2-D AND 3-D DESIGN AT A UNIVERSITY OF TECHNOLOGY:

A RETROSPECTIVE OUTCOME

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DECLARATION BY CANDIDATE

I, the undersigned, hereby declare that the work contained in this dissertation is my own independent work and that this dissertation, or parts thereof, has not previously been submitted by myself or anyone else to any other institution in order to obtain a degree. I furthermore understand what plagiarism entails and am aware of the University's policy in this regard. As such, where external sources were utilised (whether a printed source, the Internet or any other source), due acknowledgement was given by means of a comprehensive list of references in accordance with departmental requirements.

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I, Johan Frederick Barnard, hereby declare that I have been appointed by Hilda Anna Faber (the Candidate) to attend to the linguistic aspects of the research report (excluding appendices) that is hereby submitted. To the best of my knowledge, all suggestions and recommendations made by me in this regard have been attended to by the above-mentioned candidate.

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ABSTRACT

Older views of curriculum and instruction are being replaced with an expanded vision of the place of visual arts in human experience. The current transformation of art education is not merely a broadening of curriculum content, but a response to the immediacy and mass distribution of imagery changes in teaching strategies that become inevitable.

This study focuses on the 2-D and 3-D Design module forming part of the new Diploma in Design and Studio Art as accredited in 2014 at a South African university of technology. This study furthermore examines the balance between prescriptive and intensive skills (technique) building versus dialogue and experimentation (conceptualization) in the 2-D and 3-D Design module.

Views were obtained through questionnaires, structured interviews and participant observation. The sample groups represent first-year 2-D and 3-D design students and Design and Studio Art lecturers. An analysis of these impressions and experiences indicates some common values between the groups. Themes emerge such as factual, conceptual, procedural and meta-cognitive informational factors.

The students were generally very positive as regards their lecturer and theory subject and were able to connect key elements to their practical work. Some preferred working in groups, while others enjoyed working independently. The students generally felt that lecturer encouragement was crucial in generating ideas and initially found the technique somewhat challenging. Time management also proved to be a factor. The modelling strategy was found the best way to demonstrate to the students what was expected of them. The students needed consistent motivation and it became apparent that the majority required a step-by-step learning experience. Lecturer instruction on first-year level thus remains an integral part of learning.

In conclusion this study illustrates that there is an overall balance between prescriptive and intensive skills (technique) building versus dialogue and experimentation (conceptualization) in the 2-D and 3-D Design module.

Key concepts: 2-D and 3-D design; conceptualization; prescriptive and intensive skills (technique) building; curriculum content and design; university of technology

DEFINITIONS

Abductive thinking: Something that may be

Brainstorming: An effective way to generate ideas by building on each other's ideas

Brief: A brief either dictates or negotiates requirements and constraints

Conceptualisation: Inventing or contriving an idea or explanation and formulating it mentally

Critique: Reflection of our own and of our peer's work

Curriculum: The guideline of the chapters and academic content covered by an educational system while undergoing a particular course or programme

Curriculum content: The totality of student experiences that take place in the educational process

Curriculum design: It includes the consideration of aims, intended learning outcomes, syllabus, learning and teaching methods, and assessment

Deductive thinking: Something that must still be

Design: To plan or to organise

Dialogue: Can be characterised by incisiveness, creativity, and the joining of diverse points of view into an interconnected understanding that gives rise to new insights, enabling decision-making and action. The quality of dialogue determines the quality of idea generation, problem–solving and how people make decisions

Experimentation: It is a process of questioning, testing of ideas and a search for knowledge

Inductive thinking: Something that is operative

Interdisciplinary: Consisting of cross-disciplines

Learner-centred learning: This refers to multiple of educational programmes that lend themselves to focus on the specific learning needs, interests, aspirations, or cultural backgrounds of individual students and groups of students

Meta-cognitive: Our ability to think about what we have learned and to make meaning of it

Mind-mapping: It is a way of generating ideas by showing relationships among pieces of the whole. It is often created around a single concept, drawn as an image in the centre of a blank page, to which associated representations of ideas such as images, words, and parts of words are added

Modelling strategy: Modelling is an instructional strategy in which the teacher demonstrates a new concept or approach to learning and students learn by observing

Multidisciplinary: Consisting of more than one discipline

Prescriptive and intensive

skills (technique) building: A skill is a learned power of doing something competently, a developed aptitude or ability

Quasi-quantitative method: When a sample is too small to be purely quantitative

Syllabus: An academic document that communicates course information and defines expectations and responsibilities

University of technology: A University of Technology offers technological career directed educational programmes, focuses on innovative problem solving research and engages with government/business/industry with communities as end users

Visual diary: A visual form of evidence of the student's progress, usually in the form of a sketchbook

2-D design (within CUT context): This deals with all that is flat such as composition, pattern, illusion and colour

3-D design (within CUT context): This covers all concepts relating to 3-dimensional form and structure, as well as related spatial issues

LIST OF ACRONYMS AND ABBREVIATIONS

2-D	**–**	**Two-dimensional**
3-D	**–**	**Three-dimensional**
ACRL	**–**	**Association of College and Research Libraries**
ACT	**–**	**Anti-conventional Thinking**
ALTC	**–**	**Australian Learning and Teaching Council**
ASCD	**–**	**Association for Supervision and Curriculum Development**
CAL	**–**	**Computer-aided Learning**
CCS	**–**	**Creative and Cultural Skills**
CHE	**–**	**Council on Higher Education**
CUT	**–**	**Central University of Technology, Free State**
DDSA	**–**	**Department of Design and Studio Art**
DEFSA	**–**	**Design Educators Forum of Southern Africa**
DFP	**–**	**Design for Performance**
DHET	**–**	**Department of Higher Education and Training**
DoE	**–**	**Department of Education**
ENTP	**–**	**Extraversion, iNtuition, Thinking and Perception**
FPD	**–**	**Fashion Product Design**
HE	**–**	**Higher Education**
HET	**–**	**Higher Education and Training**
HEQC	**–**	**Higher Education Quality Committee**
HEQSF	**–**	**Higher Education Qualifications Sub-Framework**
ICT	**–**	**Information and Communication Technologies**
IT	**–**	**Information technology**
MBTI	**–**	**Myers-Briggs Type Indicator**

NQF	**–**	**National Qualifications Framework**
NQFS	**–**	**National Qualifications Framework Standards**
NSS	**–**	**National Student Survey (United Kingdom)**
PBL	**–**	**Problem-based Learning**
QUT	**–**	**Queensland University of Technology**
RBL	**–**	**Resource-based Learning**
REALs	**–**	**Rich Environments for Active Learning**
REAP	**–**	**Reviewing Education and the Arts Project**
RSA	**–**	**Royal Society of Arts**
SAQA	**–**	**South African Qualifications Authority**
SQA	**–**	**Scottish Qualifications Authority**
STEPS	**–**	**Strategic Transformation of Educational Programmes and Structures**
TBL	**–**	**Team-based Learning**
UAL	**–**	**University of the Arts London**
UJ	**–**	**University of Johannesburg**
UK	**–**	**United Kingdom**
UoTs	**–**	**Universities of Technology**
USA	**–**	**United States of America**
WBL	**–**	**Work-based learning**

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CHAPTER 1

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1   Introduction

Freedman and Stuhr (2004:815) state that in moving away from the emphasis on traditional fine art disciplines, national and international art educators have to make way for a broader range of visual arts and cultural issues. In response to changing conditions in the contemporary world, a transformation of art education has been elected by contributors to the field. Here the visual arts such as popular arts and contemporary fine art are an increasingly important part of the larger visual culture that surrounds and shapes our daily lives. In the process, older views of curriculum and instruction are being replaced with an expanded vision of the place of visual arts in human experience. The current transformation of art education is not merely a broadening of curriculum content, but is also a response to the mass distribution of imagery. This transformation includes a new level of theorising about art in education that ties in to developing postmodern philosophies based on a growing environment of intercultural, intracultural and transcultural visualisations (Freedman & Stuhr 2004:816). Shifts to visual culture not only refer to expanding the range of visual art forms included in the curriculum, but also to addressing issues of imagery and artefacts that do not necessarily centre on form. These issues include the power of representation, the formation of cultural identities, functions of creative production, the meanings of visual narratives, critical reflection on technological pervasiveness and the importance of interdisciplinary connections. It can be said that emphasis is placed on the idea that the views, feelings and experiences of both lecturers and students could facilitate a deeper understanding of producing art as far as informed and critical decision-making skills can be utilised.

The Higher Education Act of 1997 replaced the Universities Act of 1995, the Tertiary Education Act of 1088 and the Technikons Act of 1993. Also important was the declaration of the NQF and HEQSF that subsequently required all programmes to be realigned. The reasoning behind this was to establish a single co-ordinated higher education system which promotes co-operative governance and provides for programme-based higher education as well as the restructuring and transformation of programmes and institutions with the aim of improving response to the human resource, economic and development needs of the Republic (CHE 1997).

The Higher Education Qualifications Sub-Framework (HEQSF) ascribes to the Council on Higher Education (CHE) the responsibility for developing standards for all higher education

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qualifications. The CHE must ensure that such qualifications meet the criteria of the South African Qualifications Authority (SAQA) for registration on the National Qualifications Framework (NQF) in terms of section 1(f)(ii) of the Higher Education Act as amended.

According to the South African Qualifications Authority (SAQA) examples of international institutions that have introduced integrated courses are Loughborough University in Leicestershire, United Kingdom (UK), who run an Undergraduate Programme consisting of Fine Art and Graphic Communication as well as the Art Institute of California - Inland Empire in the United States of America (USA) which offers a Diploma in Studio Arts. Students are given the choice of two disciplines from the range of art and design media available, including painting, photography, graphic design, computers in design, textiles and surface design, printmaking, ceramics, sculpture and video. Commercial Photography; Animation Art and Design and Fashion Design are also options (SAQA 2014).

As part of the Vision 2020 at the Central University of Technology (CUT), Free State, the strategic Transformation of Educational Programmes and Structures (STEPS) was launched in 2010. The program was borne out of formal meetings held with other academic institutions, government institutions, organisations and industry, with the specific goal being to determine the relevance of university program offerings in meeting the demands of industries and other external stakeholders (Mthembu, Orkin & Gering, 2012). This new programme enabled the CUT to offer revamped, brand new and demand-driven programmes incorporating aspects such as work-integrated learning in order to be responsive to the demands from government, business and industry (Mthembu 2009:214). In the past our current universities of technology (UoTs) – then named Technikons – were known for their three- to four-year National Diplomas; since then several of these institutions have merged either with other UoTs or with traditional universities. The changes that emerged from these amalgamations forced the UoTs to reconsider who they admit, what they teach, who they teach, and what the overall outcomes should be.

In its STEPS process, the CUT undertook such a view. According to Nwaila (2010), the then Director General of the Free State Province emphasised at the CUT's mid-2010 curriculum transformation conference that "the different key sectors of our region do not seem to be strategically positioned to deal with 21st century 'unknown' challenges, and we often seem quick to fall back on traditional, 'known' approaches and solutions" (Mthembu 2009:217). At a large preparatory conference held in 2010, numerous international, local and CUT inputs were presented. This was the first step in STEPS and contributions from high-level representatives of industry, government and parastatals were included. The aim was to express the broad expectations of large-scale employers of CUT graduates.

According to Du Pré (2010), the prime purpose of UoTs such as the CUT is the achieving of a developmental impact on its region through differentiated curricula. This means that students with diploma- rather than degree-level university entry qualifications are allowed entry. The end result is equipping them with graduate attributes. A further advantage will be that the specific niche-oriented qualifications will secure graduates mid-level jobs and a feasible career path. In addition, more versatile academic staff engaging in technology-infused teaching and innovatory research with external partners will result in UoTs contributing to the broader community. It is imperative for these institutions to command these products and processes in order to develop as multidisciplinary institutions into the future (Adam 2015).

In the field of visual arts, a new Design and Studio Art qualification was accredited in 2014. The following diploma-level courses were replaced by this newer qualification, namely *Fine Art*, *Fashion*, *Photography*, *Graphic Design*, and *Jewellery Design*. The new Design and Studio Art qualification was developed in such a way so as to maximise the development of a competent professional having both the knowledge and skills required for design- and/or art-related fields. On obtaining this qualification, the professional was able to competently integrate theory, principles, proven techniques, practical experience and appropriate skills in solving well-defined and abstract problems in the selected design and/or art fields (SAQA 2014:2). The appropriate application of skills in management, professional practice and research was proportionally integrated at all levels. The holder of this qualification was furthermore able to work independently as well as in a supervisory capacity within a spectrum of visual art sectors.

In this study the researcher focused on the 2-D and 3-D Design module and which forms part of the Design and Studio Art qualification. The subject content in 2-D and 3-D Design was made up of two sections. The first section included the introduction and study of concepts in design. These were conveyed through lectures, discussions and readings that took place in the theory class. A short, weekly presentation on terminology, 2-D and 3-D design elements and principles, sources of design inspiration and the design process was presented to the students. Discussions that cover the specific section followed throughout the course. Specific techniques and appropriate materials were utilised in the different fields of the visual arts such as graphic, interior, fashion and metal design as well as fine art to produce works in the respective studios. Through intensive conceptual, visual and material investigations, students were introduced to studio practice. Art pieces were produced during these direct bi-weekly lecturer instruction periods. Producing art is ultimately an ongoing process that makes use of informed and critical decision-making in order to determine appropriate outcomes to problems.

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1.2   Problem statement

With the implementation of the 2-D and 3-D Design subject, the literature indicated that students were expected to adapt and understand the challenges presented to them within the visual arts field of the higher education (HE) environment as the nature of knowledge that art and design encompasses is "procedural, provisional, socially constructed and ever changing" (Vaughan, Austerlitz, Blythman, Grove-White, Jones, Jones, Morgan, Orr, and Shreeve 2008. In: Drew 2008:125 – 148).

The transition from school to a higher education environment required a change in students' approach to knowledge, especially students who did not take or did not have the opportunity to take art as a subject at school. For example, even top students sometimes do not yet have the skills to recognise the essential fluidity of meaning in visual language, while average students generally often struggle more with uncertainty (Vaughan et al. 2008:129). In a pilot study undertaken at the CUT it was found that the art students also experienced problems regarding terminology, technique, time management and related issues possibly due to the fact that most of the students had not had art as a subject at school.

A study done by Hetland (2013:7) called Reviewing Education and the Arts Project (REAP), aimed at discovering what highly accomplished arts educators teach, how they teach and what their students learn in their classes. The researcher saw the educators trying to instil "eight studio habits of mind ", whenever teaching took place. They are observing, envisioning, reflecting expressing, exploring, engaging and persisting and understanding of the art world. Both the evidenced and the perceived range of expectations held by both the students and their lecturers always had to be considered with the implementation of the programme for the new Design and Studio Art qualification. As a result, introductory activities had a tendency to revolve around prescriptive and intensive skills building, which could lead students to value technical skill over dialogue and experimentation. The lecturers at the art school have also had to make a mind shift in their approach to tutoring. Whereas in the past they have been accustomed to being "specialists" in their fields, they were now being required to have a more "cross-field" approach. They also had to become more knowledgeable in areas they had previously been unfamiliar with. According to Clapp (2011:74), arts and arts education are no longer kept in discrete cultural silos. The World Wide Web has breached the walls of buildings with concepts that defy physical space, making museums, galleries, theatres, schooling and higher education all interconnected in today's mass multimedia on the Internet.

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1.2.1   Research questions

The primary research question is:

What are the core competencies that are considered critical in helping students to thrive in the world of work today, and what are the strategies that are necessary to ensure that students master the necessary skills successfully?

The secondary research questions are:

What are the perceptions of the students regarding their overall impressions and experiences of the new 2-D and 3-D Design module with regards to time management in and out of the class, their positive experiences, technical difficulties experienced, strong points and shortcomings?
What are the lecturers' feelings, knowledge and observations regarding the outcomes of the 2-D and 3-D Design module?

1.3   Main objective/co-objectives

The overall aim of this study was to gain insight into the balance between prescriptive and intensive skills (technique) building versus dialogue and experimentation (conceptualisation) in the new 2-D and 3-D Design module. The above-mentioned aim was realised by pursuing the following objectives:

Conducting a literature study in order to triangulate the theory with the outcomes.
Scrutinising and describing the students' overall impressions and experiences of the new 2-D and 3-D Design module with regards to time management in and out of the class, their positive experiences, technical difficulties experienced, strong points and shortcomings.
Exploring and describing the lecturers' feelings, knowledge and observations regarding the outcomes of the 2-D and 3-D Design module.

1.4   Methodology: Research approach

In order to gain reliable and truthful knowledge, the mixed methods research design was followed. Understanding and interpreting social interactions are two of the main purposes of qualitative research. In line with Yin's (2011:3) statement on qualitative research, this study aimed to explore the experiences of both the students and lecturers in order to gain insight into the balance between prescriptive and intensive skills building and dialogue and

experimentation. A phenomenological research approach in collecting data was furthermore followed. The main aim of this kind of research approach is to highlight and identify the specific phenomena through how they were perceived by the participants in a given situation – in this case the experiences of the lecturers and students involved in the 2-D and 3-D Design module. In a natural human setting this normally translates into gathering "deep" information and perceptions through inductive, qualitative methods such as interviews by the researcher of the lecturers involved in the module, participant observation of the researcher, and representation from the perspective of the research participant(s), in this case the students (Lester 1999:1). When these observations were conducted in a natural setting, it became a process of building a complex and holistic picture of the interest of the phenomenon (Yin 2011:8). Additionally, the present study was conducted in two phases.

Research design and plan

PHASE	METHOD (Quantitative)	SAMPLE (Purposive sampling)	OBJECTIVE
1	Structured questionnaires	First-year students registered for 2-D and 3-D Design n=13	– to scrutinise and describe the students' overall impressions and experiences of the new 2-D and 3-D Design module with regards to conceptualisation and skills building
	(Qualitative)		
2	Individual semi-structured interviews	CUT lecturers involved in the teaching of the 2-D and 3-D Design module: n=5	– to explore and describe the lecturers' feelings, knowledge and observations regarding the outcomes of the 2-D and 3-D Design module
	Participant observations	The same group of students that was part of the quantitative phase n=13	– to foster an in-depth and rich understanding of the behaviour of the students concerning conceptualisation and skills building

Figure 1.1 Research framework and phases of the study

1.5   Population and sample

The population group for this study consisted of students and lecturers involved in the 2-D and 3-D Design module offered by the Department of Design and Studio Art at the CUT. The sample consisted of 13 first-year students out of 51 registered in 2015 for the 2-D and 3-D Design module. At the beginning of the year, the total population of 51 students had been divided randomly into four groups of 12 to 15 students in each group, with each group allocated

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a letter designation. For the purpose of this study, the researcher only selected Group A to be part of the observation group to complete the questionnaire. Firstly, the researcher was also one of the lecturers in the 2-D and 3-D Design module. It was therefore not possible for the researcher to observe the students while lecturing another group at the same time. Secondly, to attempt objectivity, the researcher could not observe or gather data from the group that she had already taught. Therefore, by a process of elimination, Group A was selected. Further with regards to this decision, Creswell and Plano Clark (2011:172) indicate that when it comes to the number of participants, it is more beneficial to select a smaller group rather than a large number of participants or sites.

1.6 Data collection procedures

Quantitative Phase:

In the quantitative phase data was collected by means of structured closed-ended questionnaires that were in a set format. A five-point Likert scale was also used to measure attitudes, views, and feelings.

Qualitative Phase:

In the qualitative phase individual face-to-face interviews were conducted which generated rich information that helped to clarify the phenomenon under study. Participation observation entailed observing respondents in their actual workplace or in the production process.

1.7 Data analysis

Related data on an inquiry was collected by the researcher, after which the analysis of the data emerged from the data itself. The constant comparative method is one way to conduct an inductive analysis. A phenomenological research approach is a holistic approach which probes into the contexts within which human experiences arise and is thus concerned with learning from particular instances. Qualitative research explores the inner world of perception and meaning-making in order to understand, describe, and explain certain processes from the perspective of the participants (Bazeley 2009).

1.8   Reliability and validity in qualitative research

With a view on establishing the trustworthiness of the qualitative research in this study, terms such as credibility, transferability, dependability and conformability were used. Credibility was enhanced by means of triangulation, by using multiple data sources such as observation, questionnaires, interviews and literature (readings). During observations the researcher had to prove the accuracy of the observations being made throughout the research. Validity determines the credibility of a study. In this study the interviews were compared to the students' answers on the questionnaires as well as the researcher's observations.

Reliability refers to the consistency and accuracy of a study. By means of a pilot study conducted in 2014 it was found that questions posed to respondents and interviews must be appropriate. A research project must also be as accurate and truthful as possible (Booth, Colomb & Williams 2008:219). All quotes, paraphrases and summaries were furthermore acknowledged according to accepted academic standards and practices.

All the participants involved were consulted and the aim of the study was explained in an information leaflet. Questionnaires were handed out to the students by an independent/neutral party and not by the lecturer involved in the teaching of the 2-D and 3-D Design module. In this study, precautionary measures were furthermore undertaken to deal with possible "bias".

1.9   Division of chapters

This dissertation is divided into six chapters. Chapter 1 deals with the introduction and background to the study while Chapter 2 presents a literature review. Chapter 3 sets out the methodology employed in this study and Chapter 4 the quantitative phase of the research. Chapter 5 deals with the qualitative phase of the study and whereby the interviews with the lecturers as well as the observations of the students were explored. Finally, Chapter 6 includes the final conclusions drawn and insights gained from the study as well as recommendations for further research.

1.10   Conclusion

In the following chapter the core competencies that are considered critical in helping art students to thrive in the world of work today will be discussed. The core competencies are *Learning and Innovation Skills*; *Information, Media and Technology Skills*; *Life and Career Skills* as well as *Productivity and Accountability*. Following this discussion are the strategies

ensuring mastery of these competencies and which are *Instruction and Curriculum*, *Professional Development*, *Learning Environment* and *Reflection and Assessment*.

CHAPTER 2

LITERATURE REVIEW

2.1 Overview

This chapter provides an outline of the core competencies that are considered critical in helping art students to thrive in the working world today. The Central University of Technology (CUT) as such does not have a model that encompasses the student attributes that are in alignment with the National Imperative (Vision 2030) mentioned in section 2.3, therefore the researcher used the following model that closely represents these attributes. The combined input from teachers, education experts, and business leaders led to the development of a unified, collective vision for learning known as the *Framework for 21st Century Learning: Student Outcomes and Support Systems* (Partnership for 21st Century Learning 2007). The main goal was to hereby assist educators and practitioners in teaching fundamental academic subjects, as well as to define and illustrate the skills and knowledge required by students to succeed in work, life and citizenship, including the support systems necessary for 21st century learning outcomes. The core competencies are *Learning and Innovation Skills*; *Information, Media and Technology Skills*; *Life and Career Skills* as well as *Productivity and Accountability*.

The aforementioned core competencies have been considered in the development of the 2-D and 3-D Design curriculum. Following this discussion are the strategies ensuring mastery of these competencies and which are *Curriculum and Instruction*, *Professional Development*, *Learning Environment* as well as *Reflection and Assessment*. The chapter concludes by reflecting on the Design and Studio Art qualification offered at the Central University of Technology, Free State (CUT) with specific focus on the 2-D and 3-D Design module. The purpose of this chapter, therefore, is to capture the ideal curriculum for 2-D and 3-D Design, benchmarked against current curriculum development theory, so that that curriculum can form the basis for the evaluation of the effectiveness of the implementation of the curriculum (and which will be undertaken in Chapters 4 and 5 respectively).

