was established in survey question (f): learning means ‘using all the experiences in life’ at $p < .004$, which is part of the deep learning conceptions. For those questions, the null hypothesis was rejected because the probability of obtaining the t test result if the null hypothesis was true, as it was less than 1 in 10.

In both cases in which the null hypothesis was rejected, females agreed more strongly with the two questions, that is, learning means: ‘Making sure you remember things well’ and learning means ‘Using all the experiences in life’ more than did males. For the two sub-sections,

however, the mean differences between the males and females were shown to be significant in relatively few times, in comparison to the number of questions.

5.2.3 Summary of findings on studying approaches, by year of study among students in Technical Education GA courses results.

Research Objective 3 looked at differences in studying approaches by year of study, among students in Technical Education GA courses with regards to:

- i) Surface studying approaches: related to lack of purpose, unrelated memorizing, syllabus boundness, fear of failure;
- ii) Deep studying approaches: related to seeking meaning, relating ideas, use of evidence and interest in ideas;
- iii) Strategic studying approaches: related to organized studying, time management, alertness to assessment demands, achieving and monitoring effectiveness.

The mean average for the three groups was 3.70, 3.74 3.70 for the first year, second year and third year respectively. This indicated that their studying approaches were actually similar.

The results of the ANOVA for the 19 questions indicated, that a significant difference, by year of study, nearly existed only in the case of Strategic Studying Approach question, T 03 , where studying means: “quick at getting down to work whenever you need to”. At $p = .10$.

However, subsequent *post hoc* testing did not identify the difference between the second/first and third two groups as being significant.

A conclusion can be made that all the three groups had a mixed approach to the studying approaches with the second-years leading in the strategic approach. The totals may also indicate an overall strategic approach inclination.

5.2.4 Summary of findings on studying approaches among male and female students in Technical Education GA courses results.

Research Objective 4 looked at differences in Studying approaches among male and female students in Technical Education GA courses with regards to:

- i) Surface studying approaches: related to lack of purpose, unrelated memorizing, syllabus boundness, fear of failure;
- ii) Deep studying approaches: related to seeking meaning, relating ideas, use of evidence and interest in ideas;
- iii) Strategic studying approaches: related to organized studying, time management, alertness to assessment demands, achieving and monitoring effectiveness.

For all three subsections, the mean difference between the males and females was shown to be significant relatively few times $f = 3.80$ and $m = 3.68$ in comparison to the number of questions asked in that sub-section.

The Independent Sample t test for the 19 questions indicated p was less than .10 for surface studying approaches questions S 01 and S 04, and questions for deep studying approaches questions D 03 and D 05. S 01 was ‘Often have trouble in making sense of things I have to remember’ at $p < .009$, S 04 was ‘You feel overwhelmed by the sheer amount of material you have to cope with’ at $p < .028$, D 03 was ‘try to see in your own mind how all the ideas fit together when you are working on new topic?’ at $p < .019$, and D 05 was ‘Find ideas in textbooks or articles often setting you off on long chains of thoughts of your own at $p < .012$. For these questions the null hypothesis was rejected because the probability of obtaining the test results if the hypothesis was true was less than 1 in 10. In all four cases in which the null hypothesis was rejected, females more strongly agreed with the questions being made than did the males.

For questions T 01 to T 07 in the study, there was no significant difference between the male and female responses. Nevertheless, it showed that the female students were willing to learn to try out new topics than the males. It also showed that the female students were more cognisant of the time factor and were, therefore, seeking ways of strategically succeeding with the lecturers’ guidance. The female students would be more receptive to being guided on the quantity of work that they expected to complete within the course duration. There were no significant differences in relation to the strategic approaches questions,

66.7% of the deep studying approach questions and 66.7% of the surface approach questions. Generally, the students, therefore, tended to be creative, even if they were prone to replication, and were strategically poised for success in their studies.

5.2.5 Summary of findings Learning Conceptions and Studying Approaches among students in Graphic Arts Factor Analysis Results

In addition to analyzing the survey data using the ANOVA and the independent t test, factor analysis was used to analyse the variances in the learning conceptions and the studying approaches of the Graphic Arts students.

5.2.5.1 Learning Conceptions

Principal components analysis was used because the primary purpose was to identify and compute composite learning conceptions scores for the underlying factors. The initial Eigen values showed that the first factor explained 28.1 % of the variance, the second factor 13.0 % of the variance and 12.3 explained the third factor. The three factor solution, which explained 53% of the variance, was preferred, because of its previous theoretical support. The ‘levelling off’ of Eigen values on the scree plot (Figure 4.23), was after three factors and therefore was not difficult to support. The variances linked the responses to a mixed surface and deep learning conceptions, which had been established by the mean scores. It indicates that there was indication of critical thinking and reflection combined with memorisation. The students used beliefs in

reproducing knowledge and later use experiences and understanding as transforming knowledge.

5.2.5.2 Studying Approaches

Principal components analysis was used because the primary purpose was to identify and compute composite studying approaches scores for the underlying factors. The initial Eigen values showed that the first factor explained 21.8 % of the variance, the second factor 10.0 % of the variance and 6.7% explained the third factor and 6.4% explained the fourth factor, 5.95% explains the fifth factor while 5.559% explains the sixth factor. The six factor solution, which explained 57% of the variance, was preferred, because of its previous theoretical support.

The ‘levelling off’ of Eigen values on the scree plot (Figure 4.24), was after six factors and therefore, was not difficult to support. The variances linked the responses to a mixed surface and deep studying approaches with strengths in the strategic studying approaches, which had been established by the mean scores. There is an indication of strategic thinking in attending to the studies and keeping to what is taught by the lecturers and contained in the syllabus. The students combined building facts, information, and putting a lot of effort in ensuring that they studied well.

5.3. Conclusions

In conclusion, paying attention to the existent learning conceptions and studying approaches processes are paramount in developing essential and

latest skills. These are crucial for higher student productivity, better employment creation rates, enterprise development and realization of industrialisation as envisaged in the goals of the MDGs, the EFA initiatives and the Kenya Vision 2030. The following conclusions arrived at from this research are divided into two sections. The first section relates to research objectives 1, 2, 3 and 4. The second section relates to the supplemental information gathered from the survey.

5.3.1. Conclusion on differences in learning conceptions (surface and deep) by year of study

With regard to research Objective 1 on differences in learning conceptions (surface and deep) by year of study, ANOVA test results do not warrant conclusion that there is a significant difference in learning conception by year of study in Graphic Arts TE courses. Although the means obtained by year of study, indicated slight differences, the ANOVA tests performed did not show that there were learning conceptions significant difference with regard to the several questions within the survey.

Reflecting on the phenomenon conceptual framework on which this study is based, indications are that the students had unfavourable high mean responses towards the surface learning conceptions and favourable responses towards the deep responses. Incidentally, analysing the GA Technical Education curriculum reveals that the students are expected to have a strong background in the reproducing knowledge, as middle level

supervisors and when they progress to manager status they should possess the deep skills. The trend could also be acceptable in TE Diploma course where the students are expected to build their theoretical base by reproducing knowledge and develop their practical skills by transforming the taught knowledge. It can be concluded, that there may be specific areas in which there is a significant difference, but not by year of study in learning conceptions, although this cannot be generalized.

5.3.2. Conclusion on differences in learning conceptions (surface and deep) by gender

On research Objective 2, differences in learning conceptions (surface and deep) by gender, *t* test results do not fully warrant the conclusion that there is significant difference in learning conceptions among male and female students. This is because the *t* tests did indicate there were significant differences in only two questions within the survey. One was the surface learning conceptions category question c) 'making sure you remember things well' at $p < .019$, and the second in the deep learning conceptions question f) 'using all the experiences in life' at $p < .004$. In both cases, the null hypothesis was rejected.