2.2 Introduction

With the introduction of universities of technology (UoTs) in 2004 as centres of education these institutions have continued to affect the new role which Higher Education (HE) will play. This new role comprises a more meaningful contribution to social and economic development (Winberg 2004:38). Departments of Visual Arts and Design within such institutions felt these effects. The South African educational system has a complicated social structure, which has

led to its development being impacted quite extensively. De Beer (2010:92) is of the opinion that the "links" that exist between government, industry, higher education institutions and the creation of partnerships are fundamental and that these connections must interact and co-develop. Johnson, Louw and Smit (2010:113) put forward that this partnership must serve society and in doing so make knowledge tangible. The shift that has ensued for faculties and current and future educational offerings is crucial in the driving force behind a UoT.

Research has shown that the assumed role of a UoT is that of an entrepreneurial institution (Sooful 2013:238), which ultimately broadens the view of the student on education, while at the same time dealing with the world's intricacies. Problem-solving knowledge is generated and students are allowed to take risks. Today the value of design thinking is seen by educators as an important introduction into the world of work.

Subotzky (1999:418) reiterates that the present context of higher education programmes in South Africa provides an opportunity for the UoT to remodel itself. In doing so it is giving vision to relevant, applicable knowledge and at the same time having curricula which focus on problem-solving skills, interpersonal communication, and learning to learn. Du Pré (2010:21) is of the opinion that curricula and research programmes that reflect problems and concerns of industry, community and society at large are very relevant and important to a UoT. As a society that is constantly evolving and being competitive, as well as having designs of being "First World", the paradigm shift in education should be in keeping with this. With the acceptance of it being a university with a technology status, the concept of a UoT in South Africa has further developed into the idea that higher education should be focussed towards an elevated status of faculty and educational offerings. It should further be a learner-centred institution which develops knowledge through innovation which can be commercialised. With this in mind, the proposals for new educational programme offerings are currently underway for acceptance by the Department of Higher Education and Training (DHET). At the CUT, and specifically in the Department of Design and Studio Art, an inter- and multidisciplinary diploma called Design and Studio Art was designed and accepted by the DHET. This diploma is designed in a manner which encourages a broad conceptual understanding of design and studio arts, and which can be flexibly applied across a range of different creative media. Graduates are likely to pursue careers as creative practitioners (whether in fashion, photography, digital and graphic design or visual arts practice – offerings in the selected researched department).

South Africa is not the only country where major higher education reform is taking place. Over the past decade countries such as the USA (Bok 2015:9,10), Canada (Jones 2012:1-4) and Australia (Southwell & Morgan 2009:5) have also launched large scale re-curriculation of their

educational systems. The emergence of a global economy, the influence of technological inventions, changes in the organisation of work, the change in expectations of the readiness of learners to adapt in the workplace, and the need for critical thinking and problem-solving skills are among the main reasons behind this change. As early as 1986, Shuell (as cited by Biggs 2006:349) expressed the opinion that if students are expected to learn desired outcomes in an effective manner, the lecturer's main task is to encourage his or her students to achieve those outcomes through engaging them in learning activities that are likely to produce the desired result. It is not so much what the lecturer does, as opposed to what the student's actions are, that is actually more important in influencing what the student learns. Therefore, learner-centred learning (2.4.1.1) sets out to stimulate creativity, critical thinking, problem-solving and interpersonal communication. In the *Manual for Learning and Teaching at the Central University of Technology* (Hay, Mahlomaholo, Van der Merwe, Brussouw, Lambrecht & Badenhorst 2004:22) emphasis is placed on the students' active participation in their learning by means of a student-centred approach. By developing new skills and understanding and nurturing the desire and skills to continue learning, students can build on previous learning and take responsibility for self-directed learning. At the CUT the students' learning needs are the main driver behind curriculum design and delivery, rather than the expediency and preference of academics. Critically, therefore, the same curriculum design, delivery and assessment strategies are geared towards what the lecturers want their learners to demonstrate successfully at the end of the course. Thus the main aim of curriculum design is to empower students to achieve outcomes which are specifically, explicitly and visibly described, knowing all students can achieve these outcomes, and that the students will be able to *do* significant things at the end of their time at the CUT. The curriculum (as any curriculum) should be designed with the end product in mind. Thus any curriculum design starts with the student outcomes (the destination) and then determines the curriculum, namely the routes to get there (Hay et al. 2004:22). This is generally known as the "design down, implement up" approach to curriculum design. This was the approach followed for the curriculum under review in this research and which has led to the research concern, namely an investigation into the effectiveness of the curriculum to achieve the goals that it set out to achieve.

2.3   Student outcomes

As part of vision 2020 the CUT Graduate Attributes Project was introduced in support of "social and technological innovation in socio-economic development". Furthermore, this is in alignment with the National Imperative (Vision 2030). The overall aim is to ensure that when

students graduate from CUT, they are fully able to contribute to the world of work (Industry). Firstly, "sustainable development" means not only to be sensitive to the environment, but also to see oneself as part of society which is socially responsible. "Community engagement" means to partake socially in one's communities. Recognising opportunities and turning them into enterprising ideas is "Entrepreneurship" and goes together with basic business skills. "Innovation" and critical thinking enable the student to "solve real world problems". Students must be able to apply theoretical knowledge that will in turn lead to the creation of "new ideas, methods, techniques, practices, products and services in a variety of contexts (technology, commerce, social systems)". Students must be able to use information and communication technologies efficiently so as to become "technologically literate". Being adept at basic mathematics, budgeting and financial management skills is essential in order to be "numerate". Students should be able to communicate proficiently both orally and in writing. In order to successfully negotiate and persuade others one needs to be self-assured and eloquent. Technical and conceptual competence means to demonstrate depth of specialised disciplinary knowledge and skills, as well as being able to apply them in different contexts to solve problems. Students should be able to work independently as well as in "teams," and self-management of their own learning, work and life is important. "Citizenship and global leadership" fundamentally encompasses making a meaningful and positive contribution to society, having ethics and being visionary leaders who can show leadership in different contexts (cut.ac.za/vision-2020-2/).

The following illustration outlines the core competencies that are considered critical in helping students to thrive in the world today. Each of these core competencies will subsequently be described in more detail below.
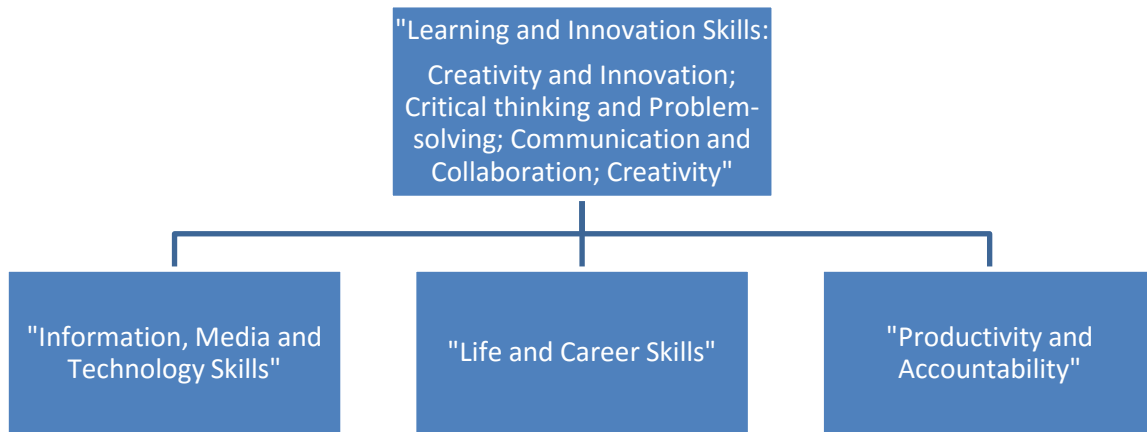
Fig. 2.1: Core competencies considered critical in helping students to thrive in the world of work today (Adapted from *Framework for 21ˢᵗ Century Learning: Student Outcomes and Support Systems*) (Partnership for 21ˢᵗ Century Learning 2007:1)

2.3.1 *Learning and Innovation Skills*

With higher education and employment requirements becoming more competitive, complex and technical, it is argued that students will require skills such as "creativity and innovation, critical thinking and problem-solving as well as communication and collaboration skills". These are required not only to successfully navigate the modern world, but also to excel in challenging careers and processing increasingly complex information (DoE: Education Glossary − *critical-thinking*).

2.3.1.1 Creativity and Innovation

According to Leonard and Swap (1999) (cited by Hagemann 2010:4), developing and expressing possibly useful original ideas can be seen as creativity. An invention or a creative idea becomes an innovation only once it has found a market or at least a practical way to apply that idea. According to Nelson and Stolterman (2012:11), "[o]utside of nature, designers are the prime creators of experienced reality, and the ability to design determines our humanness." Margolin (1989:28) was of the opinion that design could be an expression of feeling and reason. Design as an essential human action gives rise to social values and theories concerning the way in which the world functions (Cadle & Kuhn 2013:22).

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To design means to plan and to organise (Pentak, Roth & Lauer 2013:4). Design has a more universal meaning than the commercial applications that might first come to mind and is inherent in the full range of art disciplines from painting and drawing to sculpture, photography, and time-based media such as film, video, computer graphics, and animation. It is integral to crafts such as ceramics, textiles, and glass. Visual design principles are applied in architecture, landscape architecture, and urban planning. In the design process art ultimately seeks visual solutions to visual problems.

Harvey (2013:103) is of the opinion that "design thinking is an extremely broad-based and multifaceted phenomenon with no single definition". Designers inevitably function and identify and solve problems in a specific way. Expanding on the ideas of American philosopher Charles Sanders Peirce (1839–1914), Cross (2006:18) reiterates that designers use "abductive thinking" as opposed to "deductive and inductive thinking". Peirce (cited in Cross 2006:18) further explains that "deduction" is something that must be; "induction" refers to that is in the process of being while "abduction" is something that is still possible. Put another way, and drawing on the approach to design curricula in education, some parts of the curriculum need to be inductive, guiding students to discover how the world "is" (the descriptive approach). Then again some parts of the curriculum need to be deductive by guiding the students to develop ways of explaining why the world is as it is (the explanatory or analytical approach). Finally, some aspects of the curriculum need to be abductive, guiding the students to develop processes to "change" the world to what it could be or could become (the creative approach).

Adams, Daly and Mann (2011:588) emphasise that design thinking embraces the idea that what designers "understand about design and how they go about the act of designing is based on this understanding". Buchanan (1998:13) presents his interpretation of design thinking against a theoretical and practical backdrop. Design is described in four comprehensive themes or orders: "communication, construction, strategic planning, and systemic integration".

In an article titled *"Design Process of Novice Fashion Design Students: An Educator's Reflective Analysis"*, Harvey (2013:103) cites Tonkinwise (2011) describing "problem-definition/solution-proposition" as cohabiting in design thinking. This can be seen as inductive and deductive skills on the one hand, and abductive skills on the other. Dorst (2011:522) further specifies that designers create frames within which they can address open, multifaceted problems. Cross (2006:20; 2008:24; 2011:25) further maintains that a designer's performance consists of a set of connecting ideas which confront obscure problems, and at the same time a strategy aimed at finding solutions within the design thinking framework.

2.3.1.2 Critical Thinking and Problem-solving

Rusbult (2000:4) argues that creativity and critical thinking are a cohesive unit in the problem-solving methods found in a wide range of "design" fields such as engineering, architecture, medicine, mathematics, music, and art. To design a product, or improve on a product, activity, strategy or theory are the collective objectives of all these fields. A product does not always have to be seen as a mere object. In an article titled "An Introduction to Design Process", Rusbult (2000:3) states that, in the context of design, a problem is defined as being any situation where one has an opportunity to make a difference or to improve on a situation, while problem-solving is taking an existing situation (the NOW-State) and transforming it into a desired future situation (the GOAL-State).

Active problem-solving occurs whenever creative and critical thinking takes place regarding ways to improve the quality of life. *Business Dictionary* (www.businessdictionary.com) defines "problem" as any "perceived gap between the existing state and a desired state". In this approach, problem-solving in its ideal shape is proactive, but it can also be responsive. In this way a negative aspect is minimised and a positive aspect is maximised.
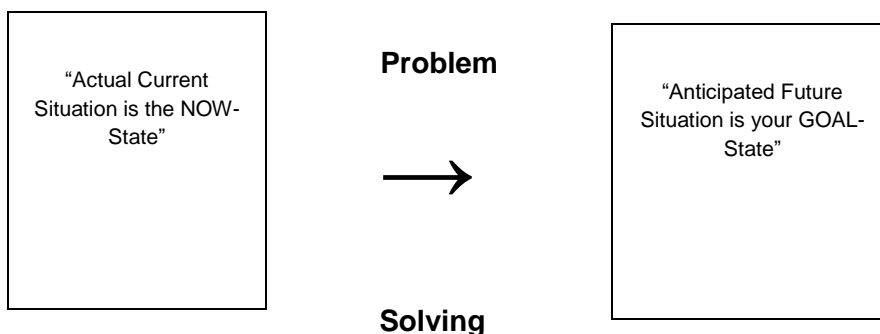
Fig. 2.2: Rusbult's model for Recognising Opportunities and Solving Problems

(Rusbult: 2000:7)

In an overview of the design process, Rusbult (2000:7) explains that a design project is usually initiated by "recognising an opportunity" and finding a solution to an improved product, activity, strategy or theory. Following this design project, goals are defined. By choosing an overall objective, the designer can then decide what must be designed.

Old and new information is then generated by means of searching for existing information regarding old products as well as the properties of each product. By inventing ideas for new products in creative ways, new variations of old products come into being. New information

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can also be generated merely by thinking about a new or existing product and by making predictions about its properties. In this way theories are discovered that assist in the understanding of products and their properties.

Pentak et al. (2013:9) is of the opinion that one has to know what you are doing when thinking about a problem. By keeping in mind the final outcome and what specific visual or intellectual outcome needs to be achieved, the problem can be better understood. Guiding questions that may arise include visual stylistic requirement, physical limitation and when a solution is needed. Shortcomings can take place as a result of not fully understanding the problem at the very beginning.

According to Pentak et al. (2013:4-21), "looking" at the problem is possibly the primary education of any artist and is a process that includes studying both the natural and human world. In observing nature, one encounters the elegant adaptations of plants and animals to their environment, offering models for efficient design and beautiful art. "Doing" starts with visual experimentation and for most artists and designers, this means "thinking with the materials". At this point an idea starts to take form, whether it is in a sketch of final materials, through trial and error, intuition, or deliberate application of a specific system (Pentak et al. 2013:4-21).

In a mental strategy, decisions are made about the actions one will undertake, and then one applies these preconceived strategies to undertake the task at hand. In a physical approach a more direct connection between deciding and doing takes place. In this way more emphasis is placed on the quality of doing (Rusbult 2000:4). This duality is similar to deductive thinking in that a predetermined strategy is "imposed" on the problem at hand, as opposed to inductive thinking where pre-knowledge and the emergent problem interact in the moment of problem-solving. In the latter case the solution is emergent.

In a study done on novice designers at an Australian UoT (Popovic 2004: 527-545) it was the researcher's intention to tap into "novice and expertise design visuals" as part of the process of problem solving that takes place during the conceptual stages of the design process. Popovic states that at novice level of expertise, the design "constraints" should be limited to one, at the most two, design sections. The study concluded that the skills level, which is communicated through design language, plays an important role in problem presentation.

A study undertaken by Lawson in 2010 investigating the way in which students go about the design process clearly highlights a sequence of distinguishing activities occurring in some "predictable" order. Even though some discrepancy exists regarding the design process, it can

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be agreed that student designers each approach their design processes in a unique manner. In a study on novice and advanced industrial design students, Christiaans and Dorst (cited in Cross 2011:120-121,130) determined that some students tended to over think the information gathering stage, instead of continuing with the solution generation phase. However, beginner students tended to gather less information and went on to solve a simple problem disregarding the possibility of potential criteria and difficulties. These students' activities were divided into three modes: gathering of information, sketching and reflecting. The study shows that Atman and several co-workers (cited in Cross 2011:144) determined that the inexperienced students who spent a large portion of their time defining the problem, did not actually generate quality designs. What was also discovered was that these same students stagnated in the problem-definition phase and failed to progress satisfactorily into further stages of the design process. It was suggested by Cross (2011:144) that, while doing problem-solving, novice students would usually commence with a depth-first approach. By doing so it is implied that the novice recognises a problem and immediately initiates comprehensive problem solving. In short, design curricula need to find the balance between cognitive problem-definition activities, and cognitive problem-solving activities. Speculatively this can be seen as the tension inherent in the synergies of "thinking" and "making".

2.3.1.3 Communication and Collaboration Skills

Art and design students need to communicate their personal thoughts, feelings and ideas not only through the creative use of art and design materials and techniques, but also by way of academic writing practices such as reflective and creative written work. Babb, Longenecker, Baugh and Feinstein (2014:46) have been instrumental in defining several known pedagogy failure methods in the teaching of programming skills to students, one of which was the lack of suitable team or group work designs. These support collaborative and peer-driven learning. Chinn and Chinn (as quoted by Powell and Wimmer 2016:86) define collaborative learning as "a small group of students working together to complete an academic task." Earlier research by Baer (2003) has identified collaborative learning as a good instructional tool in higher education. The results of a study by Powell and Wimmer (2016:86), titled "Evaluating Students' Perception of Group Work for Mobile Application Development Learning, Productivity, Enjoyment and Confidence in Quality" indicated positive feedback regarding student perceptions through the use of group programming (for mobile application development, in their study). The researchers found that their results were consistent with the results of similar studies that used a shared learning technique or pair learning techniques. By encouraging group work, the instructor fosters a responsibility among the students for having a successful

learning experience. Michaelsen, Knight and Fink (2004) also developed a team-based learning (TBL) technique, which stressed the importance of using small groups.

Anti-conventional Thinking (ACT) is a relatively new, fun and effective approach to goal-orientated creative thinking, developed by Jeffrey Baumgartner (Baumgartner 2014:2). In four steps the process takes one from a situation where one wants to do something creative, through to building a creative vision and an action plan for implementing it. It is modelled after the way creative people work together and is based on scientific research into how the brain works and how groups collaborate. The first step is deconstructing and understanding the situation. Following this a goal is created after which ideas are developed through debating and finally an action plan is outlined. Baumgartner further states that brainstorming can be an effective way to generate various ideas on a specific issue, after which one or the group determines which idea – or ideas – is the best solution. While there are many different approaches to brainstorming, the traditional approach is generally the most effective as it is the most energetic and openly collaborative, allowing participants to build on each other's ideas (Van der Horst & McDonald 1997:1). Created by Alex Faickney, this method seeks the generation of a large quantity of ideas in a short period of time. At this stage their function, feasibility or importance is not yet considered. The first principle underlying brainstorming is the need for quantity, secondly premature criticism is avoided, thirdly "freewheeling" is welcomed and the fourth principle states that a combination and improvement of ideas is desired. This is usually carried out at the beginning of idea generation (Gonçalves, Cardoso & Badke-Schaub 2014:45).

If a "constructivist" view of learning is to take place, rich environments for active learning (REALs) must promote study and investigation within a reliable context. Students should be inspired to be responsible, show initiative, make their own decisions, and learn purposefully. Collaboration among students and teachers should be encouraged and "dynamic, interdisciplinary, generative learning activities" should be promoted in the quest for higher-order thinking. Student progress should be monitored and "learning-to-learn" enhanced through real-world "tasks and performances" (Grabinger & Dunlap 1995:5).

2.3.2 *Information, Media and Technology Skills*

In "Digital Natives, Digital Immigrants Part 1", Prensky (2001:1) indicates that not only have students in the USA evolved in terms of language use, attire and adornments but most importantly in the digital technology of the last years of the 20th century that has manifested itself as the being the biggest change. It was found that, compared to their American

counterparts, a smaller percentage of students at South African tertiary institutions, born after 1982, have grown up in an information technology and media-rich environment and have subsequently been exposed to technology to such an extent that they can be classified as Generation Y students (Wessels & Steenkamp 2009:1039). Having been labelled Millennials (Howe & Strauss 2000), the "Net Generation" (Tapscott 1998), or Generation Y (Kennedy, Krause, Gray, Judd, Bennett, Maton, Dalgarno & Bishop 2006), these students have spent their entire lives up to now surrounded by and using computers, videogames, digital music players, cell phones, and almost all of the other toys and tools of the digital age (Wessels & Steenkamp 2009:1040).

It is important that students see a picture first after which they can "tear it apart into components". The students are then tested on their ability to rebuild that picture (Wessels & Steenkamp 2009:1051). Most lecturers (being in many cases of an earlier generation), on the other hand, are quite comfortable going through what they have regarded as "the logical steps", and do not seem to need to see the final result or outcome of the purpose of these steps before starting on a project. Meiring (2013:167) – with reference to Prensky (2001) – highlights that further research indicates that due to their exposure to interactive media, students are able to concentrate for long periods. This has resulted in them needing interactivity and being rewarded with feedback as soon as possible. Because adequate time for reflection is lacking, ultimately this is an urgently needed part of any thought or design process.

A paper presented by Meiring (2013:171) at the Design Educators' Forum of Southern Africa (DEFSA) conference held at the University of Johannesburg (UJ) highlights the fact that it remains a challenging task to achieve a successful new practice of design teaching. Areas of concern in this journey are the design process, educational content and digital literacy. In a culture swamped by an ever-changing information age, is it possible to successfully teach design? What is the impact of this notion on the present-day designer and design (Meiring 2013:171)? Meiring goes on to say that most design courses on third-year level at the UJ are made up partly of theory modules and one or a few major design modules. The framework towards a new design education practice addresses these separately. Studio work involves teaching the student in such a way as to enable the student to help himself or herself. The lecturer must keep stimulating students' creativity as well as critical thinking. In this way one broadens the students' concepts in order for them to solve design problems that they will encounter in the world that have not currently surfaced yet. The lecturer has to encourage interactivity within the class and with the educator, and students need adequate time to reflect on their work and learn from the feedback given from each project. Because immediate feedback is not always possible, ways have to be created to accommodate the individual and

the class as a group. Certain class exercises can assist in this and stimulate students to further self-study outside of the classroom (Meiring 2013:171,172).

In a report by Thomson, Purcell and Rainie (2013:1), research reveals that the arts organisations represented in a survey tend to agree with the idea that the Internet and social media have "increased engagement" and made art a more participatory experience, and that they have helped make "arts audiences more diverse." They also tend to agree that the Internet has "played a major role in broadening the boundaries of what is considered art."