These questions were favoured more strongly by the females with a mean of 4.08, than did the males with a mean of 3.88. It can be concluded that the females were more proactive in wanting to learn, even if they had a greater inclination towards surface learning conceptions where learning is

known to be reproducing knowledge. These changes could be attributed to advancement of girl child awareness by various stakeholders.

5.3.3. Conclusion on Differences in studying approaches (surface, deep and strategic) by year of study

With regard to research Objective 3, differences in studying approaches (surface, deep and strategic) by year of study, the ANOVA test results do not warrant the conclusion that there is significant difference in studying approaches by year of study overall. Tests did indicate that there could be a difference in only one question between the first, second and third-years in the strategic studying approach. Nonetheless, it was found that the second-years had a favourable mean of 3.74, while the first and third-years tied at mean 3.70. It is concluded that the students showed an inclination towards the strategic studying approaches.

5.3.4. Conclusion on differences in studying approaches (surface, deep and strategic) by gender

In research Objective 4, differences in studying approaches (surface, deep and strategic) by gender, *t* tests results did not warrant the conclusion that overall there is significant difference in studying approaches by gender (male and female) students. Only tests on S 01, S 04, D 03 and D 05 did indicate that there were significant differences. Survey questions S 01 and S 04 included in the surface (rote) studying approach questionnaire asked questions on ‘uncertainty about the usefulness and appropriateness of choice of studying’, while S 04 investigated ‘syllabus boundness where students focused on the minimum requirements of the course’.

Question D 03 asked the respondents to indicate the extent to which they utilized the question: ‘try to see in your own mind how all the ideas fit together when you are working on new topic’, and D 05 looked at ‘find ideas in textbooks or articles often setting you off on long chains of thoughts of your own’. The null hypothesis was rejected by sub-sections of the research questions and overall. The females had lower mean scores to their deep studying approaches responses, but were found to be more favourable towards the questions than did the males. In the surface studying approaches, the females response, had higher means and were found to be more favourable towards the surface studying approaches. This indicated that the females were slightly more inclined towards the rote and reproducing studying approaches, but the gap was minimal.

5.3.5. Other conclusions

These findings demonstrate that there is still much to learn about Technical Education Graphic Arts, and how students perceive its worth. This research, while exploring the differences in learning conceptions and studying approaches based on year of study and male and female students did so by studying groups of individuals that have all had at least some exposure to computer technology and were close to the same age, hence the slight differences.

5.4. Recommendations

A greater understanding of the learning conceptions and studying approaches can provide valuable insights on how individual students can strengthen their learning conceptions and studying approaches.

5.4.1. Recommendations on differences in learning conceptions (surface and deep) by year of study

- 5.4.2.1. The fact that all the students zeroed into the strategic learning conceptions, by year of study, calls for the students to vary or diversify their learning skills moving from generic learning to transformative learning;
- 5.4.2.2. Catalysts to deep learning conceptions should be identified (critical thinking, teamwork and autonomous learning);
- 5.4.2.3. Students should be involved in identifying learning conceptions that can help them grapple with the careers that do not yet exist and base their learning performances with the future in mind.

5.4.2. Recommendations on differences in learning conceptions (surface and deep) by gender

- 5.4.2.1. Both male and female students had a greater inclination towards surface learning conceptions where learning is known to be reproducing knowledge. They should advance their social networking skills to change their learning motivations;
- 5.4.2.2. The students should consider the importance of prior knowledge/experiences which they can reflect on to be innovative and creative in their learning.

5.4.3. Recommendations on differences in studying approaches (surface, deep and strategic) by year of study

- 5.4.3.1. Assessments and discussions on the quality of studying and value that each approach adds would be greatly beneficial;
- 5.4.3.2. Diversification in the training of instructors/lecturers to identify the different approaches to be carried out using in-depth entry interviews at each level of study;
- 5.4.3.3. Adaptation of the 21st century skills, which demand transformative lifelong studying approaches.

5.4.4. Recommendations on differences in studying approaches (surface, deep and strategic) by gender

- 5.4.4.1 Both male and female students should recognise disciplinary differences and identify studying approaches that will leverage their opportunities across careers;
- 5.4.4.2 Networking should be encouraged to advance best practises among both male and female students;
- 5.4.4.3 Infrastructure that support experiential, interactive and explorative learning should be exploited, to reduce the reliance on lecturer cues for passing examinations.

5.4.5. Other recommendations

- 5.4.5.1 This study on students learning conceptions and studying approaches should be availed to students, lecturers and institutions for deliberations.

- 5.4.5.2 The curriculum developers should develop syllabi that are flexible, dynamic and challenging and not time bound, so as to enable students to develop critical thinking and problem-solving skills;
- 5.4.5.3 Teachers should adopt a variety of teaching methodologies through research, that enable the students to be more inquisitive and willing to face challenges instead of only anticipating what will be taught so as to pass the exams;
- 5.4.5.4 Technical training institutions should be proactive and flexible enough to encourage the deep learning which leads to high quality of learning and higher student satisfaction in the institutions;
- 5.4.5.5 Employers should work closely with the curriculum developers and the implementers to ensure that students are aware of the rapidly evolving 21st century skill demands.

5.5. Recommendations for further studies

Further studies to confirm these results, as well as to examine more thoroughly the effect of socio- cultural background differences, age, and education working life on learning conceptions and studying approaches will allow curriculum developers, educationists, students and other stakeholders to make more informed decisions about training and success on the job in Graphic Arts Technical Education and industry.

REFERENCES

- Africa Progress Panel (2010). *Africa Progress Report 2010*. Imprimerie Lenzi, Geneva Switzerland. www.africaprogresspanel.org
- AAUW, (2010). *Why So Few? Women in Science, Technology, Engineering and Mathematics* at www.aauw.org/learn/research/whysofew.cfm,
- Amutabi, M. (2011). Replace 8-4-4 system yes, but with what? *Opinion pg 13. Daily Nation. Thursday 29 December 2011: Issue no 17081*
- Anderson, C., (1995). Chapter 8. Student Learning in *Tutoring and Demonstrating: A Handbook*. Authors Forster, F., Ed.; Hounsell, D., Ed.; Thompson, S., Ed.; UC. SDA, Sheffield, Scotland S10 2GJ United Kingdom: University of Sheffield.
- Buckley, C. A., Pitt, E., Norton, B., & Owens, T., (2010). Students' approaches to study, conceptions of learning and judgements about the value of networked technologies. *Active Learning in Higher Education, 11(1)55-65*.
- Bunyi, G., (2006) in Chege, F. N., & Situma, D. N., (2006). *Girls and Women's Education in Kenya*. Nairobi: UNESCO.
- Burge, P.L., & Filer K., (2008). Gender. In *Encyclopaedia of educational psychology*/editor, Neil J. Salkind. Copyright © 2008. Great Britain: SAGE Publications, Inc.
- Byrne, M., Flood B., & Willis P., (2009). An inter institutional exploration of the learning approaches of students studying accounting. *International Journal of Teaching and Learning in Higher Education 2009, 20, (2), 155-167*<http://www.isetl.org/ijtlhe/> ISSN 1812-9129
- Chege, F. N., & Situma, D. N., (2006). *Girls and women's education in Kenya*. Nairobi: UNESCO.
- Cummings, T., (2011). *Women in Graphic Communication: A comparison of two studies. The Printing Industry Center Rochester Institute of Technology (RIT)*
- Cronbach, L.J., (1951). Coefficient alpha and the internal structure of tests. *Psychometrika 16:297-334*.
- Devlin, M., (2002). Taking responsibility for learning isn't everything: A case for developing tertiary students' conceptions of learning. Centre for the Study of Higher Education, The University of Melbourne, Parkville, Victoria Australia: University of Melbourne.
- Economist, (2009). Africa's population: The baby bonanza: Is Africa an exception to the rule that countries reap a "demographic dividend" as they grow richer? Aug 27th 2009 | JABI, Somalia: the Economist.
- Entwistle, N., (2010). Centre for Research and Learning, University of Edinburgh. The ASSIST manual and scoring key. Retrieved January 15 2010 from enhancing teaching-learning environments in undergraduate courses. <http://www.ed.ac.uk/etl/questionnaires/ASSIST.pdf>
- Entwistle, N., (2006). ESRC Teaching and Learning Research Programme. Project Proposal for enhancing teaching-learning environments in undergraduate courses (ETL) project, Higher and Further Education, University of Edinburgh, Paterson's Land, Holyrood Road, Edinburgh EH8 8AQ, tel: 0131 651 6669/6661, email: etl@ed.ac.uk: URL: <http://www.ed.ac.uk/etl>

- Entwistle, N., McCune, V., & Tait, H., (2006). *Approaches and Study Skills Inventory for Trainees (ASSIST)*. Report of the Development and Use of the Inventory (updated February).
- Entwistle, N., Tait, H., & McCune, V., (2000). Patterns of response to approaches to studying inventory across contrasting groups and contexts. *European Journal. Psychological Education* 15:33–48.
- Entwistle, N.J., & Ramsden, P., (1983). *Understanding student learning*. London: Croom Helm
- Entwistle, N. J., (1998a). Approaches to learning and forms of understanding. In B. Dart and G. Boulton-Lewis (Eds.), *Teaching and Learning in Higher Education* (pp. 72-101). Melbourne: Australian Council for Educational Research.
- Entwistle, N.J., & Peterson, E. R., (2004). Conceptions of learning and knowledge in higher education: relationships with study behaviour and influences of learning environments. *International Journal of Educational Research*, 41 (6) 407-428 2004.
- Felder, R. M., & Brent, R., (2005). Understanding student differences. *Journal of Engineering Education*, 94(1), 57-72.
- Ferla, J., Valcke, M., & Schuyten G., (2008). Learning conceptions and their impact on higher education students' study strategies and academic achievement. *Learning and Individual differences*, 18(2), 271-278.
- Ferla, J., Valcke, M., & Schuyten, G., (2007). Relationships between student cognitions and their effects on study strategies. *Learning and Individual Differences* (2007), DOI:10.1016/j.lindif.2007.11.003. Elsevier Inc. Article in press.
- Fuller, R., (1999). Do university students' conceptions of learning really influence their learning? School of Education. Edith Cowan University, Australia: Edith Cowan University
- Gay, L.R., Mills, G. E., & Airasian, P., (2009). *Educational research: competencies for analysis and applications*, 9th edition. New Jersey: Pearson Merrill. USA.
- Gerds, P., (2008). Shaping and evaluating vocational training offers. In Rauner, Felix and Maclean, Rupert (Editors) (2008). *Handbook of technical and vocational education and training research*. Bonn: UNEVOC. Springer
- Government of Kenya (1999). *The Koech Report: Report of the commission of inquiry into the education system of Kenya: Totally Integrated Quality Education and Training (TIQET)*. Ministry of Education, Science and Technology. Nairobi: Government Printer.
- Government of Kenya, (1999). *National poverty eradication plan 1999-2015*. Nairobi: Government Printer.
- Government of Kenya, (2003a). *Economic recovery strategy for wealth and employment creation 2003-2007*. Nairobi: Government Printer.
- Government of Kenya, (2003b). *Rapid appraisal on the status of Technical and Vocational Education and Training (TVET) in Kenya*. Nairobi: MOEST/GTZ
- Government of Kenya, (2005). *Sessional paper no: 1 of 2005, on a policy framework for education, training and research: Meeting the challenges of education, training and*

- research in Kenya in the 21st century. Ministry of Education, Science and Technology. Nairobi: Government Printer.
- Government of Kenya, (2007a), Kenya Vision 2030: A competitive and prosperous Kenya. Medium term period of the Vision 2008-2012. Ministry of Planning and National Development. Nairobi: Government Printer.
- Government of Kenya, (2007b). Gender policy in education. Nairobi: Ministry of Education.
- Government of Kenya (2010). Constitution of Kenya. Nairobi: Government Printer.
- Habibur, R. I., (2009). Empowerment of women: www.thedailystar.net
- Hansen, R., (2008). The roots of technical learning and thinking: situating TLT in schools. *Journal of Technology Education* 20 (1) 5-15.
- Heidelberg, (2008). *Heidelberg News*. Issue 266:2008. Frankfurt, Germany: Heidelberger Druckmaschinen Ag
- Heidelberg, (2009). Women in print. International network for women executives in the print media industry. Heidelberg Druckmaschinen AG. Heidelberg: Print Media Academy.
- Hermanussen, R., & Booy, C., (2002). Equal opportunity in higher technical education: past, present and future*. VHTO, P.O. Box 2557, 1000 CN Amsterdam, the Netherlands. E-mail: vhto@vhto.nl.
- Hooijer, J. G., (2010). In the business of learning: Approaches to learning of undergraduate students in business. Doctor of Philosophy Dissertation. Tilburg University, Netherlands.
- Hoskins, B., & Fredriksson, U., (2008). Learning to learn: What is it and can it be measured? *JRC Scientific and Technical Reports*. Rome, Italy: European Commission.
- Hounsell, D., (2005). Contrasting conceptions of essay-writing. In: Marton, F., Hounsell, D., and Entwistle, N., (eds.) *The experience of learning: implications for teaching and studying in higher education*. 3rd (Internet) edition. Edinburgh: University of Edinburgh, Centre for Teaching, Learning and Assessment. pp. 106-125.
- Howe, F., (2008). Task-oriented learning in Rauner, Felix and Maclean, Rupert (Editors) (2008). *Handbook of technical and vocational education and training research*. Bonn: Springer UNEVOC.
- Kember, D., Leung, D.Y.P., & McNaught, C., (2008). A workshop activity to demonstrate that approaches to learning are influenced by the teaching and learning environment *Active Learning in Higher Education* 2008 9: 43 DOI: 10.1177/1469787407086745
- Kenya Institute of Education, (1998). Diploma in Art and Design: Graphic Design Option. Nairobi: Kenya Institute of Education
- Kenya Institute of Education, (2002). Diploma in Printing Technology. Nairobi: Kenya Institute of Education
- Kenya Institute of Education, (2010). Diploma in Printing Technology. Nairobi: Kenya Institute of Education

- King, K., & Palmer R., (2007). Technical and vocational skills development. A DFID practice paper.
- King, K., & Palmer, R., (2006a). Capacities, skills and knowledge in the least developed countries: new challenges for development cooperation. Background paper for the 2006 least developed countries' report, mobilizing and developing productive capacities for poverty reduction, Geneva: UNCTAD,.
- King, K., & Palmer, R., (2008). Summary of Kenneth King and Robert Palmer's Paper: Skills for work, growth and poverty reduction: challenges and opportunities in the global analysis and monitoring of skills. London: British Council and UNESCO.
- Konayuma, G. S., (2008). Policy frameworks: major policy issues in technical education in Africa. Presented at the All Africa IVETA Conference 2008: Achieving Poverty Reduction Through Quality Vocational Education and Training through Partnership with Industry. Livingstone, 10-13 August 2008. Ministry of Science, Technology and Vocational Training. Lilongwe, Zambia: Zambia Policy Frameworks.
- Lai, P., & Chan, K., (2005). A structural model of conceptions of learning, achievement, motivation and learning strategies of Hong Kong teacher education students. Paper Presented at the Australian Association of Research in Education Parramatta Conference, University Of Western Sydney, Sydney, Australia, 28 Nov-2 Dec 2005.
- Learning and Skills Network (LSN) (2010). Learning – positioning paper. Fresh thinking for learning and skills. The Foresight Group RoundTable. Published by LSN. www.lsnlearning.org.uk
- Lindblom-Ylänne, S., & Lonka, K., (1999). Individual ways of interacting with the learning environment — are they related to study success? *Learning and Instruction* 9 1-18
- Long, W. F., (2000). *Detecting study approach dissonance in higher educational settings. An examination and use of the Approaches and Study Skills Inventory for Students.* Master of Letters Thesis. University of Aberdeen
- Long, W. F., (2003). Dissonance detected by cluster analysis of responses to the Approaches and Study Skills Inventory for Students, *Studies in Higher Education*, 28 21-36.
- Majumdar, S., (2009). Adapting to global trends in Asia-pacific. TVETipedia online community
- Marton, F., & Säljö, R., (1997). Approaches to learning. In: Marton, F., Hounsell, D. and Entwistle, N., (eds.) *The Experience of Learning: Implications for Teaching and Studying in Higher Education.* 3rd (Internet) edition. Edinburgh: University of Edinburgh, Centre for Teaching, Learning and Assessment. pp. 39 - 58.
- Marton, F., Hounsell, D., & Entwistle, N., (1984). The experience of learning. Edinburgh: Scottish Academic Press.
- Meyer, J.H.F., Parsons, P., & Dunne, T.T., Individual study orchestrations and their associations with learning outcomes,' *Higher Education*, 20, 67-89 (1990) in Felder, R. M., and Brent R., (2005). Understanding student differences. *Journal of Engineering Education*, 94(1), 57-72 (2005).
- Molyneux, M., (1985). Mobilization without emancipation? Women's interests, the state and revolution in Nicaragua, in *Feminist Studies* 11 (2): 227-254.