Perceived positive impacts of technology on the arts
Based on your experiences and those of your organization, do you agree or disagree with each of the following statements?
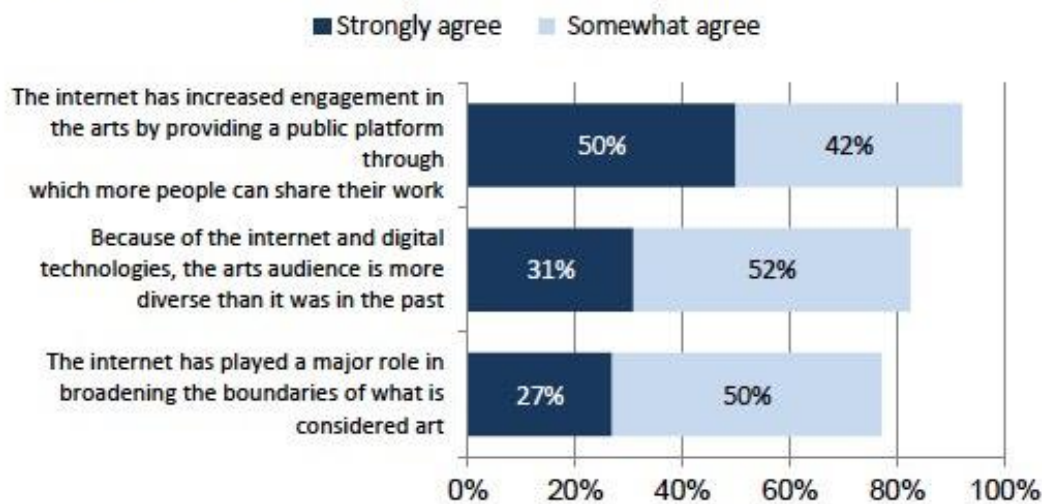
Source: Pew Research Center's Internet & American Life Project. Conducted between May 30-July 20, 2012. N for respondents who answered this question=1,207.

Fig 2.3: Pew Research Centre's Internet and American Life Project

(Thomson, Purcell & Rainie 2013)

2.3.3   *Life and Career Skills*

A recent report issued by the Design Skills Advisory Panel titled the *UK Design Industry Skills Development Plan* (Creative and Cultural Skills [CCS:2007]) indicates that even though strong foundations exist within the design education in the UK, there still seems to be concerns regarding the surplus as well as gaps that exist in skills and knowledge: "Industry and

education need to work together to develop a positive strategy to address this apparent mismatch between the number of design graduates and jobs in the industry. Such a strategy must also address the fact that some new graduates do not have the right skills to meet industry needs" (CCS 2007:25). It is also evident that the CCS Development Plan accentuates areas within the curriculum where there is room for improvement, ultimately ensuring graduation of students with appropriate skills to meet their career expectations. The skills content of design skills in schools, colleges and universities is an area of concern that needs attention. Because so many learners opt for design as a subject in secondary and tertiary education, designers have been in abundance. The requirement of complementary skills such as business management and communication are vital for students. Furthermore, the experience of working in multidisciplinary teams as well as knowledge of global markets and supply chains are important. Added to this are their core design capabilities in specialist disciplines (Vaughan et al. 2008.129).

Stephenson and Yorke (2013:2) refer to past research as posing the question "What is higher education for?" The capability movement began questioning this issue as early as 1980 when it published its *Education for Capability* manifesto through the Royal Society of Arts (RSA) in London. When education is seen merely as the pursuit of knowledge and intellectual skills for their own sake, it results in limited value, the latter being what the manifesto focused on. When seen in the context of rapid change, the manifesto implies that higher education should be reviewed by the extent to which students are confidently able to take responsibility for their own continuing personal and professional development. Sir Toby Weaver (1994), as cited by Stephenson and Yorke (2013:2), describes "capability" as an all-round human quality: a "purposive and sensible" action.

One of the most significant developments in the 1990s has been the extent to which students and employees have been encouraged to be responsible for managing their own learning and development. This trend has been further enhanced by extensive changes in the working environment and greater understanding of the nature of good performance in the workplace (Stephenson & Yorke 2013:7). Life and career skills include the application of knowledge to potential real-world situations as well as the development of flexibility and the initiative of self-directed team players and adaptable lifelong learners.

In an article titled "Employability: University education isn't just about developing skills" (*The Guardian*, 4 April 2012), David Docherty rightly indicates that "[i]f the point of the university is to prepare students to learn from their experiences, then wisdom is a key characteristic we have to develop in our students as they seek employment." Pellegrino and Hilton (2012:17) define "deeper learning" as a process they refer to as "transfer". This process takes place

when an individual becomes proficient in using what was learned in one situation and applying it to new situations. When shared learning and interactions takes place within a community deeper learning takes place (Pellegrino & Hilton 2012:17). The individual is then encouraged to develop expertise in a particular sphere of knowledge and/or performance. The end product of deeper learning is transferable knowledge and encompasses the realm and knowledge of how, why, and when to apply it. This blend of both knowledge and skills is referred to as "21st century competencies" (Pellegrino & Hilton 2012:18). This deeper learning allows the individual to solve new problems by transferring what was learned, while other types of learning may allow an individual to recall facts, concepts, or procedures.

2.3.4 *Productivity and Accountability*

Rowntree (1987) – as referred to by Falchikov (2013:2) – draws attention to the "constant prod from assessment" which encourages learning. A conclusion can therefore be drawn that assessment has a motivational purpose that is more directly related to the needs of students than other purposes of assessment. However, Rowntree further argues that motivational assessment may be seen as an instrument of coercion. In other words, it is a way of getting students to do something they would not normally be inclined to do. In this way, motivational assessment may also benefit the teacher rather than students. As such motivation has two sides. Firstly, it includes both encouragement and coercion, and adding to this, students benefit more readily from feedback. Traditionally, "preparation" has meant the specific focus on employment and career advancement. However, some researchers have seen collaboration and sharing as more valuable life skills than excellence in struggle and competition, and thus the role of assessments in preparing students for life seems to be changing. When students undergo the transition from school to tertiary institution, they generally experience considerable change or increase in academic expectations and processes. It is unavoidable that students that are not adequately prepared may struggle to keep up with their coursework, to acquire new skills, or to learn at a more accelerated pace. As each transition is dealt with, students are expected to become more self-reliant and take on more responsibility for things such as being organised, planning ahead, or meeting deadlines without assistance or reminders from lecturers (DoE: Education Glossary – *transition*).

2.4   Educational approaches or strategies

Certain approaches or strategies are critical systems necessary to ensure student mastery of skills. *Instruction and Curriculum*, *Professional Development*, *Learning Environment* and

Reflection and Assessment must be aligned to support students in reaching their learning outcomes described in the previous section.

The following illustration outlines the above-mentioned strategies that ensure student mastery of skills.
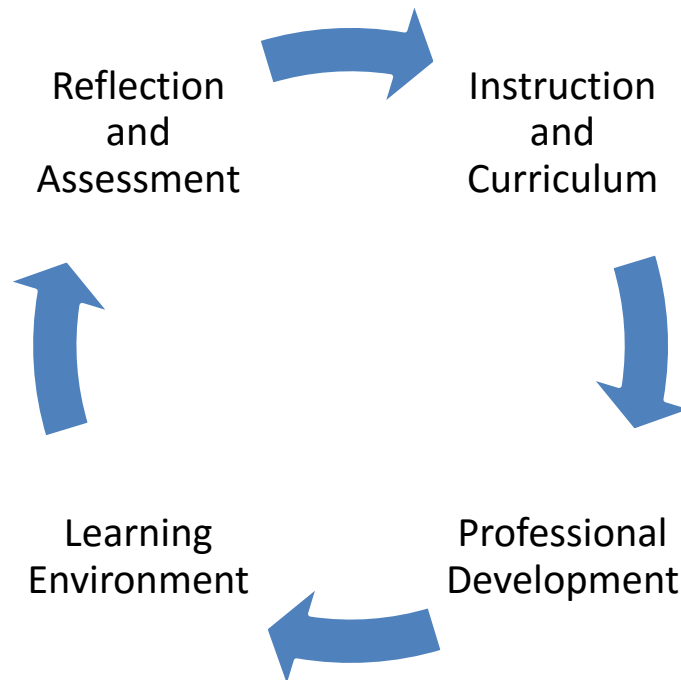
Fig. 2.4: Strategies that ensure student mastery of skills

Adapted from: Framework for 21st Century Learning: "Student Outcomes and Support Systems" (Partnership for 21st Century Learning 2007:1)

2.4.1 Instruction and Curriculum

As is shown in the figure above, Instruction and Curriculum form part of a cycle that includes Professional Development, Learning Environment and Reflection and Assessment. Auerbach (1992:15) points out that every approach to curriculum development reflects a certain view of learners and learning. These views are very often contained in the way a curriculum is developed and structured. The choices made regarding curriculum content and goals as well as the patterning of social relations in the learning environment are also of great importance.

2.4.1.1 Instruction

In the paper titled *"A Kind of Exchange: Learning from Art and Design Teaching"*, Shreeve, Sims and Trowler (2010:11) write that learning has a material and physical dimension.

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Learning and creating have visible and social facets to them, and this is seen in the engagement with the material itself and with the way ideas are developed through sketchbooks, drawing and performance. The person's whole involvement in learning is recognised (Shreeve et al. 2010:11), and involves the emotions and senses. In working with materials the student learns to experiment, to take risks and to push boundaries. As stated earlier, the lecturer's main task is thus to encourage the students to achieve certain outcomes through engaging their learning activities.

Direct instruction can be defined as the use of straightforward, explicit teaching techniques used to teach a specific skill. It is a teacher-directed method, meaning that the teacher stands in front of a classroom and presents the information (DoE: Education Glossary – *direct instruction teaching method*).

The term student-centred learning refers to a wide variety of educational programmes, learning experiences, instructional approaches, and academic-support strategies that are intended to address the distinct learning needs, interests, aspirations or cultural backgrounds of individual students and groups of students (DoE: Education Glossary – *student-centred learning*).

Teacher-centred teaching methods, techniques and activities are employed and occur where the teacher decides what is to be learned, what is to be tested, and how the class is to be run. Often the teacher is in the centre of the classroom, giving instruction with little input from students (ESL Glossary: Definitions of common ESL/EFL terms: *teacher-centred*).

The following table highlights traditional lecturing practices versus learner-centred lecturing practices.

Traditional lecturing practices	Learner-centred lecturing practices
Passive learners	Active learners
Examination-driven	Learners are assessed on an ongoing basis
Rote learning	Critical thinking, reasoning, reflection and action
Syllabus is content-based and broken down into units	An integration of knowledge; learning is relevant and connected to real-life situations
Textbook-/worksheet-bound and lecturer-centred	Learner-centred. The lecturer becomes a facilitator of learning. The lecturer makes use of, amongst other strategies, group work and teamwork to consolidate the new approach
Perceives syllabus as rigid and non-negotiable	Learning programmes are perceived as guides that allow lecturers to be innovative and creative in designing programmes
Lecturers responsible for learning. Motivation dependent on the personality of the lecturer	Learners take responsibility for their learning. Students motivated by constant feedback and affirmation of their worth by their learning facilitators
Emphasis on what the lecturer hopes to achieve and favours	Emphasis on outcomes (what learner becomes and understands)
Content placed into rigid time frames	Flexible time frames allow learners to work at their own pace
Curriculum development process is not open to public comment	Comment and input from the wider community is encouraged

Fig 2.5:   Traditional versus learner-centred lecturing practices

(Adapted from Van der Horst & McDonald 1997:28)

Four areas of study in art and design higher education were examined at the University of the Arts London (UAL). The study "A kind of exchange" aimed at highlighting the areas that could be referred to as "signature pedagogies" in these various areas and to determine what part they play in student-centred learning (Shreeve et al. 2010:11). The idea is that the teacher is concerned with the student's experience and learning is seen as a partnership. Internationally,

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higher education has experienced greater emphasis on the quality of the learning experience for students in the last 15 years (Biggs 1999, 2006; Prosser & Trigwell 1993). Of overall importance seems to be "the need to place students at the centre of the learning experience (Brown 2003:7; Trigwell & Shale 2004:534)". Lecturers in design are more likely to adopt a student-focused, conceptual change approach than, for example, lecturers in the [natural] sciences (Trigwell 2002).

Certain teaching methods such as problem-based learning, resource-based learning, E-learning and work-based learning, to name but a few, support learner-centred learning (DoE: Education Glossary – *teaching methods*). The term "student-centred learning" refers, thus, to a multiplicity of educational programmes, learning experiences, instructional approaches, and academic support strategies that lend themselves to focus on the specific learning needs, interests, aspirations, or cultural backgrounds of individual students and groups of students (DoE: Education Glossary – *student-centred learning*).

Smith, Hedley and Molloy (2009:13-27) talk about "an integrated teaching strategy or approach" which can be described as an integration of different modules. The various tasks that are completed in each module are then intentionally merged to discourage students from viewing the modules as insulated entities (Breytenbach & Johnston 2011:29).

In a study conducted by Breytenbach and Johnston (2011:28) regarding the first year offered at the Department of Interior Design at the University of Johannesburg, an "integrated teaching strategy" was introduced at first-year level with the aim of strengthening the connection between first-year modules. The result would be the joining of combined student knowledge and skills within separate modules and ultimately creating new programmes across different departments. A second challenge that was identified was in the form of a comparison made between the student output before 2009 to the output delivered in 2009 and 2010. Students appeared to prefer a "step-by-step" teaching approach in obtaining basic skills in drawing, painting and model-making. Feedback garnered from students showed that the integration of the teaching strategy introduced in the first term of the first year was successful. The students reported that through the knowledge and skills they acquired through the sub-component of the design project, they were able to lay a foundation from which they could further develop their knowledge and skill base and problem-solving techniques (Breytenbach & Johnston 2011:38).

A project that would normally take a whole year to complete was designed to take place over one term, which consists of a period of eight weeks, and varied between a six- to nine-hour contact session per week. Teaching during the second term would take the form of problem-solving. But before this process could take place it was imperative that students needed to

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develop an understanding of design elements such as composition, form, scale, texture, and rhythm. Focus was placed on the "heuristic [as described by Smith et al. 2009] in which attention is given to the parts which are used to construct a space." The literature (Smith et al. 2009:2) has further revealed that Interior Design Academics at the Queensland University of Technology (QUT) in Australia also had to address an appropriate teaching strategy for the interior design department. Their proposal was that it would be favourable if traditional teaching methods be replaced by an integrated and interactive approach.

Problem-based learning: Problem-based learning (PBL) originated in the 1960s and is a teaching pedagogy that is learner-centred. Students learn about a topic through the solving of problems and generally work in groups to solve the problem where, often, there is no one correct answer. In short, "it empowers learners to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to a defined problem" (Savery 2006). Problem-based learning aims at stimulating active learning which, it is believed, leads to deep learning that is more likely to be retained by learners (Pillay 2002:93). Responsibility for the learning process rests with the students rather than the lecturers. In group-based sessions, for example, lecturers act as facilitators rather than educators. Here students are encouraged to brainstorm their ideas and to share their own experiences with the other students in order to help the group achieve its learning goals (Hay et al. 2004:24).

Resource-based learning: A flexible learner-centred approach to education is resource-based learning (RBL). By removing all unnecessary barriers to learning, this approach seeks to increase access to educational opportunities. RBL places the responsibility on the lecturer as well as the student, while the lecturer is now seen as a planner, evaluator and change agent (Hay et al. 2004:25). Resources include media, people, places or ideas that have the potential to support learning. Resources are information assets – data points organised by an individual or individuals to convey a message (Allee 1997, cited by Hill and Hannafin 2001).

E-learning is defined as the use of any new technology or application that supports learning. The importance lies in that e-learning can make a difference in how a student learns, how quickly the student masters a skill, how easy it is for the student to study and how much the student will enjoy learning (Laurillard 2006:2). Hay et al. (2004:24) purport that "[e]-learning should not be viewed as a replacement of the lecturer or of conventional learning and teaching methods. The main aim of e-learning is to boost the process of learning and is therefore incorporated in the mainstream curriculum and supplementary to it." E-learning technologies are used to enhance the process of learning at the CUT and are therefore integrated into the mainstream curriculum and are supplementary to it. E-learning is therefore not an aim in itself, but a tool that is utilised to create a learner-centred environment. It should not be viewed as a

replacement for staff or conventional learning and teaching methods, as these will continue and have a role to fulfil (Hay et al. 2004:24).

Rennie and Morrison (2013:6,7) are of the opinion that a breakdown in the "traditional place of expertise, authority and scholarly input" are some of the restrictions of e-learning. In moving away from the "printed word to the more transient digital word" there are concerns about trust, reliability and believability (Poster 1990). As most students lack the critical skills to sort through the overabundance of unauthenticated, unfiltered information, traditional notions of quality in higher education seem to be abandoned in the move to Web 2.0 learning. Carlson (2005, in Rennie and Morrison 2013) reiterates that "not everyone agrees that millennials are so different from their predecessors, or that, even if they are different, educational techniques should change accordingly." Critics are further of the opinion that new technologies possibly lead to students having a short attention span and that, rather than think for themselves, they demand immediate answers. Another criticism is that the fact that because the content is created by users on different systems (e.g. podcasts, blogs, wikis, chat systems, and other social networking software), it can ultimately be difficult to keep track of where everything is (Rennie & Morrison 2013:7). It is further argued that learning in formal courses, where learning takes place in a step-by-step manner, differs greatly from learning that takes place from websites and online discussion groups. However, Kapp (2006:197) goes on to state that students are already using Web 2.0 technologies comfortably and effectively, and that traditional classroom lectures are no longer sufficient. Instead of criticising e-learning methods, students need to be assisted in focusing on the development of their critical thinking skills, analysing the content of websites, and commenting on student assignments from peer perspectives.

According to the Association of College and Research Libraries (ACRL), visual literacy is a set of abilities that enables an individual to effectively find, interpret, evaluate, use, and create images and visual media (Hattwig, Bussert, Medaille & Burgess 2013:62). A learner is able to understand and analyse the contextual, cultural, ethical, aesthetic, intellectual and technical components involved in the production and use of visual materials by means of visual literacy skills (Hattwig et al. 2013:62).

Work-based learning: Work-based learning (WBL) is an educational approach whereby students are provided with real-life vocational experience and scenarios in which they can apply academic and technical skills. Raelin (2000:191) argues that work-based learning differs from traditional studio learning in a number of important ways. Firstly, work-based learning is centred around reflection on work practices. Not only are a set of technical skills acquired, but the student learns from experience. Secondly, work-based learning views learning as

"arising from action and problem-solving within a working environment", and is therefore centred on live projects that are accompanied by challenging situations for both individuals and organisations. Work-based learning also views situations where problems are shared and solutions found as the creation of knowledge taking place as a shared and collective activity. Finally, work-based learning requires "meta-competence – learning to learn" in addition to new knowledge. A brief is a good example of how an educator can improve the learning experience of the learner. According to an article published by the Scottish Qualifications Authority (SQA) in 2005, a good brief design should "identify a client, identify the design area or context, identify possible themes, differentiate between 2-D and 3-D design activity and set requirements and constraints (SQA 2005:1)". The student may be presented with a real-life scenario with an actual business or individual in the client role. The brief aims at either dictating or negotiating what is required from the client and sets out the constraints of the brief. It is the responsibility of the student to draft the brief with as little aid from the lecturer as possible. The student and the lecturer may also decide to work on the brief together, with the lecturer possibly in the client role and negotiating requirements, terms and conditions with the student. The starting point might be a brief that is accompanied by specifics and an outline structure. Personalised alteration and deviation are still allowed in terms of fleshing out or customising any requirements and possible constraints which may have an influence on delivering on the brief. It is important that the student be guided and equipped to "investigate and research, consider and develop, communicate a solution and evaluate (SQA 2005:2)".

2.4.1.2 Curriculum design

A programme is defined as "a logical set of courses, leading to a certain degree". A programme consists of a core curriculum and optional courses, together making up the different ways a student can choose to arrive at the degree (Vroeijenstijn 1995). Definitions of curriculum range from rather narrow interpretations to broad, comprehensive interpretations which include virtually every aspect of the full education system (Nkomo 2000:5).

The process of designing a learning programme is normally a very intricate procedure and merits a study in its own right. Therefore, for the purpose of this study, this section will be discussed only very briefly with reference to the diagram presented in Fig. 2.6 below.

Analyse the need for a learning programme

Identify what the learners should know and should be able to do

Formulate the outcomes of the programme

Describe the assessment criteria for each outcome

Plan how the outcomes will be assessed

Design the learning process to achieve the outcomes

Select the INPUT (e.g. learning material, exercises)

Present the learning programme and facilitate

Assess learners against the learning outcomes

Credit the learner for outcomes achieved

Fig. 2.6: The typical process in designing a learning programme (Hay et al. 2004:37 as adapted from Hattingh 2003)

The term "curriculum" refers to the academic content taught in a specific course or programme. Depending on how broadly educators define or employ the term, curriculum typically refers to the knowledge and skills students are expected to learn (and which includes the learning standards or learning objectives they are expected to meet), the teaching and learning methods as well as methods of assessment (DoE: Education Glossary – *curriculum*).

According to the National Qualifications Framework Standards (NQFS) settings, there are ten levels that are grouped into three bands that describe the different levels of education and

training in South Africa. Higher Education and Training (HET) covers Levels 5 to 10. Level descriptors cannot be defined as learning outcomes or assessment criteria. Rather they provide a "broad frame from which the specific and contextualised outcomes and assessment criteria for a particular programme can be derived (SAQA 2014:3)". The level descriptors consist of ten categories that are used to describe applied competencies across each of the ten levels of the National Qualifications Framework (NQF). They are scope of knowledge; knowledge literacy; method and procedure; problem-solving; ethics and professional practice; accessing, processing and managing information; producing and communicating information; context and systems; management of learning as well as accountability (SAQA 2014:1).

Before designing a module, the level of learning at which the module will be pitched needs to be determined, and this level (within the module) will be determined by the descriptor. If, for example, a module pitched at Level 5 is being designed for learners who have just graduated from a high school or a further education and training institution, it will mean the following: Ultimately a module must be designed with the following aim in mind: to produce students who will demonstrate the ability to take responsibility for their own learning within a controlled environment. They will also be expected to make decisions about their own actions and have the ability to evaluate their own performance against set criteria (Hay et al. 2004:40,41). The South African Qualifications Authority (SAQA 2014:1) defines learning outcomes as "qualifications and standards that would be expected to clearly state the expected skills, knowledge, values and attitudes to be acquired and level and standard expected of these in order to guide learners and facilitators of learning."

In education, learning objectives can be defined as "brief statements that describe what students will be expected to have learned by the end of a course". In many cases, learning objectives are the provisional academic goals that lecturers establish for students who are working towards meeting more comprehensive learning standards (DoE: Education Glossary – *learning objectives*).

SAQA (2014) defines learning outcomes as the "contextually demonstrated end product of the learning process". Davies (2003:1) states in the document titled "Writing Learning Outcomes and Assessment Criteria in Art and Design" that in order to successfully complete a defined period of learning such as a project, unit, module or course, the definitive aim of learning outcomes in higher education is to clearly express what students are expected to understand and what they are expected to do. The levels at which they are aimed will determine the general or specific nature of that articulation.

Davies (2003:3) further explains that learning outcomes play an important role in making the curriculum transparent so as to benefit learners and other participating parties. It is vital that

one be open about what one wants the students to learn, especially in the context of moving towards a learning standard which supports self-directed education. It is not enough to merely describe the syllabus and course content, because, whilst knowing the outline and details of the unit, the students will only make sense of it if they know exactly what is expected of them. Put another way, determining outcomes allows students to know what they will need to demonstrate to successfully complete the learning programme, which, in turn, allows the students to keep track of where they are (or should be) in the progression towards that demonstration.