- Morris, J., (2002). The implications if research into the conceptions of the nature of learning of entering physiotherapy students for the achievement of high quality learning outcomes. Senior Lecturer in Physiotherapy, Colchester Institute (E-mail: Morris@colch-inst.ac.uk)
- Moser, C., (1993). Gender planning and development theory: Practice and training. London.
- Moustafa, W., (2009). Competency and research skills in technical education. mostaphaw@yahoo.com. Competency and Technical Education Consultant.
- Mugenda, O.M., & Mugenda, A. G., (2003). Research methods: quantitative and qualitative approaches. Revised Edition. Nairobi . ACTS Press.
- Ogol, L. A., (2000). Perception of female students experiences in technical education at the Moi Institute of Technology in Migori, Nyanza Province. Unpublished Masters of Education Project. University of Nairobi.
- Okech, J. G., & Asiachi, A.J., (1992). Curriculum development for schools. Nairobi: Educational Research and Publications.
- Orodho, J. A., (2009). Elements of education and social science research methods. 2nd Edition. Maseno, Kenya: Kanezja Publishers
- Orodho, J. A., (2009). Techniques of data analysis using statistical package for social sciences (spss) computer programme. Maseno, Kenya: Kanezja Happyland Enterprises.
- Palmer, R., Wedgwood, R., Hayman, R., King, K., & Thin, N., (2007). *Educating out of Poverty? A Synthesis Report on Ghana, India, Kenya, Rwanda, Tanzania and South Africa*, DFID, London, freely down-loadable or securable in hard copy through: <http://www.dfid.gov.uk/pubs/files/educating-out-poverty-70.pdf>
- Pavlova, M., (2007). Empowering individuals for the future: Technology education and technical education for sustainable development. Griffith Institute for Educational Research. Bonn: Springer. UNESCO-UNEVOC.
- Pavlova, M., (2009). Technology and vocational education for sustainable development. Griffith Institute for Educational Research. Nathan, Australia: Springer Science+Business Media.
- Rauner, F., & Maclean, R., (Editors) (2008). Handbook of technical and vocational education and training research. Bonn: Springer UNEVOC
- Richardson, J.T.E., (2006). Investigating the relationship between variations in students' perceptions of their academic environment and variations in study behaviour in distance education. *British Journal of Educational Psychology* 76:867–893.
- Richardson, J.T.E., Dawson, L., Sadlo, G., Jenkins, V., & Mcinnes, J., (2007). Perceived academic quality and approaches to studying in the health professions (WEB PAPER). Institute of Educational Technology, The Open University, Milton Keynes, United Kingdom, 2007; 29: e108–e116 *Medical Teacher*.
- Romano, F. J., (2009). Revision of “An investigation into the printing industry demographics”. 2009-2010 Research Proposals. The Printing Industry Center *Rochester Institute of Technology (RIT) No PICRM-2009-01*.

- Rowe, J.W.K., (2002). Approaches to study by first-year engineering students. School of Engineering and the Learning and Teaching Institute, Sheffield Hallam University, Sheffield, UK: Sheffield Hallam University.
- Sadler S. E., & Tsang, F., (1998). A comparative study of approaches to studying in Hong Kong and the United Kingdom. *British Journal of Educational Psychology*, 68, 81-93
- Saljo R., (2005). Reading and everyday conceptions of knowledge in F. Marton, D. J. Hounsell, & N. J. Entwistle (Eds.), (2005). *The Experience of Learning* (2nd Edn). Edinburgh: Scottish Academic Press
- Saskia, F., Galster, A., Kramer, J., Trang Le, Lukas L., Marz, B., Ragusa, L., Riede, C., Schneider, C., Schütz, S., Stein, M., Zebic, V., Ziegler, P., & Zöllkau, U., (2008). The strengths of print for brand and corporate communication: a comparative study of the advertising impacts of print and electronic media. *Heidelberg: Print Media Academy, Germany*.
- Scott D., (2008). Critical essays on major curriculum theorists. Cornwall, Great Britain: Routledge TJ International.
- Selangor & Federal Territory Chinese Printing Presses' Association (SFTCPPA), (1994). *A Reference Guide plus Information Book on Print*. Kuala Lumpur, Malaysia: Malaysian Printing.
- Severiens S. E., & Ten Dam G. T. M., (1994). Gender differences in learning styles: A narrative review and quantitative meta-analysis. *Higher Education* 27, 4, 487-501, DOI: 10.1007/BF01384906
- Speth, C. A., Namuth, D. M., & Lee D. J., (2007). Using the ASSIST short -form for Evaluating an Information Technology Application: Validity and Reliability. *Issues Informing Science Journal Volume 10, 2007*. Editor: Rowan Wagner. University of Nebraska-Lincoln, College of Agriculture and Natural Resources, Lincoln, Nebraska, USA cspeth2@unl.edu; dnamuth1@unl.edu; dlee1@unl.edu
- The Kenya Polytechnic University College (2008). *Graphic Arts Department. Handing over Report 2008*. Nairobi: KPUC.
- The Kenya Polytechnic University College (2009). *2009 Graduation Ceremony Booklet*. Nairobi Kenya: KPUC.
- UNESCO, (2006). *Girls and Science. A Training Module on Motivating Girls to Embark on Science and Technology Careers*. Edited by Andrew Clegg. Paris: UNESCO.
- UNESCO, (2009). *World Conference on Education for Sustainable Development: EFA-ESD Dialogue: Creating Synergies and Linkages for Educating for a Sustainable World*. Gerhard de Haan, Free University Berlin, Germany; International Advisory Group for the World Conference 31st March-3rd April 2009.
- World Bank, (2011). *2012 World Development Report: Gender Equality and Development* © 2011 The International Bank for Reconstruction and Development / The World Bank, 1818 H Street NW, Washington DC 20433, Telephone: 202-473-1000. Internet: www.worldbank.org

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APPENDIX A: Approval Letter from the National Council of Science and Technology

APPENDIX B: Introduction Letter to CEOs of selected Technical Education Training Institutions offering Graphic Arts in Nairobi, Kenya

LUCY ACHIENG OGOL

P.O.BOX 30231 00100. NAIROBI.

30th August 2011

To

.....

RE: LETTER OF INTRODUCTION FOR RESEARCH STUDY

The above refers.

I am undertaking research towards completing my Ph.D. thesis at the Kenyatta University, on **Learning Conceptions and Studying Approaches among Graphic Arts Trainees in Technical Training Institutions in Nairobi, Kenya**. The study aims to contribute to the development of a curriculum and instruction learning strategies, with the aim of not only increasing performance, but also attaining sustainable strategic and transformative education in Kenya. The study will comprise of three questionnaires and an observation schedule. The questionnaires will be administered to the students who are the main respondents. The observation schedule will be administered to you as the CEO. It should not take more than one hour to complete the questionnaires.

I encourage the students to be as forthright as they possibly can in answering the questions. Data collected through the questionnaires are secure and confidential. The students will not be identified in the subsequent analytical work. No one else will see the answers. No one within the institution, outside the institution, family members, or government authorities will see the answers. Accordingly feel comfortable in airing sincere viewpoints. The answers will be combined with those of other participants of this study. Research will be conducted in line with normal University standards of research as per the copy of the research approval from the National Council of Science and Technology.

If the students cannot answer some of the questions, please consult the researcher for clarification. The students should answer all the questions. After the research is complete a copy of the results will be sent to you. If you would like to know more about the research, you can contact me or the Chairman, Department of Educational Management, Policy and Curriculum Studies, Kenyatta University, Box 43844, Nairobi.

The success of this research depends a lot on your cooperation and assistance. I will be calling soon to seek an appointment with you on this respect, and look forward to your positive response. Thank you in advance for your support.

Yours sincerely,

Lucy Achieng' Ogot, B. Ed, M.Ed., Ph.D. Student

Email: lucyogol@gmail.com, tel +254751283618

APPENDIX C: Introduction Letter to Students in selected Technical Education Training Institutions offering Graphic Arts Courses in Nairobi, Kenya

Form No.....

Dear Participant

Introduction Letter to for Students in Graphic Arts Courses in Technical Education in Nairobi, Kenya.

These questionnaires have been designed to allow you to describe, how you go about learning and studying. The technique involves asking you a substantial number of questions which overlap to some extent to provide good overall coverage of different ways of studying. Most of the items are based on comments made by other students. Please respond truthfully, so that your answers accurately describe your actual ways of studying, and work your way through the questionnaires quite quickly, making sure that you give a response to every item.

Your responses are strictly confidential and will not be seen by other members of staff or students.

Part A: Background information

1.0 Name (optional):

2.0 Age:.....years

3.0 Name of Institution

4.0 Name of Course.....

5.0 Year of study.....

6.0 Sex Male..... Female

7.0 Academic Level before joining the present course

a). **KCSE.....Grade**
(optional).....

b). **Diploma Certificate**

c). **Craft Certificate**

APPENDIX D: Students Learning Conceptions Questionnaire for Graphic Arts Technical Education Courses

Instructions

What exactly do you think 'learning' means? You are given below a number of different meanings of the term learning. A scale of how close the word is to your thinking is given against each question. Indicate by putting a tick (✓) in one box against each question to show how close the question is to what **your own** thinking of the meaning of the word learning.

Key

VC= Very close, **QC**= Quite close, **RD**= Rather different **VD**= Very different.

Kindly try not to use **NC**= Not so close, unless you really have to.

	Learning means:	VC	QC	NC	RD	VD	
a.	Making sure you remember things well.	5	4	3	2	1	
b.	Developing as a person.	5	4	3	2	1	
c.	Building up knowledge by acquiring facts and information.	5	4	3	2	1	
d.	Being able to use the information you have acquired.	5	4	3	2	1	
e.	Understanding new material for yourself.	5	4	3	2	1	
f.	Using all the experiences in life	5	4	3	2	1	
g.	Seeing things in a different and more meaningful way.	5	4	3	2	1	
h.	Getting on with the things you've got to do.	5	4	3	2	1	
i.	Being able to relate to people better.	5	4	3	2	1	

APPENDIX E: Students Studying Approaches Questionnaire for Graphic Arts Technical Education Courses.

Instructions

How do you study? You are given a number of questions of study approaches that a student can use when studying. A scale of how the question applies to you is given against each question. Giving your **immediate** response, indicate the extent that the question applies to you in terms of your Graphic Arts course, by putting a tick in one box against each question. It is very important that you answer **all** the questions: when you've finished, please check you have done that.

Key: **VM**= Very Much, **M**= Much, **NA**= Not at All, **NS** = Not Sure

Kindly try not to use **NM** =Not Much, unless you really have to.

	To what extent do you:	VM	M	NM	NA	NS	
1.	Organize time systematically when it comes to revising for exams?	5	4	3	2	1	T1 3
2.	Not really sure what's important in lectures, so you try to get down all you can?	5	4	3	2	1	T1 1
3.	Try to find out for yourself exactly what the author means, when reading an article or book?	5	4	3	2	1	TO 9
4.	Quick at getting down to work whenever you need to?	5	4	3	2	1	TO 7
5.	Often have trouble in making sense of the things you have to remember?	5	4	3	2	1	TO 5
6.	Organise your study time carefully to make the best use of it?	5	4	3	2	1	TO 3
7.	Find much of what you are studying making little sense more like it's like unrelated bits and pieces?	5	4	3	2	1	S1 8
8.	Don't find it at all difficult to motivate yourself.	5	4	3	2	1	S1 6
9.	Feel overwhelmed by the sheer amount of material you have to cope with?	5	4	3	2	1	S1 4
10.	Find yourself questioning things you hear in lectures or read in books or on the internet.	5	4	3	2	1	S0 8
11.	Try to see in your own mind how all the ideas fit together when you are working on a new topic?	5	4	3	2	1	S0 4

12.	Work steadily through the term or semester, rather than leave assignments all until the last minute.	5	4	3	2	1	S0 1
13.	Examine the details carefully to see how they fit in with what's being said when you read?	5	4	3	2	1	D 17
14.	Find ideas in textbooks or articles often setting you off on long chains of thought of your own.	5	4	3	2	1	D 15
15.	Often worry about whether you will ever be able to cope with the work properly?	5	4	3	2	1	D 12
16.	Often refers to knowledge sourced from the internet	5	4	3	2	1	
17.	Find that there's not much of the work here that you find interesting or relevant.	5	4	3	2	1	D 10
18.	First try to work out what lies behind it before tackling a problem or assignment?	5	4	3	2	1	D 06
19.	Put a lot of effort into studying because you are determined to do well?	5	4	3	2	1	D 02

Do you have any additional comments about your ways of studying?

.....

.....

.....

.....

How well do you think you have been doing in your assessed work overall, so far, in the Graphic Arts course that you are pursuing?

.....

.....

.....

.....

Please make sure you have answered all questions.

Thank you very much for spending time completing these questionnaires: it is much appreciated.

APPENDIX F: Observation Schedule for the Graphics Arts Technical Training Institutions

Introduction

The observation schedule has been designed to allow the researcher to verify through documents and records to ascertain the information provided verbally by the students and lecturers.

University or College.....

a) The Graphic Arts course outlines and requirements;

- 1. Number of courses offered
- 2. Namely i).....
- ii).....
- iii).....
- iv).....

Brief background of institution

b) Male and female student enrolment per course;

Name of course	Student enrolment number	
	Female	Male

iii) Adequacy and suitability of GA teaching-learning materials used for learning.

	Adequate	Inadequate	Suitable	Unsuitable
Library				
Textbooks				
Internet				
Course books				
Others				

e) Adequacy and suitability of teaching-learning equipments and rooms used for learning.

	no	Adequate	Inadequate	Suitable	Unsuitable
Computers					
Printing equipment					
Classrooms					
Workshops					
Exhibition rooms					
Extra curricula spaces					

Thank you very much for spending time completing this observation schedule:

It is much appreciated.