Certain approaches or strategies are critical systems necessary to ensure student mastery of skills. Instruction and Curriculum, Professional Development, Learning Environments, and Reflection and Assessment must be aligned to support students in reaching their learning outcomes described in the previous section.

After the formulation of the outcomes the assessment criteria for each of these outcomes must be described. Assessment is the process of determining whether or not learners have achieved the learning outcomes. Most importantly the chosen assessment method (assignments, portfolios, presentations and so forth) must allow the learners to show that they have achieved the learning outcomes. The aim of assessment is to supply the learner with the grade (summative assessment), to enable student progression (formative assessment), to guide improvement (collaborative and peer feedback), to motivate learners (to prompt their efforts towards success) and to add direction to teaching and learning (Hay et al. 2004:80-116).

After planning how the outcomes will be assessed, the learning process/facilitation should be designed. To effectively facilitate the process of learning, the lecturer/facilitator should be familiar with the factors that are associated with academic success. These factors include cognitive ability, motivation, learning styles and approaches to learning (Hay et al. 2004:49-62).

2.4.2   Professional development

In an educational context, the term "professional development" is used to describe a wide variety of "specialised training, formal education, or advanced professional learning" intended to help learners improve their professional knowledge, competence, skill, and effectiveness. Fenstermacher and Berliner (1985:281-314) cite Elmore (2002) in that professional development is the label assigned to activities that are designed in some way to increase the skill and knowledge of learners in their endeavour to gain employment (DoE: Education Glossary – *professional development*).

In practice, professional development refers to a diverse variety of educational programmes, learning experiences, instructional approaches, and academic support strategies that are intended to address the distinct learning needs, interests, aspirations or cultural backgrounds of individual students. Because the general aim is to make individual learning needs the key consideration in important educational and instructional decisions, it is apparent that specific learning styles of students need to be considered if they are to reach their full potential. Only in this way can they be successful at their careers (DoE: Education Glossary – *personalised training*).

Durling, Cross and Johnson (1996:1) explored the different ways in which design students approached their thinking and learning. A survey conducted of design students at two universities in the UK was reported on in the outcome of their study. Lack of agreement, which leads to poor communication, exists when teaching approaches and learning styles do not match. The possibility existed of a match between teaching styles and learning styles of art-based design students, using "adaptive computer-aided learning (CAL)". As was mentioned in 2.3.1.1 above, Hagemann (2010:4) asserts that "creativity is a process of developing and expressing novel ideas that are likely to be useful." Even though working methods and the attitudes towards problem-solving may vary from other professionals, creativity remains central to designers' thinking.

A sturdy tool for the assessment of learning styles has been proposed in the form of the Myers-Briggs Type Indicator (MBTI) (Myers & McCaulley 1985:2): "It measures preferences which reflect the kinds of perceptions and judgments individuals use in interacting with their environment."

orientation	**E**	Extraversion	Introversion **I**
cognitive	**S**	Sensing	Intuition **N**
processes	**T**	Thinking	Feeling **F**
attitude	**J**	Judgment	Perception **P**

Fig. 2.7: MBTI Scales

(Durling, Cross & Johnson 1996:2)

The main themes above are explained as follows:

Extraversion types prefer interaction with other people and things. They function optimally "externally or in action". They also enjoy working in groups. **Introversion** types relate well to "ideas and concepts". They prefer working on their own, and do their best work reflectively in their heads.

Sensing has to do with how a person processes information directly through the senses. These learners use "details and facts" as their starting point, then move toward ideas. **Intuition** refers to the way in which a person absorbs information using "internal sensing and imagination". These learners prefer to begin with the "big picture", and then progress towards "details and facts".

Thinking types prefer "analytical, logical, evaluative and objective" modes of thought. These types of learners prefer thinking based around "things or products". **Feeling** types value appreciation and use more "personalistic, subjective values". They gravitate toward decisions based on personal values.

Judgment type learners focus on thinking patterns which are "decisive, planned and orderly". These types of students prefer more structure in lessons. **Perception** has to do with a "more flexible, spontaneous and adaptable approach", and these types prefer a learning environment that offers choice and is conducive to exploration (Durling et al. 1996:2,3).

A total of 16 types represented by a four-character label is evident in the interplay of these scales. Each type contains an overriding process which represents the primary view through which the individual views and interacts with his/her world.

The samples presented for fine artists show a larger majority of the artists (91%) having intuition as a preference, while nearly three quarters also prefer feeling.

In another sample the specialised units explored included product design, interior design, graphic design, furniture design, and design marketing. Over three quarters (79%) preferred intuition and a majority also preferred perception. A general conclusion can be made that designers prefer a teaching approach that starts with the bigger picture, which includes the concepts, followed by the details. Instruction focused on future possibilities and allowing alternative views as well as teaching that has a lightweight structure, allowing for guided exploration is also preferred. Lastly logical and analytical teaching based on examples that show and demonstrate things can be added to these preferences (Durling et al. 1996:5).

Creativity and specific personality traits of designers seem intricately fused to one another, with intuition seemingly being at the core of this creativity. The designer students' largest grouping is ENTP: Extraversion, iNtuition, Thinking, and Perception. Myers (Durling et al.

1996:6) indicates that those ENTPs who lean more towards intuition "acquire an unquestioned personal validity that no other process can approach." They will naturally live lives that give maximum freedom to the pursuit of intuitive goals. Because perception is a natural part of intuition, this group will view the world from a perceptive point of view. They will depend on their judgment and their thinking only if it is not in conflict with their intuition (Durling et al. 1996:6). If this is the case, then it has comprehensive implications for the designing of curricula.

2.4.3 Learning Environment

Learning environments not only refer to the actual environments in which students learn, such as varied physical locations, contexts, and cultures. As is often the case where students may learn in a wide variety of settings, the term "learning environment" is often preferred when describing a studio. When using the term studio, more limited and traditional examples come to mind, such as a room with rows of desks and a chalkboard, for example (DoE: Education Glossary – *learning environments*).

For the purpose of this study, the focus is going to be on REALs, as defined by Grabinger and Dunlap (1995:5) from the University of Colorado, Denver, as being inclusive, "comprehensive instructional systems" that develop from constructivist philosophies and theories, and are consistent with the latter. The class of theories found in the development of REALs is known as constructivist theories (Clement 1982; Bransford & Vye 1989; Minstrell 1989; Resnick & Klopfer 1989; Schoenfeld 1989; Bednar, Cunningham, Duffy & Perry 1991; Duffy & Bednar 1991; Perkins 1991; Scardamalia & Bereiter 1991; Spiro, Feltovich, Jacobson & Coulson 1991). Creswell and Plano Clark (2011:40) further reiterate that constructivism is formed through participants and their subjective views, while the understanding or meaning of the phenomena makes up this worldview. The understandings of the participants are shaped by the meanings derived from socially interacting with others as well as their own personal histories. In this form of inquiry, research is shaped from individual perspectives to broad patterns and broad understandings – ultimately "from the bottom up".

In its essence constructivism emphasises that learning is a never ending process of building, interpreting, and modifying our own views of reality based upon our experiences with that reality (Jonassen 1994c) (cited by Grabinger & Dunlap 1995:5).

In "The Teaching Landscapes in Creative Arts Subjects" at the University of the Arts London (UAL) (cited by Shreeve et al. 2010:4) it is stated that the "layout, size, temperature, light and cleanliness" of a working space can all influence the teaching and learning experience.

"Flexible" spaces should ideally be present where "subject-based, cross-discipline and social exchanges" can take place spontaneously, thereby supporting more formal learning in the curriculum.

In *Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education* Kolb and Kolb (2005:199) cite Lewin as stating that both the independent person and environment are interdependent variables. Marrow (1969) (cited by Kolb and Kolb 2005:199) further feels that the space a person lives in is equal to the total psychological environment which the person intuitively experiences. It embraces needs, goals, unconscious influences, memories, beliefs, events of a political, economic, and social nature, and anything else that might have a direct effect on behaviour.

Shreeve et al. (2010:4) further reiterate that the aims of the above-mentioned study were to develop academic research possibilities within the UAL as well as to give rise to more practical ways in which to understand the nature of teaching in the creative arts subject areas. The research was generally concerned with the specific characteristics of art and design teaching and learning. Student-centred approaches emphasising core ideas and highlighting experimental learning and observable experimental processes were highlighted as being of importance. Central to these forms of education is the "kind of exchange" between educators and their students, or in other words an interchange aiming at engaging students with creative and conceptual language. What was evident in this study was that some of the lecturers emphasised a tension in maintaining a balance between their work as artists and their role as educators.

2.4.4   Reflection and Assessment

As early as 1939, Dewey (cited by Hatton and Smith 1995:33) drew on the ideas of many former educators such as Plato, Aristotle, Confucius, Lao Tzu, Solomon as well as Buddha and is himself seen as an invaluable instigator in the 20th century of the concept of reflection. To him it was a singular form of problem-solving and a way to resolve an issue which involved a careful ordering of ideas linking each with its predecessors.

Current research (Giloi 2011:102 cites De le Harpe, Petersen, Frankham, Zehener, Neale, Musgrave and McDermot 2009) in design assessment indicates that approaches such as "holistic assessment" (which is designed to evaluate product, person and process) and authentic assessment have been identified. Both of these move towards a more learner-centred and process-centred approach.

Yorke (2003:479) notes that Bloom, as early as 1971, distinguished formative from summative assessment. Summative assessments are concerned with determining the extent to which a student has achieved curricular objectives. Some assessments, e.g. in-course assignments, are deliberately designed to be formative and summative at the same time. Because the student is expected to learn from whatever feedback is provided, it is formative, and summative because the grade awarded to the student contributes to the overall grade at the end of the study unit. However, summative assessments can act formatively if the student learns from them, for example, if the student passes or fails a module (Yorke 2003:479,480).

The essence of formative assessment is that it provides feedback to students during the course so they have opportunities to improve. Formative assessment overlaps with feedback in learning and does not strictly contribute to the marks for a module, year or degree (Brown, Bull & Pendlebury 2013:12).

Once the learning outcomes have been specified, the following two things can take place: firstly, to establish what has to be done to empower students to achieve those learning outcomes. In constructing the syllabus and its content the most efficient and effective way in which students can achieve the intended outcomes must be determined. Secondly, the best way to assess whether students have ultimately achieved those outcomes has to be decided on.

In an article titled "Enhancing Teaching through Constructive Alignment", Biggs (2006:347) states that the two lines of thinking – the first being derived from constructivist theory and the second from the instructional design literature – are becoming increasingly important in higher educational practice. Constructivism and is made up of a family of theories. Central to these are the student's activities in creating or "constructing" meaning. These as well as related ideas have significant implications for teaching and assessment. It seems there is an important alignment between the objectives of a course or unit and the targets for assessing student performance. "Constructive alignment" represents a marriage of these two main ideas. Constructivism is being used as an outline in guiding decision-making at all stages in instructional design in the following areas: in achieving curriculum objectives in terms of performances that represent a suitably high cognitive level, in deciding teaching/learning activities judged to draw out those performances, and to assess and summatively report on student performance. The "performances of understanding" selected in the objectives are therefore used to methodically align the teaching methods and the assessment (Biggs 2006:347).

Giloi (2011:103) writes in the article "Creating a Community of Assessment Practice for Graphic Design Through the use of E-Portfolios" that coinciding with research already done in

the field of art and design education, the Midrand Graduate Institute implemented a gradual progression moving towards a more holistic approach incorporating the "teaching, learning and assessment" of "process, person and product" (De le Harpe et al. 2009:39). Often an assignment or brief may expect the student to be proficient in all three areas, it is difficult to separate them. During a process phase students are given the opportunity to identify problem areas, "do research, plan, document, reflect, find a solution" and rate its success. When reflecting on their own work, students are encouraged to think beyond merely accepting any solution they think could work for a specific brief. According to Heller (2006:12), students are expected to provide a "well-articulated reason for action", either in written form and/or in the form of a class presentation.

Action research refers to a cycle of actions designed to address the objectives of the proposed research project. The procedural representation of a typical action research process follows a cycle of four steps: *plan*, *act*, *observe*, and *reflect* (Dawson 2009:17). The applicability of this methodology to the study is that it allows for a structured cyclic process of investigation and implementation of the findings (Moule & Hek 2011:69).

Pentak et al. (2013:24) state that, as part of assessment, an integral component of studio education is critique. Art students could experience critique in different forms, such as a direct dialogue with an educator in front of a work in progress, or the completed work could be reviewed by the entire class. Critique can also take the form of a self-critique and the use of a journal. A critique's main objectives are being met when increased understanding of a project's successes and shortcomings are achieved.

It is generally felt among creative people, from artists to composers to writers, that criticism is best left for after the completion of a design, composition or piece of writing (Pentak et al. 2013:24). Too much criticism too soon can suppress a free and flexible approach to any studio work (Pentak et al. 2013:24). Although the components of a constructive critique can vary, a critique is most valid when linked to the criteria for the artwork, design, or studio assignment. A constructive model for critique would include the following:

Description: A verbal account of what is there.

Analysis: A discussion of how things are presented with an emphasis on relationships (example: "bigger than" / "brighter than" / "to the left of").

Interpretation: A sense of the meaning, implication, or effect of the piece.

In the article "Critical Design as Critique of the Design Status Quo", Cadle and Kuhn (2013:22) cite Poynor (2004) as describing critique as finding out what transformation can take place in

people's lives. According to Lefebvre (2002:18), it can further be defined as stating critically "how people live, or how badly they live, or how they do not live at all". Critique is mostly found within the studio space or in written work. In an article titled *"*An Examination of Student Formative Assessment and Face to Face Feedback in Studio-based Design Education and its Relationship to Students' Learning Experiences", Bernadette Blair (2011:19) refers to a questionnaire completed by undergraduate students in their final year in which they relate their learning experiences on their course. The questionnaire, known as the UK National Student Survey (NSS), indicates that all disciplines reported having concerns relating to feedback and assessment. Art and design students in particular feeling that they do not get enough feedback were some of the findings. Knewstubb and Bond (2009:180) are of the opinion that "teaching involves gaining students' understandings in order to further their understanding." Blair (2011:19), together with colleague Allan Davies, carried out a one-year research project exploring the way in which student assessment in art and design is implemented through formative and positive feedback tools available to students. These are well-established and cohesive mechanisms that form part of the art and design curricula. Over many centuries the "atelier model" has been characteristic of art and design student learning. It can be described as a small group of students working closely with an artist or designer as mentor, in order to develop their skills and knowledge. After the Second World War there was a surge of art colleges in the UK and Europe. This resulted in the critique ("crit") being viewed as an important form of providing "critical engagement" (Blair 2008; Blair 2010; Percy 2004). It also gave the students, specifically larger groups, an opportunity to view feedback of their work. Another form of feedback takes place in the form of "studio cruising" (Ashton 1997; Swann 2002) where the students seek out the guidance of the lecturer in the form of feedback on their concepts or processes. This process is further enhanced as the tutor makes himself or herself available to the students on an ongoing basis.

As part of the assessment and reflection process in art and design education students are also required to use a student portfolio as evidence of learning (Blaikie, Schönau & Steers 2004:302-314). Even though these portfolios can appear in different forms, the main aim is to combine various types of evidence which will ultimately allow the viewer the opportunity to assess the student's competence (Van Tartwijk & Driesen 2009:792).

The Midrand Graduate Institute similarly uses a traditional approach to their structure and system for the assessment of practical modules. The students are given briefs which they complete during the year. The outcome of this is formative assessment and feedback by the lecturer in a studio environment. Critique ("crit") sessions also take place in the form of evaluations and feedback by lecturers, students and peers. These reflections assist students in their thinking processes and enable them to defend their decision-making in the evaluation

of the final product and take the form of a workbook, journal or visual diary. These form part of the presentation of the final artworks in the assessment process. Even though visual diaries vary in quality of work and depth of research, depending on the student, the main aim is for these journals to be a true reflection of the student's hard work and conceptualisation. The ideal would be for these journals to become artworks in their own right (Giloi 2011:104).

2.5   2-D and 3-D Design module

2.5.1   Introduction

In his book titled *Teaching for Quality Learning at University*, Biggs (1999) describes the task of good pedagogical design as one of ensuring that there are absolutely no inconsistencies between the curriculum taught, the learning and teaching activities/instruction used, the learning environment chosen, and the assessment procedures adopted. To achieve complete consistency, the assumptions being made at each stage need to be examined very carefully and need to be aligned to those assumptions. Thus, the starting point needs to carefully define intended learning outcomes, after which learning and teaching activities need to be identified that stand a good chance of allowing the students to achieve that learning. Assessment tasks that will genuinely test whether the outcomes have been reached need to be designed. Biggs largely discusses how design decisions can be implemented in a more straightforward manner by adopting the assumptions of a "constructivist pedagogical approach", where the focus is always on the learning activities of the learner. Biggs goes on to use the term "constructive alignment" to specify his assumptions that learning should be based on constructivist theory.

As has been stated earlier, at the CUT and specifically in the Department of Design and Studio Art, an interdisciplinary and multidisciplinary diploma-level qualification was designed, namely the Diploma in Design and Studio Art. For the purpose of this study, emphasis is placed on one of the first-year modules, namely 2-D and 3-D Design.

The following illustration outlines the first-year modules, level descriptors, the credits per module and the outcomes categories as have been accepted by the DHET.

DIPLOMA: DESIGN AND STUDIO ART: 1ˢᵗ YEAR

Description of offering	NQF Level Descriptors	SAQA credits per module	Funda-mental Category	Core Category	Elective Category
Language of instruction and communication	5	9	✓		None on first-year level
Numeracy and quantitative literacy	5	6	✓		
Personal and process competencies	5	3	✓		
Computer literacy	5	6	✓		
Visual Culture	5	24		✓	
Drawing	5	18		✓	
Professional Practice	5	12		✓	
Digital Imaging	5	18		✓	
2-D and 3-D Design	**5**	**24**		✓	
TOTAL		**120 credits**	**24 credits**	**96 credits**	

Fig. 2.8: Programme: Design and Studio Art

(HEQC Online: 6)

Before designing a module, the level of learning at which the module will be pitched needs to be determined. This level will be determined by the descriptor. The module 2-D and 3-D Design – as indicated in Fig. 2.8 above – is pegged at Level 5 (first year). The total number of SAQA credits amounts to 120. The fundamental category adds up to 24 credits while the core categories add up to 96 credits. As indicated, none of the first-year students have electives. The main focus of this study lies at the 2-D and 3-D Design module which consists of 24 credits meaning that an average student could spend ± 240 hours in order to complete this module.[1]

2.5.2   Curriculum Design: 2-D and 3-D Design

In the designing and writing of curricula, a number of steps take place, not necessarily in a chronological order, and also sometimes happening simultaneously. The reason for this is to ensure that curriculum alignment takes place (Hay et al. 2004:119,120).

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[1] Core and fundamental categories are compulsory; elective categories (though there are none on first-year level) are individually selected.

The four major steps involved in the process of curriculum alignment are:

- Defining the intended learning outcomes

- Choosing teaching/learning activities likely to lead to attaining the objectives

- Deciding on assessment strategies and tasks to assess learners' learning outcome to see how well they match what was intended

- Arriving at a final mark

It is very important that students are clear on what is expected from them. Learning outcomes make the curriculum transparent for the benefit of the students, allowing them to know what they will need to demonstrate to successfully complete the learning programme.

2.5.2.1 Learning Outcomes: 2-D and 3-D Design

In the South African context the *Manual for Learning and Teaching at the Central University of Technology* identifies three different kinds of learning outcomes that are applicable for each learning programme, namely *learning area outcomes*, *specific outcomes* and *critical outcomes* (Hay et al. 2004:36):

(1) **Learning area outcomes** refer to the broad outcomes belonging to each learning area.

(2) **Specific outcomes** refer to the specific knowledge, attitudes and understanding which should be displayed in a particular context. This category would involve both knowledge content and understanding; an understanding of theoretical concepts, terminology and the application of that knowledge in different contexts.

(3) **Critical outcomes** ensure that learners will gain the necessary skills, knowledge and values that will allow them to contribute to their own lifelong learning and success. This category would be made up of those features commonly known as "transferable skills, key skills and core skills" such as "group work, communication, time management, resource management and information technology".

The following figure outlines the learning outcomes of 2-D and 3-D design as they appear in the 2-D and 3-D Design module.

Purpose (overall outcome) of the module	Specific learning outcomes	Critical learning outcomes	Teaching / Learning methods	Methods of assessment
• Develop fundamental knowledge and skills to explore the inherent qualities of materials as well as the potential of appropriate technologies and their use in achieving imaginative and expressive 2-D and 3-D form, based on both perceptual and conceptual principles. • Explore and manipulate the expressive potential of various media, techniques and relevant technologies applicable to 2-D and 3-D design. • Carry out project research skills.	• Understanding of theoretical perspectives and concepts regarding 2-D and 3-D design. • Knowledge application in different contexts. • Problem and possible solutions. • Interrogate, interpret and analyse visual imagery.	• **demonstrate** effectively working in a group • **communicate** effectively by using visual skills • **communicate** effectively using language skills and the necessary organising activities responsibly and effectively • **manage** their time • **manage** their resources • **manage** their studio skills • **master** materials and **grasp** processes	Strategies vary according to the type and focus of the learning unit. It may include the following: **THEORY** Lectures • Lecturer/group discussions • Readings **PRACTICAL** • Brief • Research • Presentations • Portfolios (Visual diary) • Artworks • Group critiques	**FORMATIVE** • Presentations • Tests • Portfolios • Artworks • Critique sessions **SUMMATIVE** • Exhibition

Fig. 2.9: Learning outcomes of 2-D and 3-D Design

The 2-D and 3-D Design module for the first-year Design and Studio Art students is made up of six units each exploring different materials and methods. These modules include theory on terminology, 2-D and 3-D design elements and principles, sources of design inspiration and the design process. The module also includes a practical section made up of six studio projects in which artworks are made in the respective studios by means of specific techniques

and appropriate materials in the different fields of fine arts and graphic, interior, fashion and jewellery design.

2.5.2.2 Teaching and Learning Activities: 2-D and 3-D Design

At the CUT learner-centred learning practices are followed. The following teaching and learning activities are indicated in the 2-D and 3-D Design syllabus. Students were to attend a short presentation once a week on each of the following approaches: terminology, 2-D and 3-D design elements and principles, sources of design inspiration, and the design process. In class the students were to be introduced to studio practice through intensive conceptual, visual and material investigations. Learning facilitation would consist of structured, interactive lectures as well as group discussions on design as a process. It would be expected from students to do additional readings from their 2-D and 3-D design textbook and complete out-of-studio assignments given to them in the theory class.

Following the presentation, a studio practice class of one and a half days per week would follow over a period of five weeks. Students would be given a brief in which they were informed of certain requirements or constraints according to a specific theme. By means of sketches and brainstorming, the students were to be introduced to idea generation methods and idea refinement techniques. They were to begin a design project by recognising an opportunity and defining a problem-solving objective. After this, a design project would be defined by choosing an overall objective and the designer could then decide what must be designed.

Possible solutions to problems would be discussed during critique sessions after which the final design would be selected.