APPENDIX G. Comments Obtained from the Two Questionnaires

1. Do you have any additional comments about your ways of studying?

1. Lecturer should be more practical than theoretical.
2. I usually study during the evenings or early in the morning when am well rested and attentive.
3. I study mostly when its exam time. If the topic is interesting, I do research on it and I master it and understand it well. I also study when really want and it doesn't matter whether there's an exam.
4. Adding God in my studies is important too. God provides me with the wisdom and knowledge through my Education.
5. I like interactive classes where the lecturer discusses a certain topic with students. When this happens, I try to grasp almost half of the points being discussed while the remaining half I grasp while revising. I find this a perfect approach to my study because the points just march straight HOME and they never come out!!
6. Yes! I revise/study smartly rather than hard e.g. highlighting the relevant issues in my notes/lectures to dwell on them later at a later date.
7. Research topics should be given when there is assurance of acquisition of answers or content- has guidance of what to be expected and from where. They should be timely in that a student should have good time to research and compile before presenting/examination.
8. Some irrelevant topics in some subjects should be dropped. They are there and are taking a lot of time yet they do not assist in any way in future i.e. in typography naming parts of a type writher yet it does not exist in the market today.
9. I like studying as a group. Where a task is given and the whole group try to solve it as a unit through researching. I like studying through the internet because it's where I get current and modern trends rather than our old outdated way of studying.
10. Getting information for studying from other sources other than the notes given becomes hard because not much about these sources of literature is available e.g. textbooks (specific ones).
11. After making notes from a lesson more often than not I find myself making briefer or shorter notes as I revise just to get a better understanding.
12. I prefer lecturers that we are issued with lecture notes before the class and then we get to discuss the points during the class.
13. When working on a project or assignment, as long as am feeling inspired I am able to concentrate more and I work faster when I listen to music as I work.
14. There is always too much work to ever have enough time to cover all in studying e.g. there is a lot in practicals and a lot I theory that I have to put together. At the end of the day, I find myself doing what I like best (the practicals).
15. Projects are relevant but they are too many and time for theory is needed, the many projects compromise the studying strategies.
16. I usually find it hard to concentrate in class and so I rather read at a separate moment. Usually it's hard to cope with the projects and at the same time to read.

17. Despite the fact that I have to avoid the 'NM' option, I find most of the answers, lying there for me so kindly make it less transitional by adding another option between 'NM' and 'M'.
18. Some lessons taught in schools that are irrelevant to your choice of career.
19. Revising at the last minute due to much time being consumed by the excess projects handed in for us to tackle each and every semester.
20. Apart from the practical jobs/works I do study only when I have exams.
21. Sometimes the projects are too much you rarely find time to revise on your notes. Therefore end up doing not so well in exams.
22. The Institution should encourage students form group discussion or such clubs to enable students understand and interact well thus won't be difficult when it comes to exams period.
23. Very little time in theory or being overwhelmed by too many projects. I wish I could find a way of balancing them.
24. By doing a lot of research of the course field and also being open to new ideas, technology making one flexible while studying with one aim at the end of the tunnel to be a good graphic designer.

2. Do you have any additional comments about your ways of studying?

1. I think students should be examined on relevant material as the course dictates in a clear language that they can decipher.
2. Lectures should be more practical in their ways of studying instead of just assuming things.
3. Some should correct the students instead of just seeing a wrong thing in the students work and letting it go.
4. Teachers should try and not be complicated in giving notes. They should use memorable means of teaching for passing of exams. Try and cope with the quick sharp minded and also the slow sharp minded.
5. The theory exams should be minimized to provide enough room for thought on practical exams. Theory exams should be done once in a year. Before the exams a deadline should be indicated for submitting all practical's then every student is given a week to prepare for the theory exams.
6. I prefer lectures that relate to current affairs, world issues, how topic (relevant) relates to the market/field.
7. We spent a lot of time on trying to complete huge amount of practical work and less time to study our notes.
8. I want to be examined on what I have been taught.
9. The system does not take into account theory work and most of the time people spend doing a lot of projects which to some extent waste out time or rather we don't have sufficient tune for reading for our exams. This results to poor performance.
10. I do admit that I slacken a bit on the early studying part, because I tend to study when I revise when exams get nearer. But I do grasp whatever the lecturer teaches, straight from his/her mouth, to the board towards me. So when time comes for studying, it's like I am brushing over what I already know.
11. I prefer a course which is not more theory rather than more practical based. This will prepare the student for the market outside. Too much theory will not HELP!!!

12. The amount of course work in relation to the time frame provided is unbalanced. There is a lot that is demanded at a small time frame, thus course work remains unfinished resulting negatively in the end result.
13. A student should be assessed on his understanding and relevance to the course he/she is taking i.e. as much as one has written notes the examiners should look at the relevance of the questions to the answer.
14. I think studying should be personalized and do much of digital work.
15. I prefer lecturers that we are issued with lecture notes before the class and then we discuss the points during the class.
16. Am convinced that am doing well in my achievements.
17. I think lecturers should teach relevant material that helps the students to understand the course and also be equipped to handle the current market they are to venture in the future. Lecturers should also give notes to students.
18. In cases whereby I don't quite understand the lecturer concerning a certain issue or topic, I usually ask for assistance from a fellow student whom might have understood more than me.
19. My way of studying as I can say is still challenged by the huge work load. What I can say is there should be a rather better summary of what should be covered to what is really supposed and very important to cover to make it easy to balance my studies and any other "need to dos".
20. I would suggest that exams are marked generally by reason and by considering the answering of the students with relation to should be answered.
21. I prefer also that lecturers provide the students with notes rather than lecturing them. Exams should only come from a single semester's work and not the entire course.
22. For the last question I would also add that most of the questions/exams related to lecture notes make most college graduate incompetent in a working environment or in situations where they have to think on their own.
23. As a graphic designer the school would improve in or rather more in computer studies.
24. I like taking my time studying the areas that the lecturer has directed us to put a lot of keenness in them for the purpose of performing marvellously in the exams and shun off the less important areas which won't earn me a lot of marks.
25. I'd prefer being given notes in class as compared to handouts, because some people never read the handouts and often start blaming the lecturer for not tackling a topic.
26. Students should not go to the net and steal ideas the way they are yet the net should motivate them or help them brainstorm about new unique ideas.
27. Good in research and materials. Good reports for lecturers and fellow students which motivates me to move on every day.
28. With lecturers that are open minded one is able to view things in a different perspective and with graphics being a lot of manual one need to do a lot of practice by either through the provided graphic programmes or manual skills.

3. How well do you think you have been doing in your assessed work overall, so far, in the Graphic Arts course that you are pursuing?

1. I feel I have been doing well and the course has enabled me to portray much of my creativity through the projects I have carried out.
2. I have been doing excellent for I learn new things and I get ideas every single day. It has opened my mind to think in a different way.
3. So far, am doing well and hope to continue so in the next two years ahead.

4. I believe that I have been able to express myself to the fullest of my ability under the
5. Pressure of time consuming work. It's not easy, but that is what makes me love doing it every day. It's my life's passion.
6. I have improved my artistic skills and learned more than I imagined. My work is now better and more artistic than before.
7. Am making good progress and am proud of me
8. I do well in specific subjects but others I fail to perform well.
9. Thank God am improving day by day and finally heading to be the best out of the best.
10. I have passed all my theory exams with the highest marks and also scored highest marks in the projects and practical exams. I know my mind is going to create the BEST out of myself.
11. I think I am quite proud of my current achievement. How I fare in my assessed work. But am not satisfied I try to accomplish/attain better standing after every assessment
12. Quite fairly in that there is a grand improvement in the design knowledge and work. With the wide scope of subjects undertaken, being above average is a credit because if one specialized in one or two subjects, he/she would have a marvellous performance.
13. Prefer lecturers who use teaching aids and examples of past students to teach and ensure we ape their performances. Some subjects are behind computer age and need re-editing or scrapped off because without computer knowledge nowadays, it's hard to utilize the concepts learned in class.
14. Quite good but the world is dynamic, it changes all time yet KIE are reluctant to change with technology. Computers especially graphics packages (adobe family) should be taught and given first priority and also be examined so as to prepare students well – lecturers assumes that computer is easy; you can learn by yourself – it's not.
15. I have been doing well and as for me, I think am benefiting from the study as it helps me to think wide in terms of entrepreneurship.
16. Very well, indeed – Thanks to Good both in theory and practical work
17. Basically I have been studying myself and I think for the three years I have studied shows that am an average student. My system of working on my projects has been going down and I have been motivating myself through many ways. Now my style or studying is fine and assessing myself have been working greatly. My aim is to get what I have always wanted in my life and going higher than I ever imagined is what am targeting and always have done that. Assessing myself has been great and I love it. Its helping me put down the challenges that I have been facing.
18. I have been an average student since the first time I started doing this course. When I started, I was a top notch higher than others, because I had determination. As the second and third-year kicked in, I fluctuated a bit because of the difficulties in the subject and a lot of information to group. But I did not derail from my studies. I am still an average student and what has kept me going is the passion for graphics. The more I learnt the more interesting it gets and I get determination to learn. My self- drive is always at 99% value.
19. I have improved not from what we have been taught in class but rather through interacting with friends and discussion groups. I get to learn how to do things practically. What we are taught in class, most of them are just not applicable to modern trends. Please do something!!
20. Some of the units have information that is currently irrelevant in the changing world and this absolute information is highly and thoroughly expounded in our