Through direct lecturer instruction (modelling), emphasis would be placed on the production of objects (art pieces). Students would be expected to complete six projects throughout the year, each exploring different elements and principles of 2-D and 3-D design. In class students would also be expected to understand that art-making is an opening process that uses informed and critical decision-making to determine outcomes to problems. Discussions would be followed concerning each section throughout the course. Students would be given out-of-studio work to complete, such as going to the market-place and doing fieldwork and observations. They would also have to do research on their work and give feedback in their critique sessions. Student support such as access to eThuto[2] would also be available to the

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[2] eThuto is the e-learning platform at the CUT and was specifically designed to provide online support to students, with features such as access to e-mail, Blackboard and various other tools, thus enabling them to engage in online academic activities. *Thutô* is the Sotho word for "education" (Kok & Botha 1992:151).

students in the 2-D and 3-D Design module.**2.5.2.3 Reflection and assessment of 2-D and 3-D Design**

An essential part of any student's production of work is the process of reflection. For reflection to be successful, it must enable the student to achieve self-awareness as well as personal and professional growth. Reflection may take place individually and collectively. In 1933 Dewey (1934:11) stated that reflection is something which acts as witness, evidence or proof that something has taken place – a sentiment that still holds today. Group critiques would take place at the completion of each of the six projects. Using design vocabulary during these sessions, students would observe and discuss each other's work. This would help the students gain a deeper understanding and confidence when discussing their own work. Students would be able to understand concepts of visual expression and would be able to construct an object using the appropriate materials and methods. Students would also be expected to do self-reflection and write notes on their experiences during and after the process of creating each project.

In the 2-D and 3-D Design module formative and summative assessment would be applied both of which are subsequently discussed.

Formative assessment: In the 2-D and 3-D Design module a wide variety of assessment activities would be applied to test the students' knowledge about the subject content and to ensure that the desired skills are mastered. Students would be expected to pass all six of the components in order to pass the module 2-D and 3-D Design. At the end of each project the student's final art piece would be documented with a digital camera. Criteria for grading on studio projects would be based on the quality of the finished artworks, creativity and design concepts, preparedness, craftsmanship, effort, work in class and work outside of class. Group critiques would take place after each module was completed. Students would observe and discuss each other's work. Using design vocabulary during critique sessions would help students gain the necessary understanding and confidence to discuss their own work. Students would be able to understand concepts of visual expression and would be able to construct an object using the appropriate materials and methods.

Summative assessment: Benjamin Bloom (Van der Horst & McDonald 1997:37) developed a taxonomy describing the different cognitive levels on which learners function – each of them being more advanced and requiring more intellectual input and application of one's cognitive faculties. As mentioned above, the 2-D and 3-D Design module was pitched on a five-level scheme or taxonomy. On this level focus would be placed mainly on factual knowledge. Comprehension and application would equally support factual knowledge on this level. The

main purpose of the taxonomy would be to allow educators to create learning outcomes that target not only the subject to be taught, but the depth of the learning that is to occur.
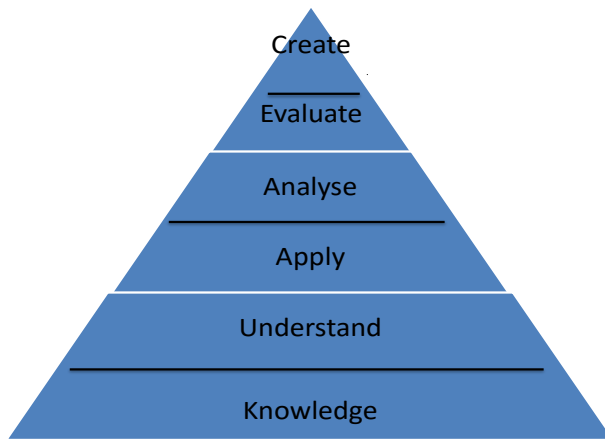
Fig. 2.10: Bloom's Taxonomy

(Adapted from Bloom, Englehart, Furst, Hill & Krathwohl 1956)

According to the *Manual for Learning and Teaching at the Central University of Technology* (Hay et al. 2004:93), it is suggested that the weighting of marks should be gained for skills on a first-year level: *Knowledge* (30%), *Understanding/Comprehension* (20%), *Application* (20%), *Analysis* (10%), *Evaluation* (10%), and *Creation* (10%). In the Department Art and Design at the CUT, a greater percentage is allocated for creation, because an invention or a creative idea becomes an innovation only once it has found a market or a practical way to apply the idea (Nelson & Stolterman 2011:11).

In the 2-D and 3-D Design module students would be expected to exhibit their studio projects during the June and November exhibitions. Criteria for grading of studio projects would be based on the above-mentioned criteria.

2.5.2.4 Calculation of Final Mark

The following table illustrates how the students' final mark would be calculated. Studio projects make up 50%, formal tests 10%, visual diary assignments 30% and group critique sessions 10% of the final mark.

	METHOD	WEIGHT	DATE OF EVALUATION
1	Studio Projects	50%	June/November
2	Formal Tests	10%	According to a time schedule
3	Visual Diary Assignments	30%	According to a time schedule
4	Group critiques % written assignments	10%	According to a time schedule

Fig. 2.11: Calculation of Final Mark

Formal tests would be written to ascertain whether students recognised and understood the unit content delivered in the class. If a student was to miss a test, he or she was to submit a formal sick letter and consult the lecturer about a suitable re-test date within three days.

Students would be expected to develop a personal and unique visual diary demonstrating the mastery of design. The works in the visual diary could include drawings, prints, collages, photographs and material swatches. At the end of each project, a student's final art piece would be documented with a digital camera. Students would receive a zero mark if the diary was not submitted on the due date without a formal medical doctor's letter.

Students would observe and discuss each other's work during sessions where they would use design vocabulary which assists the students in gaining a deeper understanding and confidence to discuss their own work. Students were able to understand concepts of visual expression and were able to construct an object using the appropriate materials and methods. Students were also expected to reflect and write notes on their experiences during and after the process of creating each project.

2.6   Conclusion

As has been mentioned at the beginning of this chapter, links between government, industry, higher education institutions and the creation of partnerships are crucial elements that must interact and co-develop. Having said this, it can be concluded that core competencies are essential if students are to flourish in the world of work. This chapter has discussed the required skills needed such as learning and innovation skills; creativity and innovation; critical

thinking and problem-solving skills; communication and collaboration; information, media and technology skills as well as productivity and accountability. These skills will ultimately assist the student to successfully navigate the modern world as well as to excel in challenging careers and process increasingly complex information.

The approaches or strategies that have been presented and discussed in this chapter are critical systems necessary to ensure student mastery of skills. Strategies such as *Instruction and Curriculum*, *Professional Development*, *Learning Environments* and *Reflection and Assessment* must be aligned to support students in reaching their learning outcomes.

As has been discussed here, an interdisciplinary and multidisciplinary diploma titled the Diploma in Design and Studio Art was designed. This diploma has been introduced at the CUT and specifically in the Department of Design and Studio Art. For the purpose of this study, emphasis has been placed on one of the first-year modules, namely 2-D and 3-D Design.

The following four major steps involved in the process of curriculum alignment have also been discussed, namely defining the intended learning outcomes, choosing teaching/learning activities likely to lead to attaining the objectives, deciding on assessment strategies and tasks to assess learners' learning outcomes to see how well they match what was intended and arriving at a final mark. Learning outcomes make the curriculum transparent for the benefit of learners. In the South African context the *Manual for Learning and Teaching at the Central University of Technology* identifies three different kinds of learning outcomes that are applicable for each learning programme, namely *learning area outcomes*, *specific outcomes* and *critical outcomes* (Hay et al. 2004:36).

At the CUT learner-centred learning practices are followed. Through direct lecturer instruction (modelling), emphasis has been placed on the production of objects (art pieces). An essential part of any student's production of work is the process of reflection (individual or collective), and for reflection to be successful it must enable the student to achieve self-awareness and personal and professional growth. In the 2-D and 3-D Design module, formative as well as summative assessment have been applied. The final mark has been calculated through formal written tests. The students also developed a personal and unique visual diary documenting their progress. Finally, group critiques took place after each one of six projects was completed.

In the following chapter the research methodology of the study will be discussed. The research aims and objectives will be expanded on and the target population as well as the data collection procedures will be explained. Finally, the reporting of the data will be summarised.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The purpose of Chapter 2 was to establish the educational foundations of the curriculum for 2-D and 3-D design and to present how the curriculum set out to address these foundations. Establishing these foundations and presenting how the curriculum set out to address them were furthermore necessary to determine the planning that was undertaken for the development of the curriculum and to discover the effectiveness of the implementation thereof. The purpose of the present chapter is to describe the methods that were used to attempt to establish the effectiveness of the curriculum considering its strengths and weaknesses. Put another way, this chapter presents the methods, and the justification of those methods, that were employed to answer the research question and sub-questions and to achieve the objectives of the study. More formally, this is captured in the research questions and sub-questions as subsequently presented in 3.1.1 below for ease of reference.

3.1.1 Research questions

The primary research question is:

Is there a balance between prescriptive and intensive skills (technique) building versus dialogue and experimentation (conceptualization) in the new 2-D and 3-D Design subject?

The secondary research questions are:

What are the students' overall impressions and experiences of the new 2-D and 3-D Design module with regards to time management in and out of the class, their positive experiences, technical difficulties experienced, strong points and shortcomings?
What are the lecturers' feelings, knowledge and observations regarding the outcomes of the 2-D and 3-D Design module?

3.1.2 Research aim and objective

The overall aim of this study was to gain insight into the balance between prescriptive and intensive skills (technique) building versus dialogue and experimentation (conceptualization)

in the new 2-D and 3-D Design module. This aim was realized by pursuing the following objectives:

A literature study on curriculum development in order to justify the original curriculum design, and then to triangulate the theory with the outcomes of the following two objectives, namely – to scrutinize and describe the students' overall impressions and experiences of the new 2-D and 3-D Design module with regards to time management in and out of the class, their positive experiences, technical difficulties experienced, strong points and shortcomings; and to explore and describe the lecturers' feelings, knowledge and observations regarding the outcomes of the 2-D and 3-D Design module.

To achieve this aim, a process of data collection was operationalized that relied upon gathering data in four domains, namely information gleaned from the literature on curriculum design in Design (which was then used to interrogate the actual 2-D and 3-D Design module established by the Department of Design and Studio Art at the CUT – this was undertaken in Chapter 2); a set of Likert scale type questionnaires administered to the students who took the course to assess their behaviour, attitudes and knowledge gained; a series of interviews with the staff that taught the selected module to ascertain their experiences of and opinions on the strengths and weaknesses of the module; and finally a series of on-sight observations, in the classes, to describe the events that might have led to learning and teaching. The data from these four approaches were then "triangulated" to address the research questions, a task undertaken in Chapters 4 and 5 – the analysis chapters. The results of, or conclusions reached from, the analysis are documented in the concluding chapter.

The purpose of this chapter, therefore, is to justify and describe the workings of each data collection method, firstly in its generic form, and then, secondly, how it was specifically implemented in the research process. The chapter locates the methods in a mixed methods approach where data is gathered in a quasi-quantitative fashion using survey questionnaires, and the qualitative methods of interviews and observation. In short, this chapter presents a mixed methods research design. An explanatory sequential design was used as it gives a detailed description and analysis of a specific group of students, namely 2-D and 3-D design students at the Central University of Technology, Free State (CUT). Creswell and Plano Clark (2007:71) define this as occurring in two distinct interactive phases. This design starts with the collection and analysis of quantitative data, which has priority for addressing a study's questions. The Quantitative phase is followed by the subsequent collection and analysis of qualitative data. The Qualitative phase of the study is designed so that it follows from the results of the Quantitative phase, which, in this case, were the interviews and observations.

The researcher interpreted how the qualitative results help to explain the initial quantitative results.

3.2 Research design and methodology hypothesis

In order to gain reliable and trustworthy information, the mixed methods research design was followed. The main aim of this kind of research approach is to highlight and identify the specific phenomena through how they are perceived by the participants in a given situation and which, in this case, were the experiences of the lecturers and students involved in the 2-D and 3-D Design module. Creswell and Plano Clark (2007:5) define mixed methods research as a research "design with idealistic conjecture as well as methods of enquiry." As a methodology, it engages idealistic theories, while at the same time guiding the direction of the collection and analysis as well as the mixture of qualitative and quantitative approaches in many areas of the research process. As a method, it focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. The chief argument is that by using both quantitative and qualitative approaches, a better understanding of the research problems is achieved than would be the case when using either approach by itself. Maxwell (2009:244-245) further includes triangulation as a way to collect converging evidence from various sources. Yardley (2009, in Yin 2011:80) explains that triangulation stems from "navigation" where three different reference points come together in order to strengthen the validity of a study. In this study triangulation took place between the information gleaned from the student group (through quantitative methods), from the lecturer group and from observation (using a qualitative approach) and from the interrogation of the curriculum (using a literature review approach).

The strengths that offset the weaknesses of both quantitative and qualitative research point to the advantage of using mixed methods research. Rather than being restricted to only a few types of data collection methods typically associated with quantitative research or qualitative research, researchers are able to use all the tools of data collection available to them (Creswell & Plano Clark 2011:12). Rather than the typical association of certain paradigms with quantitative research and others for qualitative research, it encourages the use of multiple worldviews or paradigms (i.e. beliefs and values). Finally, where the sample size is too small for the generalizability needed for quantitative research results, this can be augmented by employing other data gathering approaches such as those found in qualitative research.

Yin (2011:3,6) states that almost every real-world situation can become the subject of a qualitative study and goes on to say that qualitative research enables one to conduct in-depth

studies about a broad range of topics, while offering greater scope in selecting topics of interest.

This design starts with the collection and analysis of quantitative data, which has the priority for addressing the study's questions. The quantitative phase is followed by the subsequent collection and analysis of qualitative data. A quasi-quantitative method is followed as the sample (n=13) is too small to be purely quantitative. Ritchie, Lewis, Nicholls and Ormston (2003:83,84) state that qualitative samples are usually small in size. The qualitative phase of the study is designed so that it follows from the results of the first, i.e. the quantitative phase, which, in this case, were the questionnaires. The researcher interpreted how the qualitative results help to explain (at best) or correlate with (at worst) the initial quantitative results. The quantitative and qualitative phases were connected when selecting the participants for quantitative questionnaires and developing the interview protocol based on the results from the statistical tests from the first phase. The results of the quantitative and qualitative phases were integrated during the discussion of the outcomes of the entire study. Triangulation has been used as a means to strengthen the validity of the results, as the Likert scale data collected through the questionnaires is the result of attitudes and opinions, which are not always reliable. In this regard Booth et al. (2008:219) rightly indicate that a research project must always be as accurate and truthful as possible.

The following diagram illustrates the research process:

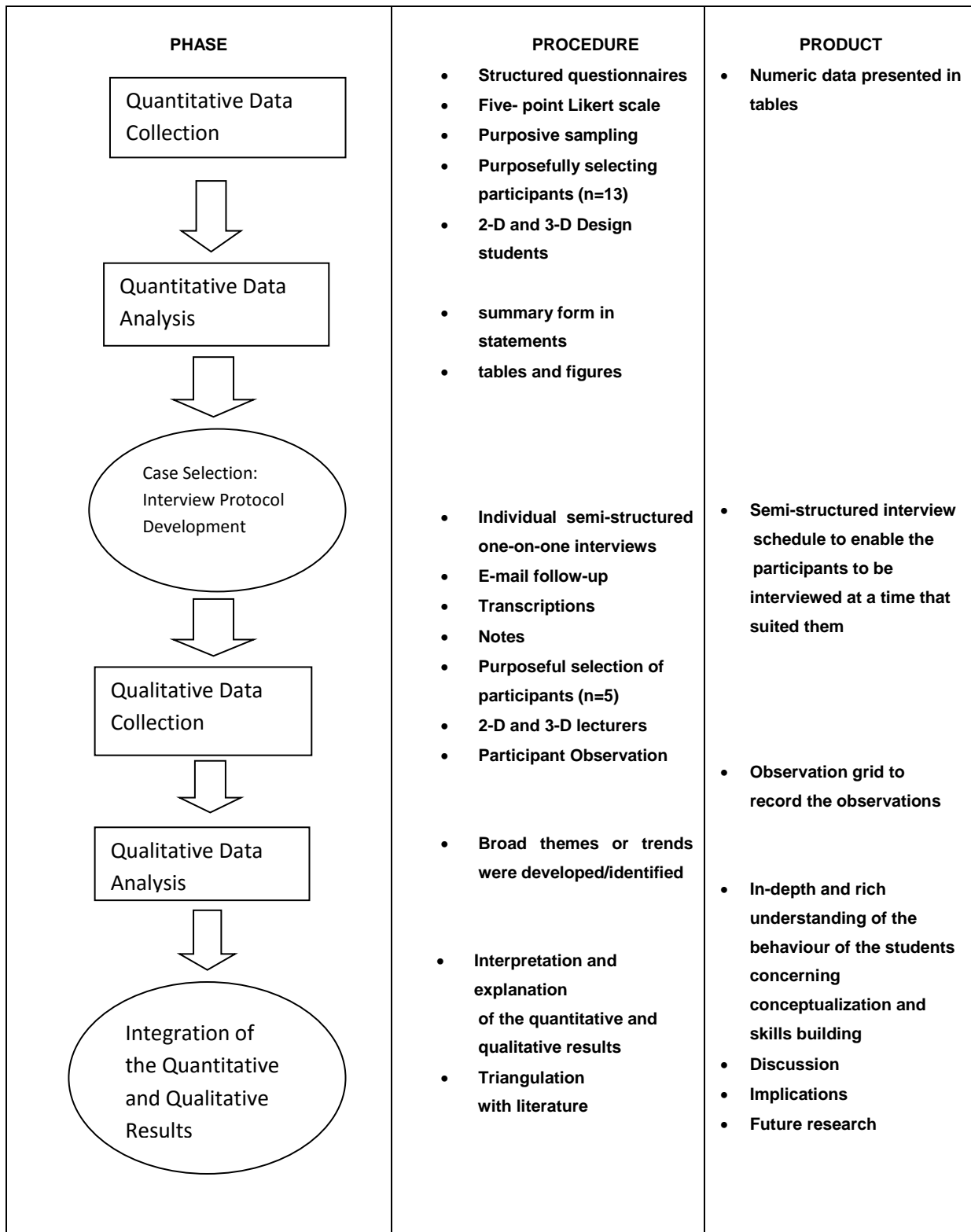| PHASE	PROCEDURE	PRODUCT
Quantitative Data Collection	• **Structured questionnaires** • **Five- point Likert scale** • **Purposive sampling** • **Purposefully selecting participants (n=13)** • **2-D and 3-D Design students**	• **Numeric data presented in tables**
Quantitative Data Analysis	• **summary form in statements** • **tables and figures**	
Case Selection: Interview Protocol Development	• **Individual semi-structured one-on-one interviews** • **E-mail follow-up** • **Transcriptions** • **Notes** • **Purposeful selection of participants (n=5)** • **2-D and 3-D lecturers** • **Participant Observation**	• **Semi-structured interview schedule to enable the participants to be interviewed at a time that suited them**
Qualitative Data Collection		• **Observation grid to record the observations**
Qualitative Data Analysis	• **Broad themes or trends were developed/identified** • **Interpretation and explanation of the quantitative and qualitative results** • **Triangulation with literature**	• **In-depth and rich understanding of the behaviour of the students concerning conceptualization and skills building**
Integration of the Quantitative and Qualitative Results		• **Discussion** • **Implications** • **Future research**

Figure 3.1   Flow chart of quantitative and qualitative phases

3.3 Target population and sample

The population group for this study consisted of students and lecturers involved in the 2-D and 3-D Design module offered at the Department of Design and Studio Art at the CUT. It is important to determine which group or subpopulation is of central interest to the subject matter of the study. This involves deciding which population will, by virtue of their proximity to the research question, be able to provide the richest and most relevant information. The appropriate population may be obvious, but often it will be necessary to think through the roles, knowledge or behaviour of different groups and their ability to shed light on different aspects of the research question (Ritchie et al. 2003:87).

For the quantitative phase of the study the researcher made use of purposive sampling methods (Teddlie & Tashakkori 2009:25) as this type of sampling relies on selecting a relatively small number of participants drawn deliberately and purposefully from the target population because they may be able to provide particular information related to the research questions under examination.

The sample consisted of 13 first-year students out of 51 registered in 2015 for the 2-D and 3-D Design module at the CUT. At the beginning of the year the total population of 51 students had been divided randomly into four groups of 12 to 15 students in each group, with each group allocated a letter designation. The researcher purposefully chose Group A to be part of the research. The reason for choosing only one group was due mainly to logistics. Firstly, the researcher was also one of the lecturers in the 2-D and 3-D Design module. It was therefore not possible for the researcher to observe the students while lecturing another group at the same time. Secondly, to attempt objectivity, the researcher could not observe or gather data from the group that she had already taught. Therefore, by a process of elimination, Group A was selected. Creswell and Plano Clark (2011:172) indicate that when it comes to the number of participants, it is more beneficial to select a smaller group rather than a large number of people or sites.

A consent form for the questionnaire was drawn up by the researcher, approved by the University research ethics committee and handed to the students. (The content of the consent form is discussed below under the research ethics section and is appended hereto as Addendum B.) They each studied and signed the consent form, thus giving consent that the researcher could hand them questionnaires to fill in and, later, observe them at work. The researcher set a time and date for them to complete the questionnaires in their studio. The questionnaire was handed to them by the researcher. The questionnaire clearly explained the aim of the research and gave effective navigation tools regarding how the questionnaire should be completed. All the statements, questions and Likert scale descriptors were clear

and unambiguous (Munro 2014:48). The students were allocated 20 minutes to complete the questionnaire, and after the completion the questionnaires were handed back to the researcher. (The discussion of the construction of the questionnaire is presented below, and the questionnaire is attached hereto as Addendum A.)

In one part of the qualitative phase five art lecturers involved in the teaching of the 2-D and 3-D Design module were selected to be interviewed so as to gain feedback regarding their feelings, knowledge as well as their observations in the outcomes of the module – specifically with regard to their experiences working with the new curriculum and the student responses to that curriculum.

In this qualitative phase the main goal was to include as much information as possible (information-rich cases) with as much emphasis on contextual factors. Thus five lecturers who taught the 2-D and 3-D Design module were purposively selected to be interviewed because of their richness of data and their experience in the subjects. Yin (2011:88) reiterates that in qualitative research, the samples are likely to be chosen in a purposive or deliberate way. In this purposive approach, the selection of participants, settings or other sampling units are based on selected criteria (Mason 2002). The sample units are chosen because they have particular features or characteristics which will enable detailed exploration and understanding of the central themes which the researcher wishes to study. In this way, the participants will yield the most relevant and plentiful data. Purposive sampling is precisely what the name suggests. Members of a sample are chosen with a "purpose" to represent a location or type in relation to a key criterion (Ritchie et al. 2013:79).

The participants in this study were employed by the CUT and had vast experience in art education and the art industry. Five lecturers at the Department of Design and Studio Art were chosen for the study. Three were male and two were female. The first participant has been a lecturer for the past eight years. She holds a Master's degree in Design: Ceramics and lectures first and second years.

The second participant holds a B. Tech Degree in Fine Art: Painting and has been lecturing for the past ten years. He lectures 2-D and 3-D Design and Studio Practice to second and third year students.

The third participant has in the meantime relocated, so is not employed at the CUT any more. At the time of lecturing at the CUT he held a B. Tech Degree in Graphic Design and had been a lecturer for five years.