course work. The new and relevant information is either touched on or not included in the syllabus rendering a graduate backward in an evolved society thus required to upgrade his/her diploma in other technical institution to better fit the market.

21. With time I have come to discover that I can do more than I thought I could thanks to the teachers/lecturers who are ever pushing students to their limits. Since it's a digital era I believe graphic artist should put a lot of focus or more focus on computer generated design.
22. I have been doing quite well unless as for finishing the assessed work in good time.
23. I am doing well.
24. Am convinced that am doing well in my achievements
25. As of now I think am an above average performer and though I still have a lot to learn I am ready to face the challenges that are ahead so as to be the best I can be.
26. I think I have been doing quite ok; however, the amount of time given to complete assignments and projects should be extended so as to do good and quality work.
27. I know that I have improved in my work since joining the institute.
28. Well, in my practical work, I must say I have so much enjoyed and worked out of my best because I really think that is what my course is so much about. Theory side has been so much challenging because of so much that we have to cover. Surely, if I had power to make the ratio of theory to practical 1:4 I could definitely do so.
29. Pretty well and satisfied apart from the bulk of work or rather projects at hand and limited time. I have no complains since everything is relevant and understandable. I don't feel left out or lost its fine and easy to cope.
30. Graphic design has evolved with the changes in technology; this has brought about more of the use of the computers. My work has been hard trying to cope with painting. Students here are told to paint the designed works for presentation. This is irrelevant in the market right now. I propose that painting is only done in the first-year or scrapped out at all. This affects their overall performances in the final exam because most of the time it is used in painting as opposed to studying.
31. Not so well. In fact not well at all reason being probably the working pressure/work load pressure in relation to the due date time is unmatched and time is quite minimal and also due to the many irrelevant subjects that don't even add in to the students overall course study making them have to deal with so much that is so inappropriate.
32. Have been doing well though I have more challenges out there because we are not taught much in computer lessons.
33. On the side of exams I have been doing marvellous but when it comes to the projects, it has become a little bit difficult because most of the projects are demanding in terms of money and time especially in 3rd year. Sometimes you ask money from the parent and the first response you get is "Did I not clear the school fees?" So I think the kind of projects and the number of projects per semester should be reviewed.
34. OK
35. Average compared to others and the job market.
36. I have been doing so well, though at times I find myself stuck, and not knowing what to do i.e. you have projects to be done, research to be conducted, lectures to be attended. It makes one feel a lot of pressure at time but if one manages his/her time well, everything else goes on smoothly.

37. It's been a progress so far, a lot has been learned from the first time upto data, so I think I have been doing good, though it should be more computer oriented than it is so far.
38. Not so well. Since I feel like we have too much to work on, hence I haven't done them to my full satisfaction or potential.
39. I think I have been doing fairly well. I think projects should be reduced because most people concentrate too much on projects that they target the theory part thus they find themselves failing in their final exams.
40. I think I've been doing quite well, though there has been quite a lot of changes especially in terms of coming up with new original designs.
41. So far in the graphic art course I have been doing fairly in terms of my performance both in practical fields and theory part.
42. Fair because I tend to relax at some point saying that there is enough time yet when it reaches pin-up there isn't much that I have done, but am learning to use my time well so as not to happen again what I did last semester.
43. Doing a good job but still a lot is ahead of me and learning never stops in this world we are in. Practice makes perfect that is am still open to new methods, t
44. Technology to be able to pursue my graphic art course.

**APPENDIX H: ANOVA of Learning Conceptions among Graphic Arts Students
(n=120)**

ANOVA of Learning Conceptions among GA Students (n=120)

		Sum of Squares	df	Mean Square	F	Sig.	Mean
a. Getting on with the things you've got to do	Between Groups	.617	2	.308	.156	.856	2.908
	Within Groups	231.375	117	1.978			
	Total	231.992	119				
b. Building up knowledge by acquiring facts and information	Between Groups	.150	2	.075	.210	.811	4.725
	Within Groups	41.775	117	.357			
	Total	41.925	119				
c. Making sure you remember things well	Between Groups	.817	2	.408	.294	.746	3.692
	Within Groups	162.775	117	1.391			
	Total	163.592	119				
d. Being able to use the information you have acquired	Between Groups	.450	2	.225	.349	.706	4.475
	Within Groups	75.475	117	.645			
	Total	75.925	119				
e. Understanding the new material for your self	Between Groups	1.867	2	.933	.712	.493	3.918
	Within Groups	153.300	117	1.310			
	Total	155.167	119				
f. using all the experiences in life	Between Groups	2.600	2	1.300	.793	.455	3.675
	Within Groups	191.725	117	1.639			
	Total	194.325	119				
g. Seeing things in a different and more meaningful way	Between Groups	.650	2	.325	.227	.797	3.925
	Within Groups	167.675	117	1.433			
	Total	168.325	119				
h. Developing as a person	Between Groups	.950	2	.475	.454	.636	4.350
	Within Groups	122.350	117	1.046			
	Total	123.300	119				
i. Being able to relate to people better	Between Groups	6.950	2	3.475	1.678	.191	3.700
	Within Groups	242.250	117	2.071			
	Total	249.200	119				
Total Mean Average							3.93

APPENDIX I: Independent Samples *t*-Test overall mean results of Learning Conceptions

Independent Samples Test overall mean results of Learning Conceptions by gender (n = 120)

		Levene's Test for Equality of Variances		<i>t</i> -test for Equality of Means						
		F	Sig.	df	Std. Error Difference	90% interval of the difference of confidence level		F	M	
						Lower	Upper	=30	=90	
a. Getting on with the things you've got to do	Equal variances assumed	.193	.661	118	.29	-.23	.74	3.10	2.84	
b. Building up knowledge by acquiring facts and information	Equal variances assumed	1.541	.217	118	.13	-.11	.31	4.80	4.70	
c. Making sure you remember things well	Equal variances assumed	5.666	.019	118	.24	.05	.86	4.03	3.58	
d. Being able to use the information you have acquired	Equal variances assumed	.018	.893	118	.17	-.42	.14	4.37	4.51	
e. Understanding the new material for your self	Equal variances assumed	.011	.916	118	.24	-.38	.42	3.93	3.91	
f. Using all the experiences in life	Equal variances assumed	8.799	.004	118	.27	-.01	.88	4.00	3.57	
g. Seeing things in a different and more meaningful way	Equal variances assumed	.019	.890	118	.25	-.27	.56	4.03	3.89	
h. Developing as a person	Equal variances assumed	1.380	.242	118	.21	-.16	.56	4.50	4.30	
i. Being able to relate to people better	Equal variances assumed	1.164	.283	118	.30	-.10	.90	4.00	3.60	
Total mean average								4.08	3.88	

APPENDIX J: ANOVA of the Surface, Deep and Strategic Study Approaches by Year Of Study.

ANOVA of the surface study approach by year of study.