The fourth participant has been lecturing for the past ten years, and he holds a B. Tech degree in Jewellery Manufacturing and Design. He is at present in the process of completing his Master's Degree in Jewellery Manufacturing and Design. He lectures Jewellery Manufacturing & Design (Studio Practice) to 2nd and 3rd year students

The final participant has been lecturing for 27 years. She holds Masters Degrees in Higher Education and in Consumer Sciences. She has specialised in Textiles and lectures 2-D and 3-D Design and Studio Practice for second and third years as well as B. Tech students.

The participants were asked if they would be willing to participate anonymously in the research. A consent form was drawn up by the researcher, approved by the research ethics committee and handed to the lecturers. (The content of the consent form for the interviews is discussed under the research ethics section, and the form can be found appended to this study as Addendum D.) They individually studied this form after which they signed, thus giving consent that the researcher could interview them individually. Individual semi-structured interviews were drawn up by the researcher. The interviews were recorded, notes were taken and the interviews were ultimately transcribed by the researcher. Follow-up e-mails were sent to the individual lecturers in the event they might want to change something in their interview transcripts. Addendum C contains the semi-structured questions and related themes for the interview.

The same group of students (n=13) mentioned in the quantitative phase were also observed by the researcher. This took place at the end of the group's five-week cycle.

The researcher drew up an observation grid and observed the students in their natural environment in the studio. The reason for the observation was to observe the students in their natural, day-to-day environment in their studio. The explanation for the way that the observation grid was constructed is presented in the relevant section below and is appended hereto as Addendum E.

3.4   Quantitative Phase

3.4.1   Data collection procedures

The main aim behind any form of data collection in any research study is to gather information in order to deal with and develop answers to the questions being asked in the study (Teddlie & Yu 2007:77-100). Ritchie et al. (2003:77) go on to say that whether the research is qualitative

or quantitative or employs mixed methods, selecting samples, settings or actions remains important. This is so even if a study involves very small populations or single case studies.

In the quantitative phase questionnaires with closed questions based on predetermined response scales were used. The researcher identified the questions and requested participants to rate their answers to the questions on a scale. In designing the questionnaire, the researcher paid attention to the type of question, the order of the questions as well as the structure and wording of each question to ensure that appropriate data for analysis would be collected. The questionnaires were administered at the end of the group's five-week cycle.

A five-point Likert scale was used as it is a well-known measurement of attitudes, views and feelings (Uebersax 2006:1) (in Bertram s.a.:1). In each section, a question was presented in which the respondent indicated a degree of agreement or disagreement in a multiple-choice format. One of the advantages is that it does not force the participant to take a stand on a particular area, but allows them to respond in a degree of agreement; this makes answering the questions easier on the respondent (De Vos, Strydom & Delport 2005). At the end of every five-week cycle (six modules per year = 30 weeks), questionnaires were handed out to the sample group of 13 first-year students out of 51 registered in 2015 for the 2-D and 3-D Design module at the CUT. Questions concerning art and design and design processes were formulated. The students were allocated 20 minutes in which to complete the questionnaires.

As noted in the previous chapter, the questionnaire was self-designed to capture the key curriculum demands of accessing factual information, conceptualization, procedural issues and meta-cognitive engagement. In the first part of the questionnaire, subjects were first asked eight questions concerning general social-demographic and work-related aspects for the purpose of providing a description of the participating sample and carrying out the previously mentioned contrasts. The second part of the questionnaire consisted of 18 questions covering factual information, while the third section consisting of ten questions broached conceptual information. The fourth part of 13 questions covered procedural information, while the last ten questions focused on meta-cognitive information. The participants were thus presented with a self-administered questionnaire that consisted of all 59 items. Section 1 consisted of "Yes" or "No" answers; parts of Questions 2, 3, 4 and 5 consisted of a Likert-type scale in which subjects indicated their degree of agreement with each of the statements presented using a response options scale scoring from 1 (*Strongly agree*) to 5 (*Strongly disagree*). Some parts of the questionnaire included open-ended questions in which the students were required to answer in broader terms as compared to the Likert-type answers.

3.4.2 Quantitative phase: Data analysis

Within mixed methods research, data analysis consists of investigative techniques applied to both the quantitative and the qualitative data as well as to the integration of the two forms of data concurrently and sequentially in a single project or a multiphase project (Creswell & Plano Clark 2011:212).

Because a mixed methods research design was followed, the data analysis consisted of separately analysing the quantitative data using quantitative methods and the qualitative data using qualitative methods. The mixed methods analysis is the result of analysing both sets of information using techniques that "mix" the quantitative and qualitative data and the results. These analyses are in response to the research questions or hypotheses put forward in a study, including mixed methods questions (Creswell & Plano Clark 2011:203). Under this heading the quantitative data analysis will be discussed while the qualitative data analysis is discussed under 3.5.2.

In this study the researcher made use of a Likert scale as a means of analysing the data collected. Uebersax (2006) (in Bertram s.a.:1) refers to Dr Rensis Likert, a sociologist at the University of Michigan in the 1930s, as developing the Likert scale technique. Likert's original report entitled "A Technique for the Measurement of Attitudes" was published in the *Archives of Psychology* in 1932, the goal being to develop a means of measuring psychological attitudes in a "scientific" way. His main aim was to develop a method that would produce attitude measures that could reasonably be interpreted as measurements on a proper metric scale.

A Likert scale can be defined as a psychometric response scale primarily used in questionnaires to obtain a participant's preferences or degree of agreement with a statement or set of statements. Likert scales are a non-comparative scaling technique and are uni-dimensional, which means they only measure a single trait in nature at a time (Uebersax 2006:1). Respondents are asked to indicate their level of agreement with a given statement by way of an ordinal scale. They are most commonly seen as a five-point scale ranging from *Strongly disagree* on one end to *Strongly agree* on the other, with *Neither agree nor disagree* in the middle.

In preparing data for analysis, the researcher took the following steps. In the quantitative research phase, the researcher began by converting the raw data into a form useful for data analysis, which means scoring the data by assigning numeric values to each response and cleaning the data entry errors from the database. In this study, data analysis results are represented in summary form in statements, tables and figures.

3.5   Qualitative Phase

3.5.1   Data collection procedures

According to Punch (2013:3), the basic distinction between qualitative and quantitative data concerns more than merely the difference between data in numerical or non-numerical form, but is more about the whole way of thinking – or even approach – which involves a collection or cluster of methods. The nature of the data is therefore at the heart of the distinction between quantitative and qualitative research (Punch 2013:4). In this way the researcher identifies and recruits a small number that will provide in-depth information about the central phenomenon or concept being explored in the study. The qualitative idea is not to simplify the sample, as would occur in quantitative research, but to develop an in-depth understanding of a few people making up the sample. This corresponds with the opinion expressed by Yin (2011:92) whereby a study topic can be covered with either a larger sample at a more superficial level, or a smaller sample examined more intensely.

In a natural human setting this normally translates into gathering "deep" information and perceptions through inductive, qualitative methods such as interviews and participant observation. The main aim of this kind of research approach is to highlight the specific and to identify phenomena through how these phenomena are perceived by the participants in a given situation – in this case the experience of the lecturers involved in the 2-D and 3-D Design module at the Central University of Technology, Free State (CUT).

■ Interviews

In line with Yin's (2011:3) statement on qualitative research, this study aimed to explore the lecturers' understanding and experiences of the balance between prescriptive and intensive skills building dialogue (conceptualization) and experimentation as witnessed in their implementation of the new curriculum. To do this a phenomenological research approach in collecting data was followed. In this study the researcher made use of semi-structured interviews as a means of gathering data for analysis from the interviews. Leedy and Ormrod (2005:185) rightly indicate that "[s]emi-structured interviews are considered as a social encounter in which a great deal of useful information is gathered." The advantages of using interviews are as follows:

(a) it allows the researcher to enter another person's world and thus gain an in-depth understanding of that person's perspective;

(b) it allows the researcher to get first-hand information about the social world of the respondent; and

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(c) it is a method which is consistent with those theories that value human responses; limitations of the interview as research method can be subjectivity while the interactions between the interviewer and the respondent may be biased.

Bernard (2011:212) defines semi-structured interviews as based on the use of an interview guide. This takes the form of a written list of questions and topics that need to be covered in a particular order and is usually the kind of interview that is mostly employed in professional surveys. The interviewer maintains discretion to follow leads, but the interview guide is a set of clear instructions or questions. This guide should be followed if the researcher wants reliable, comparable qualitative data. Semi-structured interviewing works best with people who are accustomed to efficient use of their time. It demonstrates that one is fully in control of what is wanted from an interview, while at the same time leaving both the researcher and the respondent free to follow new leads. It shows that the researcher is prepared and competent but not trying to exercise excessive control.

The use of an interview involved direct verbal interaction which generated rich information that helped to clarify the phenomenon under study. Cohen (2000:269) defines the interview as a two-person conversation initiated by the interviewer for the specific purpose of obtaining relevant information. Individual, face-to-face interviews were used for lecturers involved in the 2-D and 3-D Design module.

The first section of the interview schedule raised the question of conceptualization. Lecturers were asked questions regarding the studio projects, specifically in the following categories: theme/brief, key elements, research, idea generation and idea development. The second section covered production and process. Technique, testing of the student's own work and evaluation were discussed. The third section focused on engagement in the class. The interview schedule is included as Addendum C.

Exploring the data means examining the data with the aim of developing broad trends and the shape of the distribution or reading through the data, making memos, and developing a preliminary understanding of the database (Creswell & Plano Clark 2007:206).

■ **Participant observation**

Kluckhohn (1940:331-343) defines participant observation as "that method in which the observer participates in the daily life of the people under study, either openly in the role of researcher or in some disguised role, observing things that happen, listening to what is said, and questioning people, over some length of time." Participant observation, furthermore, is described by Bernard (2011:344) as a strategic method, not unlike an experiment, survey or

even archival research. A great deal of the data collected by participant observers is qualitative, such as field notes taken about phenomena and objects observed and sounds perceived in natural settings. The data collected, however, can also simultaneously be quantitative and based on methods like direct observation and questionnaires.

A participant observation method was used as a way to increase the validity of the study, as observations help the researcher form a better understanding of the context and phenomenon under study. The researcher also made use of an observation grid. Aspects such as brainstorming, development of ideas, handling of obstacles concerning material and technique applied were noted. According to Wagner and Turney (1998:15), this method entails observing respondents in their actual workplace or in the production process. A deeper appreciation of the group and its way of life is gained by this technique and may also allow the researcher to observe different levels of insight by means of actual participation rather than mere observation (Frankfort-Nachmias & Nachmias 1992). The grid was developed according to the curriculum design and the planned outcomes that accompany it.

3.5.2 Data analysis procedures

An inductive approach to data analysis is one of the defining characteristics of qualitative research. Firstly, related data on an inquiry is collected; secondly the analysis of the data emerges from the data itself, out of a process of inductive reasoning. The constant comparative method is one way to conduct an inductive analysis and consists of the following four distinct stages (Maykut & Morehouse 1994:126):

(a) comparing incidents applicable to each category;

(b) integrating categories and their properties;

(c) delimiting the theory; and

(d) writing the theory.

In this study, the above-mentioned guidelines were followed closely. During the data analysis each question was approached and analysed. The researcher studied the answers presented by the participants on the questions asked in order to construct an overview of the situation. Initial observations were analysed and categorized in certain themes, e.g.:

- Basic understanding of the visual elements
- The students' ability to apply this knowledge

- Time allocation

- Study guide

- Gathering of information and techniques used

- Critique sessions

- Students' attitudes

- Assessment

Yin (2011:207) explains that interpreting the qualitative data gathered enables the researcher to assign his or her own meaning to the reassembled data; in other words, the researcher can go on to analyse the data collected. As explained above, in the qualitative phase an interview schedule was set up to suit each lecturer being interviewed. The analysis was done synchronically and diachronically. In the former case, all answers to a particular question were compared to each other with a view on uncovering common themes. In the latter case, the answers offered by a particular lecturer across the entire interview were traced to find common characteristics. The cluster of synchronic findings for each question was then compared diachronically across the entire interview process.

A similar process was followed for the observation phase. Each day of observation was analysed synchronically across all phenomena that occurred on that day. Then particular moments in the grid were analysed diachronically. Finally, the two sets of findings were compared and contrasted.

After presenting the results or findings, the researcher then made an interpretation of the meaning of the results in a discussion section of the study. According to Yin (2011:206), an interpretation of the results involves developing a comprehensive interpretation, with the main themes becoming the basis for understanding a study in its entirety.

3.6   Reporting of data

Greene, Caracelli and Graham (1989) describe triangulation as seeking convergence, corroboration and correspondence of results from the different methods and data collected by those methods. Bryman (2006:97) also notes that – with a view on strengthening the validity of a study – quantitative and qualitative research methods may be combined to triangulate findings. As such the responses of the lecturers interviewed were analysed and compared to the responses of the student respondents. The analysis that came from the observation grid was then compared to the interviews of the lecturers and the responses from the student

questionnaire. Finally, the responses were compared in a triangulation with the literature collected on curriculum design as well as the actual curriculum.

3.7   Trustworthiness of research

As measure or gauge for establishing the trustworthiness of the mixed methods research in this study, *credibility*, *transferability* and *reliability* were indicated.

In order to enhance the credibility of this study, triangulation was employed as a validity procedure. This is yet another approach whereby data is drawn from several sources of information to form themes or categories in a study (Creswell & Plano Clark 2011:211). In this way the transferability of the results was pursued. Transferability in qualitative research is mostly pursued through "thick" descriptions. In this study the interviews were compared to the students' answers on the questionnaires as well as the researcher's observations. The researcher attempted to provide triangulation by using multiple data sources such as observation, questionnaires, interviews and a literature review (readings). Thus triangulation led to a thick description of the situation at hand. To be able to demonstrate the accuracy of the observations made throughout a research project, it is sometimes necessary for a researcher to use video recordings, images of students' work or even jottings generated during observations. In this study the researcher took notes while sitting in on the classes but, however, decided against making use of video recordings or images of the students' work, for two primary reasons: firstly, with such a small sample, video recordings were deemed too invasive, and, secondly, the undertaking in the ethics section of the research methodology to guarantee anonymity could not be fulfilled otherwise.

Reliability is the extent to which results are consistent over time and an accurate representation of the total population under study (Joppe 2000:1). A prerequisite for the successful execution and completion of any research project is a pilot study (De Vos et al. 2005:205). In practice it can be defined as a limited or carefully demarcated study conducted prior to a larger piece of research to determine whether the methodology, sampling, instruments and analysis are adequate and appropriate. It is an essential step taken by a researcher in order to test the procedures and techniques to see whether they work satisfactorily. The feasibility of the planned project and bringing possible deficiencies in the measuring procedure to the fore are the main objectives of this pilot study (Sarantakos 2012:291). In this research project a pilot study was conducted in 2014 in order to test the methodology and it was found that questionnaires and interviews would be appropriate. A participant group who is part of the intended test population, but who was not part of the

research sample was used. As such the questionnaires were distributed amongst a small group of first-year students who were registered for the 2-D and 3-D Design module in order to determine the clarity of the questions, the language and the time taken to complete the questionnaire.

3.8   Role of the researcher

The role of the researcher in this study was that of Participant Observer, an outsider participating in some aspects of life around the students and ultimately recording them (Bernard 2011:347). The researcher is a part-time lecturer at the CUT in 2-D and 3-D design in the Department of Design and Studio Art. The researcher collected data in various forms systematically and logically in order to analyse the data for the purpose of the research.

3.9   Ethical considerations

■ Participants' privacy

All the participants involved were consulted and the aim of the study was explained to them in detail in an information leaflet (Addendum D). It was indicated to the participants that by filling in the questionnaire they grant permission to the researcher to use the collected data. The participants to be interviewed were required to sign a letter of consent, as they needed to be furnished with copies of the agreement between the researcher and the interviewee (Addendum D). Participation was voluntary and the individual's responses were kept confidential. Data gathered was kept by the researcher in a safe place. Approval from the Institutional Research Board and Ethics Approval for this study was obtained. Questionnaires were handed out to the students by an independent/neutral party and not by the lecturer involved in the teaching of the 2-D and 3-D Design module. The researcher also made sure that it was very clear that there was no pressure on the students to be involved or to fill out the questionnaire. Participation, furthermore, was used for curriculum development purposes only and no personal characteristics of the lecturers were disclosed that could in any way lead to their identity being guessed at.

■ Bias

In this study, the following precautionary measures were undertaken to deal with possible "bias":

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(a) Questions were formulated clearly in written form;

(b) interviews were audio-taped to capture all spoken words;

(c) interviews were transcribed and re-checked with the participants; and

(d) audiotapes were kept in a secure place for reference.

Participation in this study was entirely voluntary and participants had the right to withdraw at any stage without any penalty or risk of future disadvantage whatsoever. All information obtained during the course of the interviews was strictly confidential and the data was in no way linked to any specific participant.

The identities of the participants were not revealed while the interviews were being conducted. All the data sheets that had been collected were stored in a secure place. The information received during the project was used only for research purposes and was not released for any other purposes. Only the researcher and the supervisors had access to the transcripts of the interviews. The answers were provided anonymously and the identities of the participants were not revealed under any circumstances. The results of this study may possibly be published in future, but again any such publication will refrain from revealing the identity of any research participant. The original transcripts will be stored in a safe place for three years, after which they will be destroyed. The ethics information leaflet can be found attached hereto as Addendum D.

3.10   Delimitations of the study

The study was limited to the Department of Design and Studio Art at the CUT only. Only one group of first-year students was included in the study. The study was also limited to only the lecturers involved in lecturing the first-year module. The study was conducted at the CUT which means that results cannot be generalized to other UoTs. However, the thick description of the process undertaken, and the analysis of the data gathered, will foster the transferability of the outcomes where this may be appropriate.

3.11   Summary and concluding remarks

This chapter has outlined and justified the methods used in this research project to achieve the primary goal of the study, namely to ascertain if there is a balance between prescriptive and intensive technical skills building versus dialogue and conceptualization in the new 2-D

and 3-D Design module. The secondary goals were to establish what the students' overall impressions and experiences of the new 2-D and 3-D Design module were with regards to time management in and out of the class, their positive experiences, technical difficulties experienced, strong points and shortcomings. A further goal was to establish the lecturers' feelings, knowledge and observations regarding the outcomes of the 2-D and 3-D Design module. In order to gain reliable and truthful knowledge, the mixed methods research design was followed.

The population group for this study consisted of students and lecturers involved in the 2-D and 3-D Design module offered in the Department of Design and Studio Art at the CUT. The sample consisted of 13 first-year students out of 51 registered in 2015 for the 2-D and 3-D Design module at the CUT and presented data via a Likert scale questionnaire. Five art lecturers involved in the teaching of the 2-D and 3-D Design module were furthermore selected to gain feedback regarding their feelings, knowledge and observations in the outcomes of the module by means of interviews conducted by the researcher. The responses of the lecturers interviewed were analysed and compared to those of the student respondents. Observation and cross-referencing to literature concluded the triangulation process. Lastly, possible delimitations of the study were highlighted.

The purpose of the next chapter is to analyse the data emanating from the data capturing methods presented above as well as to discuss the findings based on Phase 1 of the research.

CHAPTER 4

DATA ANALYSIS AND DISCUSSION OF THE FINDINGS BASED ON PHASE 1 (QUESTIONNAIRES)

4.1   Introduction

The purpose of the previous chapter was to present the research methods and design used to gather data to address the research problem. One of the methods involved the use of a questionnaire (as a quasi-quantitative research method) that employed a Likert scale mechanism (with some open-ended responses) and which was administered to the selected student population at the close of a five-week cycle. As such, the purpose of the questionnaire was aimed at determining the students' learning and experiences from their perspective. The purpose of this chapter is to present and analyse the results as well as presenting a discussion of the quantitative phase of the study with reference to the data gathered from the student questionnaires. Chapter 5 will engage with the research problem from the point of view of the lecturers concerned (through an analysis and discussion of the results of the interviews) and from the observations undertaken in the learning engagements.

4.2   Presentation and discussion of the questionnaire results

In this section the researcher presents an analysis of the quantitative data collected by means of questionnaires. Questionnaires were handed out to the sample group, namely students registered for the 2-D and 3-D Design module. The demographic data will subsequently be clarified as well as the perceptions of the sample group concerning the aforementioned module.

4.2.1   Section A: Demographic Information

Questions 1.1 to 1.8 of this phase of the questionnaire refer to the background and demographic information of the students as well as their previous exposure to art at school level. In this section of this part of the study, participants were requested to supply demographic data regarding their age, gender, art background at school level, data collection methods most used and type of school attended.

Table 4.1   Percentage distribution of demographic information of the first-year 2-D and   3-D design students (n=13)

AGE AND GENDER			
Age	**Male**	**Female**	**Total Students**
18-19	1 (8%)	2 (15%)	3 (23%)
20-21	3 (23%)	3 (23%)	6 (46%)
22-23	1 (8%)	2 (15%)	3 (23%)
24 or older	1 (8%)	0	1 (8%)
Total	6 (46%)	7 (54%)	
EXPOSURE TO ART AT SCHOOL LEVEL			
Parameter	**No**	**Yes**	**Total Students**
Art at school level	9 (70%)	4 (30%)	13 (100%)
METHODS OF DATA GATHERING			
Parameter	**Internet**	**Library**	**Total Students**
Data gathering methods	12 (92%)	1 (8%)	13 (100%)
Parameter	**City Schools**	**Rural Schools**	**Total Students**
TYPE OF SCHOOL ATTENDED			
Type of school attended	11 (84%)	2 (16%)	13 (100%)

Age and gender: Almost half the participants (46%) were between the ages of 20 and 21, while the rest (23%) were 18 to 19 years old. Three participants (23%) were 22 to 23 years of age, while only one participant was 24 years old or older. The gender distribution of the participants was almost equal, with the majority of the participants (54%) being female and the rest (46%) being male.

Exposure to art at school level: It was found that the vast majority (70%) of the participants had not been exposed to art as a subject at school level, even though most of them (84%) had attended city schools.

Methods of data gathering: The participants were asked which of the Internet or library they made use of the most to gather data for projects. The results suggested that the overall majority (92%) made use of the Internet, while only one (8%) participant made use of the library.

Type of school attended: Most of the participants (84%) reported that they had attended city schools, while only two (16%) participants indicated that they had attended rural schools.

It is interesting to note that the total number of male and the total number of female students is almost equal. From the data it is furthermore evident that the majority of the students were not exposed to art at school level even though most of them attended city schools.

One may assume that due to the technological age these students have grown up in they would obviously make use of the Internet as their main source of idea generation as opposed to using the library.

4.2.2 Section B: Educational Content

Questions 2.1 to 2.17 of this phase of the questionnaire refer to the educational content of the 2-D and 3-D Design module and the way in which the students experienced the module. The aim of this section was to determine the students' understanding of the theoretical content of their learning material.

Table 4.2   Educational content

Questions regarding educational content	Strongly Agree	Agree	Un-decided	Disagree	Strongly Disagree
I was able to connect the key elements (line, shape, focal point, etc.) that I learned about in the 2-D and 3-D theory class to the practical project.	7 (54%)	6 (46%)	0	0	0
I felt that the 2-D and 3-D theory and practical classes were far removed from each other.	1 (8%)	0	2 (16%)	4 (31%)	6 (45%)
I found it difficult to gather visual and factual information out of the studio.	0	2 (16%)	3 (22%)	4 (31%)	4 (31%)
I found the 2-D and 3-D theory classes to be of great value in this module.	4 (30%)	5 (38%)	1 (8%)	2 (16%)	1 (8%)
I preferred working on my own.	5 (38%)	2 (16%)	4 (30%)	2 (16%)	0
I was able to concentrate during class.	4 (31%)	5 (38%)	1 (8%)	3 (23%)	0
I enjoyed being involved in the class with tasks given to me by the lecturer.	6 (46%)	4 (31%)	2 (16%)	1 (8%)	0
I was confident to speak up in class when necessary.	7 (54%)	2 (15%)	3 (23%)	1 (8%)	0
I felt the study guide encouraged self-directive learning.	3 (23%)	3 (23%)	4 (30%)	1 (8%)	2 (16%)
I did more than was expected from me.	2 (16%)	5 (38%)	3 (23%)	3 (23%)	0
The lecturer guided me in a professional manner.	11 (85%)	2 (15%)	0	0	0
The lecturer was knowledgeable and well prepared.	7 (54%)	6 (46%)	0	0	0

In Section B it was concluded that all (54% and 46%) the students claimed (*Strongly agree* and *Agree* respectively) to be able to connect the key elements (e.g. line, shape and focal point) taught in the 2-D and 3-D theory class, and to be able to link this knowledge to the practical project. The majority of the students, i.e. 10 (76%), also felt that the 2-D and 3-D theory and practical classes were sufficiently linked to each other (2.3.3: Life and Career

Skills). This correlates with literature in that deeper learning takes place when students are able to "transfer" knowledge they have acquired in one situation (in this case theoretical knowledge) and are able to apply it to new situations (the making of art pieces) in order to solve new problems, while other types of learning may allow an individual to recall facts, concepts, or procedures. Research shows us that *Ideas* are developed through, among other things, sketchbooks and drawings. Through experimentation and risk-taking, students are encouraged to push boundaries. As stated earlier, the lecturer's main task is thus to encourage the students to achieve certain outcomes through engaging their learning activities (2.4.1.1: Instruction).

Just over half the students, i.e. eight (62%), stated that they were able to work independently and were able to gather information for their out-of-studio projects without the guidance of the lecturer. A total of five (38%) students found it either difficult or were undecided on this issue. Inexperienced students tended to solve a simple problem unmindful of several potential criteria and difficulties (2.3.1.2: Critical Thinking and Problem-solving). It could be because these novice students lack visual literacy skills – i.e. the ability that enables students to effectively find, interpret, evaluate, use and create images and visual media (2.4.1.1: Instruction).

Nine (69%) of the students found the 2-D and 3-D theory classes to be of great value to them. Only one (8%), a small percentage, was undecided, while three (23%) disagreed or strongly disagreed with this statement. This statement supports the feedback given by the students in the beginning of Section B where they claimed to be able to connect the key elements taught in the 2-D and 3-D theory class, and to link this knowledge to a practical project. At the same time, they found the subject to be very helpful, possibly because only a small percentage of the students were exposed to art at school level.

Just over half the students, i.e. seven (54%), indicated that they preferred working on their own; however, when asked if they enjoyed being involved in the class with tasks given them by the lecturer, a vast majority, i.e. 10 (77%), of the learners agreed. Almost half the students preferred working in a group. Studies have shown that it is vital to match styles of teaching with styles of learning by art-based design students (2.4.2 [Professional Development] as well as the sources cited there). The literature states that group work encourages problem-solving. The advantages of problem-based learning include empowering learners to conduct research, integrate theory and practice as well as apply knowledge and skills and, in doing so, to develop a viable solution to a defined problem (2.4.1.1: Instruction). This is important because team or group work supports collaborative and peer-driven learning. Collaborative learning is defined

as "a small group of students working together to complete an academic task" (DoE: Education Glossary) (2.3.1.3: Communication and Collaboration Format).

A high percentage of students strongly agree (46%) and agree (31%) that they enjoyed being involved in the class with tasks set by the lecturer. The fact that most of the students (67%) stated that they were able to concentrate during class could be a result of this positivity felt by the students. Adding to this, the larger percentage of students, i.e. nine (69%), was confident to speak in class when necessary. Three (23%) were undecided while only one (8%) did not have the confidence to speak in class. This might be because of the small size of the class, or it may be because the students had developed sufficient knowledge to feel that they could engage intelligibly with the task at hand.

Although almost half of the students, i.e. six (46%), felt that the study guide encouraged self-directive learning, a surprising four (30%) were undecided, while the rest, i.e. three (24%), disagreed. This finding appears to be problematic because the aim of the study guide is first and foremost to guide students in their learning. In the study guide for the 2-D and 3-D Design module, the learning outcomes are clearly indicated, the teaching/learning activities as well as the assessment strategies are laid out and tasks are specified (2.5.2: Curriculum Design: 2-D and 3-D Design). Curriculum alignment is an essential principle underlying a learning outcomes approach to teaching, curriculum design and assessment (2.4.1.2: Curriculum Design).

More than half the students, i.e. seven (54%), were of the opinion that they did more than was expected of them. The remainder, i.e. six (46%), were either undecided or disagreed.

All the students (100%) agreed unanimously that the lecturer guided them in a professional manner and was knowledgeable and well prepared. These findings strongly support the literature in that rich environments for active learning (REALs) must encourage the growth of student responsibility, initiative, decision-making, intentional learning and cultivate collaboration among students and teachers (2.4.3: Learning Environment). In order for the student to be able to help him- or herself, the lecturer must keep stimulating the student's creativity as well as critical thinking. In this way one broadens the student's concepts. Immediate feedback to the individual and the class group is also vital to encourage further self-study outside of the classroom (2.3.1.2: Critical Thinking).

An open-ended question posed to the students enquired whether they found the prescribed textbook to be very valuable in the module. Six of the 13 (46%) students questioned found the

prescribed textbook to be very valuable in the module. Some of the reasons given for their positive answers were expressed as "the book gave me guidance", "it was very helpful" and "it made things easier for me".

In the same open-ended question seven of the 13 (54%) students questioned did not find the prescribed textbook to be very valuable in the module. It appears that the main reason for their negative answers were the fact that the students did not purchase the book, as it was either too expensive, or they simply did not have the prescribed book and could not access the book through any other means.

Ten (77%) of the 13 learners were present in class throughout the module, while three (23%) were absent. The reasons given for absenteeism were generally personal or family matters. At the CUT student-centred learning is practised. Group work is again encouraged (2.3.1.3: Communication and Collaboration Format), as well as brainstorming, which can be an effective way of generating a large number of ideas in a short period of time (2.3.1.3: Communication and Collaboration Format). As a result of students' exposure to interactive media, they thrive on interactivity and receiving immediate feedback. Generally, there is no time for reflection, so this is an urgently needed part of any thought or design process (2.3.2: Information, Media and Technology Skills). In working with materials the students learn to experiment, to take risks and to think outside the box. As stated earlier, the lecturer's main task is thus to encourage the students to achieve certain outcomes through engaging their learning activities (4.1.1: Instruction).

It was apparent that a step-by-step learning experience was required by the majority of the students, and that through the knowledge and skills they acquired they received a foundation from which they could further develop their knowledge and skill base and problem-solving techniques (2.4.1.1: Instruction). By continually building, interpreting, and modifying their own experiences, greater emphasis is placed on the quality of the learning experience of students (2.4.3: Learning Environment).

Holistic assessment (which is designed to evaluate product, person and process) aligns with a more learner-centred and process-centred approach (2.4.4: Reflection and Assessment). Some assessments are deliberately designed to be formative and summative at the same time (2.4.4: Reflection and Assessment).

When students are given the opportunity to identify problems, they are able to reflect, and this in turn encourages them to go beyond merely getting to the stage where they accept an appropriate solution for a specific brief. Research shows that critique is an integral component of studio education (2.4.4 [Reflection and Assessment] as well as the sources cited there).

Critique ultimately acts as a means of discovering what must and can change and be transformed in people's lives (2.4.4: Reflection and Assessment). When reflecting on all these factors, it is quite apparent how important class attendance is.

All of the students (100%) found it easy to comply with rules in the class.

Five (38%) of the 13 students found the duration of the practical class too short. The main reasons given by these students related to time constraints. Eight (62%) found the duration of classes to be adequate.

Three (23%) of the 13 learners found the theory class duration too short, while 10 (77%) of the students found the opposite to be true. Some reasons given for a negative answer were:

> "I didn't concentrate therefore I didn't do well in the test. I was worried I was going to fail."

> "There is only one class per week and it is early on a Monday morning for a short period. More time is needed to revise."

It appears that overall the students were very positive about their theory subject and they had a very positive attitude towards the lecturer. As first-year students it seems that they lacked the self-confidence to assert themselves about the amount of work they were doing in the time given to them.

4.2.3 Section C: Conceptualization Process

Questions 3.1 to 3.10 of this phase of the questionnaire refer to information gathered regarding the conceptualization process of the 2-D and 3-D Design module and the way in which the students experienced the module. This section aimed to establish whether the students were able to link the conceptualization of their work with the educational content.

Table 4.3   Conceptualization process

Questions regarding the conceptualization process	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
I found it difficult to develop my ideas according to the brief.	0	3 (23%)	2 (16%)	5 (38%)	3 (23%)
I found it difficult to refine my original ideas into a final design.	0	3 (23%)	3 (23%)	6 (46%)	1 (8%)
The briefs given were too difficult.	0	0	3 (23%)	6 (46%)	4 (31%)
The lecturer has to encourage me to generate my ideas in class.	3 (23%)	6 (45%)	2 (16%)	2 (16%)	0
I feel positive about being in the class.	7 (53%)	3 (23%)	2 (16%)	1 (8%)	0
The pre-sketches I did as part of my planning was of great value to my learning.	4 (31%)	4 (31%)	3 (22%)	1 (8%)	1 (8%)
The visual diary that formed part of the theme greatly contributed to my learning.	4 (31%)	7 (53%)	2 (16%)	0	0
I made use of mind-mapping to generate my ideas.	1 (8%)	4 (30%)	3 (23%)	3 (23%)	2 (16%)
I made use of drawings to generate my ideas.	3 (23%)	9 (69%)	0	1 (8%)	0
I made use of the Internet to generate my ideas.	8 (62%)	3 (22%)	2 (16%)	0	0

A small percentage of the participants, i.e. three (23%), found it difficult to develop their ideas according to the brief. Two (16%) were undecided, while eight (61%) of the remaining learners found it easy to develop their ideas according to the brief. Three (23%) found it difficult to refine their original ideas into a final design. Three (23%) were undecided, while seven (54%) disagreed. According to these statistics almost half the students found idea development and refinement a challenge. This seems to be a normal tendency because the literature describes creativity as being a process of developing and expressing original ideas which in turn are then applied (2.3.1.1: Creativity and Innovation). It may be that due to the students' age and inexperience in art education, they found it difficult to refine their ideas. This could also link to

the fact that only 30% of the students had art as a subject at school level. Adding to this they are also not familiar with the fact that to design means to plan and to organize (2.3.1.1: Creativity and Innovation).

It is interesting to note that in Section B of the questionnaire it was evident that all the students (100%) claimed to be able to link theoretical knowledge to the practical project, while 49% and 46% respectively found it difficult to develop and refine their ideas according to the brief. It can be concluded from these statistics that students do not have a problem with the theory but seem to find the conceptualization process challenging. This can be defined as the part where the designer is expected to not only interpret the problem, but also to solve it.

Ten students (77%) disagreed that the briefs given were too difficult, while three (23%) were undecided. This could be an indication that the level outcomes were appropriate for a first-year subject (SAQA Level 5) (2.4.1.2: Curriculum Design). It could also be that the briefs were well developed and complied with the theory. As is seen in the literature, the student should always be guided and equipped to investigate and research, consider and develop, communicate a solution and evaluate the outcome (2.4.1.1: Instruction).

The vast majority of students (nine, or 68%) felt that the lecturer had to encourage them to generate ideas in class. It seems evident that especially at first-year level the students need a lot of encouragement and guidance from the lecturer (2.4.1.1: Instruction). Shuell (1986) (cited by Biggs 2006:349) is of the opinion that the lecturer's main task is to encourage students to achieve those outcomes through engaging the students in learning activities. It is not so much what the lecturer does, as opposed to what the student does, that is actually more important in influencing what the student learns.

Ten students (76%) felt positive about being in the class. Two (16%) were undecided, while one (8%) disagreed. This statement is supported by literature that states that the whole student's involvement in learning is seen as being more than a basic activity. It involves emotions and senses while the student is learning to experiment and learning to take risks. This positivity in the class environment is a very important part of the growth of the learner (2.4.1.1: Instruction). The term "learning environments" can furthermore be used as a more accurate or preferred alternative to the term "studio" which has more limited and traditional connotations – a room with rows of desks and a chalkboard, for example (2.4.3: Learning Environment).

Twelve students (92%) made use of drawings to generate ideas. Eight students (62%) felt the pre-sketches they made as part of their planning were of great value to their learning. Three (22%) were undecided and two (16%) disagreed. How designers work and how they frame

their problems can be found collectively summed up in "design thinking". Research states that designers exercise abductive thinking as opposed to deductive and inductive thinking (2.3.1.1: Creativity and Innovation).

Only five students (38%) made use of mind-mapping to generate ideas. Three (23%) were undecided and five (39%) disagreed. The vast majority of students (92%) used drawings, while 11 (84%) made use of the Internet to generate ideas. Only two students (16%) were undecided. Brainstorming can be an effective way to generate various ideas around a certain theme, after which one determines which idea – or ideas – is the best solution (2.3.1.3: Communication and Collaboration Format). The 11 students (84%) who made use of the Internet to generate ideas demonstrate potentially that they have grown up in an information technology (IT) and media-rich environment and have subsequently been exposed to technology.

Eleven students (84%) felt the visual diary (student portfolio) that formed part of the theme greatly contributed to their learning. This coincides with research that shows that student portfolios (visual diaries) are commonly used amongst students as evidence of their progress (2.3.3: Life and Career Skills). The use of a student portfolio as evidence of learning is common practice in art and design in education.

At the CUT students are expected to develop a personal and unique visual diary demonstrating the mastery of design. The works in the visual diary may include drawings, prints, collages, photographs, material swatches and so forth. In their required visual diary, students place photographic examples of objects, draw working ideas for projects and write down ideas for their work (Venter & Van den Berg 2015:5).

It can be deduced that the students generally had a very positive attitude about being in the class environment. As has been mentioned previously, their inexperience and lack of self-confidence made them undecided as to whether they found various aspects of the module helpful. The overall feeling regarding idea generation leaned very strongly towards drawing and technology.

4.2.4 Section D: Educational Strategies

Questions 4.1 to 4.13 of this phase of the questionnaire refer to the educational strategies of the students in the 2-D and 3-D Design module and the way in which the students experienced the module. In this section the researcher hoped to highlight the students' educational strategies as well as their understanding of the content of their learning material and their understanding of it.

Table 4.4   Educational strategies

Questions regarding the educational strategies	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
I found the demonstration by the lecturer valuable for me to be able to produce my final product/art piece.	10 (76%)	2 (16%)	1 (8%)	0	0
I only do the minimum amount of work expected from me.	2 (16%)	3 (22%)	4 (30%)	2 (16%)	2 (16%)
The techniques learnt in class were of value to me.	8 (62%)	3 (22%)	1 (8%)	1 (8%)	0
The lecturer has to continuously show me examples of what can be done in this specific module.	5 (38%)	3 (23%)	3 (23%)	1 (8%)	1 (8%)
The time allocated to the completion of the final product/art piece was sufficient.	4 (31%)	2 (16%)	7 (53%)	0	0
The materials provided in the class were sufficient.	6 (46%)	4 (30%)	1 (8%)	2 (16%)	0
It is of value to me if the lecturer maintains an ongoing (beginning, middle and end) review process throughout the module.	7 (54%)	4 (30%)	2 (16%)	0	0
The practical class was very informative and I learnt a lot from reflecting on my practical work.	8 (62%)	3 (22%)	2 (16%)	0	0
I am positive regarding the production of my final product/art piece.	6 (46%)	4 (30%)	0	3 (24%)	0
I feel very proud of the fact that I have possibly produced something new for the first time.	9 (68%)	1 (8%)	1 (8%)	2 (16%)	0
The skills I learnt in 2-D and 3-D Design were of great value to me as an artist/designer.	8 (62%)	3 (23%)	2 (15%)	0	0

Twelve students (92%) found the demonstration by the lecturer valuable in the production of their final product/art piece. This coincides with the literature indicating students working closely with the lecturer in order to develop their skills and knowledge (2.4.4: Reflection and Assessment). The literature shows us that it is important that students see a final example of what the end product will look like (2.3.2: Information, Media and Technology Skills). On first-year level, students still require a step-by-step learning experience through which they can obtain basic skills (2.4.1.1: Instruction)

Five students (38%) reported that they only did the minimum amount of work expected from them. In Table 4.2 one can see that 54% of the students stated that they did more than what was expected from them concerning educational content. This contradiction is interesting and is a possible indication of the students' inability to recognise their own self-regulatory learning capacity.

Eleven students (84%) claimed the techniques learnt in class were of value to them. Research again shows that student-centred learning supports this practice of placing the student at the centre of the learning experience. It is interesting to note that lecturers in design are more likely to adopt a student-focused, conceptual change approach than, for example, lecturers in the sciences (2.4.1.1: Instruction).

Eight students (five and three, i.e. 38% and 23% respectively) strongly agreed and agreed that the lecturer had to continuously show them examples of what can be done in a specific module. Three (23%) were undecided, while two (16%) did not agree. It seems that lecturer instruction on the first-year level of the course remains an integral part of learning, while emphasis is placed on the production of objects (art pieces). The literature indicates that first-year level students should arrive at an understanding that art-making is an ongoing process (2.5.2.2: Teaching and Learning Activities: 2-D and 3-D Design) (Learning outcomes: 2-D and 3-D Design at the CUT).

Six students (47%) agreed that the time allocated to the completion of the final product/art piece was sufficient. A majority of seven (53%) was undecided. It appears that when students typically undergo the transition from school to higher education, they experience significant change or increase in academic expectations and processes. The main challenge is that of time management and with each succeeding transition, students are expected to become more self-reliant and assume more responsibility for things such as being organized, planning ahead, or meeting deadlines without assistance or reminders from lecturers (2.3.4: Productivity and Accountability) (DoE: Education Glossary – *transition*).

Ten students (76%) felt the materials provided in the class were sufficient. One (8%) was undecided and two (16 %) disagreed.

Once again it was evident that due to their lack of experience and confidence, 11 (84%) felt it was of value to them if the lecturer maintained an ongoing (beginning, middle, and end) review process throughout the module. Two students (16%) were undecided. It is evident that the lecturer has to stimulate interactivity in the class and adequate time must be given to students to reflect on their work and learn from each project's feedback (2.3.1.2).

Eleven (84%) felt the practical class was very informative and that they learnt a lot from reflecting on their practical work. Only two (16%) were undecided. Reflection is a very important part of learning and this coincides with the literature that states that students need to be given time to reflect on their work to encourage self-study outside the class (2.3.1.2).

Ten students (76%) were positive regarding the production of their final product/art piece. Three (24%) were not. Ten respondents (77%) felt very proud of the fact that they had possibly produced something new for the first time. One (7%) was undecided and two (16%) disagreed.

Eighty-five per cent felt that the skills they learnt in the 2-D and 3-D Design module were of great value to them as an artist/designer. Sixteen per cent were undecided. Research shows that what designers understand about design and how they go about the act of designing is based on the understanding of skills learnt (2.3.1.1: Creativity and Innovation).

In an open-ended question the students were asked whether they were able to work through the technical obstacles that arose in class during the production of their final product/art piece. All the students (100%) felt that they were able to do this successfully.

In an open-ended question the students were asked if they found the technical side of the production of the final product or artwork easy to master. Most of the students (77%) found this side of the production easy to master, while the rest (23%) found it difficult. The general feedback given included references to guidance from the lecturer and practice gained in class. It was again found that at first-year level, the three (23%) that found it difficult stated that it was their first time taking a certain subject.

Because students have moved away from merely being taught towards a learning mindset, they have been encouraged to have more control over their learning. This contrasts with the present findings in that it appears to be obvious that the students generally need an ongoing form of guidance and encouragement from the lecturer, largely due to their inexperience at first-year level and their lack of confidence. At the same time, they reported being immensely proud of the production of their work.

4.2.5 Section E: Meta-cognition

Questions 5.1 to 5.10 of this phase of the questionnaire refer to the meta-cognitive information regarding the contents of the 2-D and 3-D Design module and the way in which the students experienced the module. Individuals with consciousness and self-awareness have the ability to think about what they are thinking about, therefore the aim of this section was to determine the students' understanding of the content of their learning material and their understanding of it.

Table 4.5:   Meta-cognition

Questions regarding meta-cognition	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
In the critique sessions I was made aware of the importance of time management.	7 (54%)	4 (30%)	1 (8%)	1 (8%)	0
I feel that I have the necessary background knowledge to critique another student's work.	2 (16%)	6 (45%)	3 (23%)	1 (8%)	1 (8%)
I have the vocabulary to engage in valuable critique skills.	4 (31%)	4 (30%)	4 (31%)	1 (8%)	0
I enjoyed the designing process of the module.	8 (62%)	3 (22%)	1 (8%)	1 (8%)	0
I enjoyed the making of the actual art piece.	8 (62%)	2 (15%)	2 (15%)	1 (8%)	0
I find the assessment method to be a fair process.	6 (46%)	4 (31%)	3 (23%)	0	0
I learnt a lot from the mistakes I made during the testing of my work.	8 (62%)	4 (30%)	1 (8%)	0	0
The evaluation of my work was done in a satisfactory and fair manner.	6 (46%)	5 (38%)	2 (16%)	0	0
If I could re-do my project, I would execute it differently.	6 (46%)	2 (16%)	3 (22%)	1 (8%)	1 (8%)

Eleven students (84%) agreed that in the critique sessions they were made aware of the importance of time management. The outcomes related to core or key abilities and skills such as teamwork, communication, time management, resource management, workshop skills and information technology (Fig. 2.9: Learning Outcomes of 2-D and 3-D Design). Research highlights the fact that there are issues in relation to feedback and assessment across all disciplines, while the students questioned in a survey were of the opinion that they did not get enough feedback (2.4.4: Reflection and Assessment). The high percentage indicates that overall the students were very positive about the assessment of their work.

Eight students (61%) felt that they have the necessary background knowledge to critique another student's work. Four (31%) were undecided and one (8%) disagreed. Secondly specific outcomes refer to the specific knowledge, attitudes and understanding which should be displayed in a particular context (2.5.2.1: Learning Outcomes: 2-D and 3-D Design). Research shows that after the Second World War an explosion of art colleges in the UK and Europe saw the critique ("crit") becoming a recognized form of providing critical engagement (2.4.4: Reflection and Assessment).