		Sum of Squares	df	Mean Square	F	Sig.	Mean
S 01. Often have trouble in making sense of things I have to remember	Between Groups	5.017	2	2.508	1.120	.330	3.41
	Within Groups	261.975	117	2.239			
	Total	266.992	119				
S 02. Find that there's not much of the work here that you find interesting or relevant	Between Groups	5.267	2	2.633	1.119	.330	2.86
	Within Groups	275.325	117	2.353			
	Total	280.592	119				
S 03. Find much of what you are studying making little sense more like it's like unrelated bits and pieces	Between Groups	7.550	2	3.775	1.818	.167	3.75
	Within Groups	242.950	117	2.076			
	Total	250.500	119				
S 04. You feel overwhelmed by the sheer amount of material you have to cope with	Between Groups	.017	2	.008	.009	.992	4.33
	Within Groups	114.650	117	.980			
	Total	114.667	119				
S 05. Not really sure what's important in lectures, so you try to get down all you can	Between Groups	.350	2	.175	.068	.934	2.95
	Within Groups	301.350	117	2.576			
	Total	301.700	119				
S 06. Often worry about whether you will be able to cope with the work properly	Between Groups	.950	2	.475	.254	.776	3.58
	Within Groups	218.375	117	1.866			
	Total	219.325	119				
Total Mean average							3.48

ANOVA of the deep study approach by year of study.

		Sum of Squares	df	Mean Square	F	Sig.	Mean
D 01. Try to find out for yourself exactly what the author means when reading an article or a book	Between Groups	2.450	2	1.225	.532	.589	2.48
	Within Groups	269.475	117	2.303			
	Total	271.925	119				
D 02. First try to work out what lies behind it before tackling a problem or an assignment	Between Groups	.717	2	.358	.243	.785	3.77
	Within Groups	172.750	117	1.476			
	Total	173.467	119				
D 03. Try to see in your own mind how all the ideas fit together when you are working on new topic	Between Groups	.017	2	.008	.005	.995	3.99
	Within Groups	180.975	117	1.547			
	Total	180.992	119				
D 04. Find yourself questioning things you hear in lectures or read in books or on the internet	Between Groups	1.117	2	.558	.282	.755	3.67
	Within Groups	231.550	117	1.979			
	Total	232.667	119				
D 05. Find ideas in textbooks or articles often setting you off on long chains of thought of your own	Between Groups	.350	2	.175	.107	.899	4.05
	Within Groups	191.350	117	1.635			
	Total	191.700	119				
D 06. Examine details carefully to see how they fit in with what's being said when you read	Between Groups	.417	2	.208	.183	.833	4.21
	Within Groups	133.375	117	1.140			
	Total	133.792	119				
Total Mean average							3.68

ANOVA of the Strategic Study Approach by Year of Study.

		Sum of Squares	df	Mean Square	F	Sig.	Mean
T 01. Organize time systematically when it comes to revising for exams	Between Groups	.317	2	.158	.077	.926	3.48
	Within Groups	239.650	117	2.048			
	Total	239.967	119				
T 02. Work steadily throughout term or semester, rather than leave it all until the last minute	Between Groups	2.617	2	1.308	.898	.410	3.92
	Within Groups	170.550	117	1.458			
	Total	173.167	119				
T 03. Quick at getting down to work whenever you need to	Between Groups	4.817	2	2.408	2.351	.100	4.17
	Within Groups	119.850	117	1.024			
	Total	124.667	119				
T 04. Often refers to knowledge sourced from the internet	Between Groups	3.717	2	1.858	1.202	.304	3.86
	Within Groups	180.875	117	1.546			
	Total	184.592	119				
T 05. Put lots of effort into studying because you are determined to do well	Between Groups	3.350	2	1.675	1.343	.265	4.35
	Within Groups	145.950	117	1.247			
	Total	149.300	119				
T 06. Don't find it difficult to motivate yourself	Between Groups	.267	2	.133	.074	.929	4.02
	Within Groups	211.700	117	1.809			
	Total						
T 07. Organize your study time carefully to make the best use of it	Between Groups	2.600	2	1.300	.723	.487	3.98
	Within Groups	210.325	117	1.798			
	Total	133.792	119				
Total Mean Average							3.97

APPENDIX K: Independent T Test Results of the Surface, Deep and Strategic Studying Approaches by Gender

1. Independent samples <i>t</i> test of surface studying approaches by gender (n =120)									
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Lower	Upper	F = 30	M = 90
S 01. Often have trouble in making sense of things I have to remember	Equal variances assumed	7.082	.009	1.377	118	-.088	.955	3.733	3.300
S 02. Find that there's not much of the work here that you find interesting or relevant	Equal variances assumed	.633	.428	.445	118	-.394	.683	2.967	2.822
S 03. Find much of what you are studying making little sense more like it's like unrelated bits and pieces	Equal variances assumed	1.606	.208	.944	118	-.218	.796	3.967	3.678
S 04. You feel overwhelmed by the sheer amount of material you have to cope with	Equal variances assumed	4.957	.028	1.511	118	-.030	.652	4.567	4.256
S 05. Not really sure what's important in lectures, so you try to get down all you can	Equal variances assumed	.603	.439	1.396	118	-.088	1.021	3.300	2.833
S 06. Often worry about whether you will be able to cope with the work properly	Equal variances assumed	.027	.869	.892	118	-.219	.730	3.767	3.511
Total Mean average								3.72	3.40

2. Independent samples *t* test of deep studying approaches by gender (n =120)

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	90% interval of the difference of confidence level		F = 30	M = 90
						Lower	Upper		
D 01. Try to find out for yourself exactly what the author means when reading an article or a book	Equal variances assumed	.287	.593	1.940	118	.089	1.133	2.933	2.322
D 02. First try to work out what lies behind it before tackling a problem or an assignment	Equal variances assumed	1.221	.271	.348	118	-.335	.512	3.833	3.744
D 03. Try to see in your own mind how all the ideas fit together when you are working on new topic	Equal variances assumed	5.691	.019	-1.504	118	-.818	.040	3.700	4.089
D 04. Find yourself questioning things you hear in lectures or read in books or on the internet	Equal variances assumed	.053	.818	-.150	118	-.535	.446	3.633	3.678
D 05. Find ideas in textbooks or articles often setting you off on long chains of thought of your own	Equal variances assumed	6.578	.012	-.746	118	-.644	.244	3.900	4.100
D 06. Examine details carefully to see how they fit in with what's being said when you read	Equal variances assumed	.029	.864	-1.044	118	-.604	.137	4.033	4.267
Total Mean Average								3.672	3.70

3. Independent samples <i>t</i> test of strategic studying approaches by gender (n =120)		Levene's Test for Equality of Variances		<i>t</i> -test for Equality of Means					
		F	Sig.	t	df	90% interval of the difference of confidence level		Means of	
						Lower	Upper	F = 30	M = 90
T 01. Organize time systematically when it comes to revising for exams?	Equal variances assumed	.037	.847	.074	118	-.476	.521	3.500	3.478
T 02. Work steadily throughout term or semester, rather than leave it all until the last minute		1.691	.196	-.435	118	-.534	.312	3.833	3.944
T 03. Quick at getting down to work whenever you need to	Equal variances assumed	.491	.485	1.030	118	-.135	.580	4.333	4.111
T 04. Often refers to knowledge sourced from the internet	Equal variances assumed	.320	.573	.379	118	-.422	.622	3.933	3.833
T 05. Put lots of effort into studying because you are determined to do well	Equal variances assumed	2.488	.117	1.226	118	-.102	.680	4.567	4.278
T 06. Don't find it difficult to motivate yourself	Equal variances assumed	.609	.437	.393	118	-.357	.579	4.100	3.989
T 07. Organize your study time carefully to make the best use of it	Equal variances assumed	.060	.807	-.353	118	-.569	.369	3.900	4.000
Total Mean average								4.02	3.95