When considering terminology for the critique sessions, 62% felt they have the vocabulary to engage in valuable critique skills. Thirty-one per cent were undecided whereas 8% disagreed. It is of paramount importance that lecturer, student and peers should all be involved in the critique process (2.3.3: Life and Career Skills). The students' ability to articulate their own ideas must first be developed in order to understand the material world within the confines of a particular discipline (2.4.1.1: Instruction). Students will also be expected to make decisions about their own actions and have the ability to evaluate their own performance against given criteria. Schön (1987:26) defines reflection-in-action as "thinking what one is doing while one is doing it." On learning how to do something, one can nonetheless execute smooth sequences of activity, recognition, decision, and adjustment without having to "think about it".

Eleven respondents (84%) enjoyed the designing process of the module. One (8%) was undecided and one (8%) disagreed. It is evident by the design students' largest grouping being potentially ENTP (Extraversion, iNtuition, Thinking, Perception) that their creativity and their particular personality types seem inextricably linked to one another (2.4.2 [Professional Development] and Fig. 2.7: MBTI Scales). Thus the main aim of curriculum design is to empower students to achieve outcomes which are specifically, explicitly and visibly described, knowing all students can achieve these outcomes, and that the students will be able to *do* significant things at the end of their time at the CUT.

A large majority of the respondents (77%) enjoyed the actual making of the art piece. The remainder and was undecided (15%) or disagreed (8%) respectively.

The majority of the participants (10, or 77%) found the assessment method to be a fair process. Three (23%) were undecided. Here it is important to distinguish between formative and summative assessment. In formative assessment students learn from whatever feedback is provided, while in summative assessment the grade awarded to the student contributes to the overall grade at the end of the study unit (2.4.4: Reflection and Assessment). A wide variety of assessment activities are applied in this subject to test the students' knowledge about the content and to ensure that the desired skills are mastered. Students have to pass all six of the

modules in order to pass the subject (Venter & Van den Berg 2015:5) (2.5.2.3: Reflection and Assessment of 2-D and 3-D Design).

Twelve students (92%) reported that they learnt a lot from the mistakes they made during the reflection of their work while 8% were undecided. During the risk-taking process, problem-solving is generated (2.2: Introduction). Immediate feedback is essential and class exercises can provide the platform for immediate feedback to stimulate students and to encourage further self-study outside of the classroom (2.3.1.2: Critical Thinking and Problem-solving).

Eleven students (84%) felt the evaluation of their work was done in a satisfactory and fair manner. Sixteen per cent was undecided. Other institutions have used fairly traditional approaches to their structure and system for the assessment of practical modules. The students are given briefs which they complete during the year. The lecturer then provides formative assessment and feedback in a studio environment. Approaches such as holistic assessment (which is designed to evaluate product, person and process) and authentic assessment – both of which move towards a more learner-centred and process-centred approach – have been identified (2.4.4: Reflection and Assessment).

Eight students (62%) felt that if they could re-do their projects they would execute them differently. Twenty-two per cent were undecided and 16% disagreed. Successful reflection encourages self-awareness, personal and professional growth, both individually and collectively. Group critiques take place at the completion of each of the six projects set for the 2-D and 3-D Design module. Using design vocabulary during these sessions, students observe and discuss each other's work. This helps the students gain understanding and confidence when discussing their own work. As a result, students will be able to understand concepts of visual expression and will be able to construct an object using the appropriate materials and methods. Students will also be expected to do self-reflection and write notes on their experiences during and after the process of creating each project (Venter & Van den Berg 2015:5) (2.5.2.3: Reflection and Assessment of 2-D and 3-D Design).

The majority of the students (92%) found the critique sessions of value to the learning process. From the findings it is clear that the students were positive about the manner in which their work was assessed. They also appear to be positive about the fact that they are able to successfully critique each other's work, despite their lack of experience and confidence.

4.3　Conclusion

In this chapter an analysis of the quantitative data, collected by means of questionnaires, was presented. The demographic section of the questionnaire referred to the age, gender, art background at school level, data collection methods most used and type of school attended. Almost half the participants were between the ages of 20 and 21, while 23% were 18 to 19 years of age and 23% were between 22 and 23 years old. Only one participant was 24 years old or older. The gender distribution of the participants was almost equal, with the majority of the participants being female (54%) and the rest being male (46%).

It was found that the vast majority (70%) of the participants had not been exposed to art as a subject at school level. The overall majority made use of the Internet to gather information. It was noted that most of them (84%) had attended city schools, while a significantly small minority had attended rural schools.

Factors such as key elements (e.g. line, shape and focal point learned about in the 2-D and 3-D theory class), practical classes and gathering of visual and factual information were investigated in an attempt to determine the students' understanding of the theoretical content of their learning material. From the students' perspective they were able to connect these key elements to their practical work. Some preferred working in groups, while others enjoyed working on their own. It was apparent that a step-by-step learning experience was required by the majority of the students. It appears that overall the students were very positive about their theory subject and they had a very positive attitude towards the lecturer.

In the conceptualization process the information gathered was aimed at establishing whether the students were able to link the conceptualization of their work with the educational content. The development as well as the refining of their ideas according to a brief were discussed. It was concluded that the students found idea development and refinement a challenge. This seemed to be a normal tendency and was possibly due to the students' age as well as their inexperience in art education. Even though the conceptualization process proved to be a challenge, the students were generally satisfied that the level outcomes were appropriate for a first-year subject.

The students were of the general opinion that the lecturer had to encourage them to generate ideas in class. It seems evident that especially at first-year level the students needed a lot of encouragement and guidance from the lecturer. The majority of the students, however, felt positive about being in class. (This positivity in the class environment is a very important part of the personal growth of the learner.) Most of the students made use of drawings to generate

ideas and also relied on the Internet for inspiration. In this regard it was found that designers exercise abductive thinking as opposed to deductive and inductive thinking.

The educational phase of the questionnaire refers to the educational strategies of the students in the 2-D and 3-D Design module and the way in which the students experienced the module. At first-year level students still required a step-by-step learning experience through which they could obtain basic skills. This contradiction is interesting and is a possible indication of the students' inability to recognize their own self-regulatory learning capacity. The techniques learnt in class were of value to them, even though the lecturer had to continuously show them examples of what could be done in a specific module. It seems, therefore, that lecturer instruction at first-year level remains an integral part of learning. The transition from school to a tertiary institution resulted in a significant change or increase in academic expectations and processes. The questionnaire revealed that one of the main challenges was that of time management and with each succeeding transition, students were expected to become more self-reliant and assume more responsibility for things such as being organized, planning ahead, or meeting deadlines without assistance or reminders from lecturers. The students generally felt very positive regarding the production of their final product/art piece. Because students have moved away from merely being taught towards a learning mindset, the aim was to encourage the students to have more control over their learning; however, the findings indicate that the students felt they generally needed an ongoing form of guidance and encouragement from the lecturer.

The students enjoyed the designing process of the module as well as the actual making of the art pieces. Immediate feedback appeared to be essential and class exercises provided the platform for immediate feedback to stimulate students and to encourage further self-study outside of the classroom. From the students' perspective the general conclusion can be made that they felt very positive about the module 2-D and 3-D Design. Despite their lack of experience and self-confidence, they claimed to be able to have certain necessary skills to take part in their critique sessions. The overall consensus was nonetheless that they needed a lot of encouragement from the lecturer.

As individuals with consciousness and self-awareness and having the ability to think about what they are thinking about, the aim of the meta-cognitive phase was to determine the students' understanding of the content of their learning material and their understanding of it. From the students' perspective they felt that the critique sessions were a very important part of their reflection and learning process. As novice students they were possibly more confident than they should have been in their ability to vocalize their critiquing of each other's work. The vast majority claimed to have enjoyed the designing process as well as the making part of the

art pieces. The students were generally pleased with the way in which their work was assessed.

In light of the above it can be concluded that, in reaction to their experiences in the 2-D and 3-D Design module, the students enjoyed the making processes, they struggled somewhat with the building of inspiration towards conceptualization, they struggled extensively with time management, they appeared to lack the self-confidence to make decisions about their making process without intensive lecturer guidance and they found a close correlation between the theoretical component and the critique sessions. They experienced the allocation of time, venue, and materials to be adequate. Overall they appeared satisfied that they could "transfer" the conceptual and theoretical knowledge into the techniques of designing and making. As such it would appear from the data that despite some difficulties, the students were by and large satisfied with the module on various different levels.

The purpose of the next chapter is to gauge the reactions of the lecturers to the same process (by means of the analysis of interviews) with a view on correlating the lecturers' experiences with those of the students, and to add the researcher's classroom observation into the analysis so as to triangulate the potential effectiveness of the course. Following this, the strengths and weaknesses of the course design – following implementation – will be undertaken in the final chapter with a view on proposing possible amendments and modifications.

CHAPTER 5

DATA ANALYSIS AND DISCUSSION OF FINDINGS BASED ON

PHASE 2 (INTERVIEWS AND OBSERVATIONS)

5.1   Introduction

The purpose of the previous chapter was to present and analyse the data collected from the students by means of a Likert-type scale questionnaire. As such, the chapter set out to determine the students' experiences and learning in the 2-D and 3-D Design module. The purpose of this chapter is to determine the experiences of the lecturers who taught the module (by means of an analysis of the answers provided as a response to a semi-structured interview process, as well as the findings from the observations undertaken by the research in the relevant classes). The first part of the present chapter interrogates the interview responses and compares them to the literature presented in Chapter 2 as well as the findings presented in Chapter 4. The second part of the chapter interrogates the observations, and does likewise in its comparisons. The chapter will conclude by pointing to the overall findings which are to be presented in the final chapter.

5.2   Presentation and discussion of the interviews

In this section the researcher presents an analysis of the data collected by means of interviews. Individual semi-structured interviews were conducted with the lecturers involved in the 2-D and 3-D Design module at the Central University of Technology, Free State (CUT). Data analysis procedures gave rise to results that can be presented by means of themes and categories. Each theme or category is analysed, and then compared to the literature (where appropriate) as developed in Chapter 2 as well as to the findings from the student questionnaire as presented in the previous chapter.

5.2.1 Theme A: Factual Information

Understanding the concept of visual elements found in the subject terminology relating to the 2-D and 3-D Design module – such as the design elements and principles, sources of design inspiration and the design process – is a very important part of the first-year curriculum. The participants were therefore presented with the following question:

> **What is your experience regarding the students' basic understanding of the visual elements as well as their ability to apply this knowledge to the planning of their practical work?**

Statements from the participants affirmed that most of them were of the opinion that the students were not able to apply knowledge regarding the understanding of visual elements to the planning of their practical work.

"*For most first-years the concept of visual elements is completely new. Although they learn and understand the concepts from a theoretical point of view, they do not have enough time to practically apply the knowledge in planning.*" **(Participant 1)**

"*I observed that some on them are on the level they should be and some of them are struggling to see where it all fits in. The students who are not aware of what is going on in the market are usually the ones who are challenged. They really did not give it a thought up until now.*" **(Participant 3)**

One participant reported that this basic understanding was not fully connected to that specific subject.

"*I think their understanding is very little in connection with the subject I teach, because the moment I tell them to design something, the first things they come up with are the most basic things they have seen in retail shops. So at the moment when I see them for the first time it is very limited; they struggle to come up with something original.*" **(Participant 4)**

"*They do not really apply the knowledge that they have gained in the theory class. You have to repeat it a few times, and when they do their designs you still have to point out to them that they have to learn this and that about line or form or shape or balance – how and where you apply it. You have to reiterate it the whole time otherwise they just continue and don't really think further.*" **(Participant 5)**

Only one participant reported that the students do have the ability to apply what they have learnt in class.

"*I think they have the ability to apply what they learn in class. They understand what they have learnt and can apply it to their practical.*" **(Participant 2)**

This is in strong contrast to the perceptions of the students (Table 4.2: Educational Content) that they are able to connect the key elements taught in the 2-D and 3-D design class. Some participants added that because the subjects were so new to the students and due to time constraints, the students found this application difficult. This correlates with the literature in that deeper learning takes place when students are able to "transfer" knowledge they have learnt in one situation (in this case theoretical knowledge) and are able to apply it to new situations (the making of art pieces) in order to solve new problems, while other types of learning may allow an individual to recall facts, concepts, or procedures. Research shows us that ideas are developed through, among other things, sketchbooks and drawings. Through experimentation and risk-taking students are encouraged to push boundaries. As stated earlier, the lecturer's main task is thus to encourage the students to achieve certain outcomes through engaging their learning activities (2.4.1.1: Instruction).

The literature (Shuell 1986:429) predicts that learning takes place when students are encouraged by lecturers to achieve certain outcomes. It is not so much what the lecturer does, as opposed to what the student does, that is actually more important in influencing what the student ultimately learns (cited by Biggs 2006:349).

Time allocation is an essential foundational part of the students' daily planning and goal-setting strategy, so in order for them to be able to complete their studies successfully, they need to master core skills, one of which is time management (2.5.2.2: Teaching and Learning Activities: 2-D and 3-D Design).

With the following question the researcher attempted to establish whether the students had sufficient support in order to be successful in their theory class.

> **What are your feelings regarding the time allocated for the theory class as well as the prescribed textbook and notes that are supplied by the lecturers?**

All the participants agreed that the time allocated for the theory class was adequate and that the notes and prescribed textbook were sufficient, depending on whether the students actually purchased the book or had access to the book through other means.

"*The textbook is great. I don't know about the notes. I have never seen the notes the students get. I don't know if the theory class is enough and if they learn enough in the class.*" **(Participant 2)**

"*I know some of the things I want them to know they had already learnt in the theory class. I am happy with what I have seen. My elements are showed there and the most important parts but in my practical class I would go through all those things again just to make sure they understand. I think the notes are sufficient.*" **(Participant 3)**

"*I think the time is sufficient and it's a good textbook. I just don't think all the students have it or bother to buy it.*" **(Participant 5)**

This statement correlates with the feedback from students in an open question in their questionnaires (4.2.2 [SECTION B: Educational Content] where 54% of the students questioned responded that they did not purchase the book because it was too expensive).

Because both the independent person and environment are interdependent variables (Kolb & Kolb 2005:199), it is important for students to be able to work independently away from the studio as part of their time management strategies. The participants were therefore asked the following question:

> **What is your observation regarding the students' approach to gathering information in and out of the studio?**

All the participants were of the opinion that it depended on the individual student whether they gathered information in the studio as well as out of the studio. If students had a positive attitude towards their work, they would be positive about going out and doing their share of out-of-studio work. Designers' creativity and their particular personality types seem inextricably tied to one another and intuition seems to be at the core of the designers' special brand of creativity (Durling et al. 1996:6).

"*For me it was difficult. I have to teach them to think – to go and get information, and to go and look for inspiration. I have to help them.*" **(Participant 2)**

"*Some of the approaches differ a lot. Some of the students actually go out into the industry and look at products and how they are presented in the marketplace. Some students just use the Internet and then think it's going to work. Some students don't do any research and this is a big problem. It depended on the student; some do a lot of research.*" **(Participant 3)**

"*The students want to work in class, but I find that when they go home they don't want to do any extra research. I don't think they have a culture of going home and doing work on their own.*" **(Participant 4)**

This is in contrast to the perception by students as just over half (62%) were of the opinion that they were able to work independently out of the studio (4.2.2: Table 4.2*: Educational Content*).

Formative assessment and feedback in a studio environment is provided by the lecturer. Critique sessions also take place in the form of judgment and feedback by lecturer, student and peers (2.3.2: Information, Media and Technology Skills). An essential part of any student's production of work is the process of reflection. The following question was asked:

Do you feel that the basic framework and guidelines in the study guide are appropriate in order to give the students autonomy and help them develop skills for self-directive learning? If not, what would you have done differently?

All the participants reported that the guidelines in the study guide were sufficient depending on whether the students actually made use of the study guide.

"*This is the lecturer's responsibility. I think the study guide does that. I was also once a student and even though there are a lot of references in the study guide, students seldom use these references. You really have to encourage the student to look for references.*" **(Participant 2)**

"*What we've put in the study guide – I think it will work for them. They know the basics and they can self-study it if they really want to. I think everything is there. It all depends on them. I've given them the basic knowledge of what they need to look for, but I think there are elements we can maybe add, such as specific rules that apply to certain techniques. These are not in the study guide, because it's too much to put in the study guide.*" **(Participant 3)**

"*I alter my study guide after every five weeks as we progress. In this way you can see what worked and what didn't work. Alternatively, you can omit some things. I then try to incorporate it into the study guide just to help the next group to have it in writing.*" **(Participant 5)**

The feedback from the student questionnaire indicated that almost half (46%) felt that the study guide encouraged self-directive learning (Table 4.2: Educational Content). The first-year module in 2-D and 3-D Design indicates that at the end of the module the student should have acquired certain fundamental knowledge and should have developed certain fundamental skills. These need to explore the inherent qualities of materials and the potential of appropriate

technologies as well as their use in achieving imaginative expressive two- and three-dimensional form. These should also be based on both perceptual and conceptual principles as well as the competency to explore and manipulate the expressive potential of various media, techniques and relevant technologies applicable to 2-D and 3-D (2.5.2.2: Teaching and Learning Activities: 2-D and 3-D Design).

5.2.2   Theme B: Conceptual Information

The literature reiterates that beginner students became stuck in problem-definition and do not progress satisfactorily into further stages of the design process (2.3.1.2: Critical Thinking and Problem-solving).

Students at first-year level are still adjusting to the accelerated pace of the year's work. With the following question the researcher attempted to find out if, in the experience of the lecturers, the students were able to manage the time they were allocated for idea generation sufficiently.

> **What are your feelings regarding the time allocated for idea generation?**

Only one participant reported that the time was not enough at first-year level: "*I don't think it's sufficient. Especially in the first year they still struggle to go from the inspiration part to get a design. Because I am also working with second-years you can see they are faster, but the first- years still struggle to go from the inspiration to get a design.*" **(Participant 5)**

"*I think it's sufficient. My ideas are straightforward. Because in my module you need to sell an idea to a client, the product has to be visually impressive and it has to have something unique about it. So I think the time for that is enough for me.*" **(Participant 3)**

"*I think that's enough because when they come to me first I launch the project and then we first start with the basics of the module. They then have quite a long time to get their ideas ready because I only start with the final product in week 3 [of the five weeks].*" **(Participant 4)**

The literature (Cross 2011:120-121) indicates that inexperienced students become over-involved with information gathering instead of continuing with the solution generation phase. They also tend not to gather a lot of information, solving simple problems without giving thought to several potential criteria and difficulties (2.3.1.2: Critical Thinking and Problem-solving).

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"*I don't think it's sufficient. Especially in the first year they still struggle to go from the inspiration part to get a design. Because I am also working with second-years you can see they are faster, but the first-years still struggle to go from the inspiration to get a design. They are very slow.*" **(Participant 2)**

Idea generation is an important part of the design process. Designers make use of various techniques to generate ideas, therefore the following question was aimed at uncovering the methods most used by the students. The literature shows that "doing" starts with visual experimentation, and at this point an idea starts to take form, whether in the form of a sketch, through trial and error, intuition or deliberate application of a system (2.3.1.2: Critical Thinking and Problem-solving).

> **In your studio, do you find it necessary to make your students aware of various methods such as mind maps, brainstorming, drawing techniques, images or other technology, or do you find that they do this on their own?**

The techniques most used by the students were drawing, referring to examples on the Internet, modelling, brainstorming, and group discussions. Past studies have shown that novice students managed to solve simple problems despite several potential difficulties. In protocol studies with industrial design students their activities were divided into three modes: information gathering, sketching, and reflecting (Cross 2011:130). From the literature one notes that brainstorming is a traditional approach allowing participants to build on each other's ideas and aims to generate a large quantity of ideas in a short period of time (2.3.1: Learning and Innovation skills).

"*Because visual interpretation is key I mostly show the students images of artefacts and explain the techniques used to create these artefacts. Thereafter they make use of drawing techniques to further develop their concepts.*" **(Participant 1)**

"I tell them to work with drawing techniques. First they must go and collect images then combine them into one drawing for their practical work." **(Participant 2)**

"*They do need guidance with their idea generation because in my subject they need specific techniques and design methods. They don't automatically know these things when they start here.*" **(Participant 3)**

Pentak et al. (2013:4-21) describe "looking" at a problem as possibly the primary education of any artist. "Doing" starts with visual experimentation and for most artists and designers,

this means "thinking with the materials". It is at this point that an idea starts to form. The following question was asked in support of this statement:

> **In your experience, how does the student go from idea generation to idea development in your studio? For example, do you need to inspire the students (and if so, why do you think this is so, and how do you go about it) or do you find they do not need your guidance or input directly?**

The participants reported that the students needed a lot of inspiration and guidance throughout the idea development phase and a very visual approach had to be taken (modelling) with regard to this. Here the key concept is "transferable knowledge". This is the end product of deeper learning and which allows the student to transfer what was learned to solve new problems (Pellegrino & Hilton 2012:18; 2.4.1.1: Instruction). In the literature we see that the lecturer has to stimulate interactivity within the class, and ways have to be created to give immediate feedback to the individual and the class group. This takes place in the form of critique sessions which stimulate students as well as encourage self-study outside of the classroom (2.3.1.2: Critical Thinking and Problem-solving).

"*I believe the lecturer should always try to inspire students to deliver better work by challenging them. In my studio students will use visual examples of objects in order to stimulate idea development. Most first-years require guidance in creativity and technical skills.*" **(Participant 1)**

"*They need a lot of inspiration. I think they come from a school set-up where they need to be taught to go and look for inspiration. Maybe they were 'spoon-fed' at school. I teach them to express themselves verbally in a visual way. This is the best way to inspire them. First-years need inspiration and guidance.*" **(Participant 2)**

In the literature we learn that visual literacy is a set of abilities that enables an individual to effectively find, interpret, evaluate, use, and create images and visual media. (2.4.1.1: Instruction).

A report by Thomson et al. (2013:1) argues that the Internet and social media have "increased engagement" and made art a more participatory experience. They also tend to agree that the Internet has "played a major role in broadening the boundaries of what is considered art." The following question was asked in an attempt to discover if this was the case:

Through your observation, what would you say would be the techniques most used by the students?

The techniques most used by the students were gathered from research conducted on the Internet and from paging through magazines.

"*Students mostly use images of artefacts as inspiration for their own works. Although magazines are used, images are mostly searched on the Internet.*" **(Participant 1)**

According to the findings in Chapter 4 (4.2.3: Section C: Conceptualisation Process), almost half the students claimed to have found idea development and refinement a challenge. This seems to be an average tendency because the literature describes creativity as being a process of developing and expressing original ideas which in turn are then practically applied (2.3.1.1: Creativity and Innovation). It appears that due to their age as well as their inexperience in art education, the students found it difficult to refine their ideas. This could also link to the fact that only 30% of the students had art as a subject at school level. Additionally, they are also not familiar with the fact that to design means to plan and to organize (2.3.1.1: Creativity and Innovation). An invention or a creative idea becomes an innovation only once it has found a market or at least a practical way to apply that idea (2.3.1.1: Creativity and Innovation). The following question attempted to discover the ways in which students go about this application:

How do the students apply this idea generation to further developing their ideas?

The respondents reported that most of the students make use of drawings to further develop their ideas.

"*In my subject, students will firstly design their artefacts on paper, by drawing. They will then choose the best designs for implementation.*" **(Participant 1)**

"*In my subject the students would do their designs on the computer.*" **(Participant 3)**

"*They make lots of smaller drawings or designs. They will then choose the best designs for implementation.*" **(Participant 2)**

"*They draw the image first, then select a section of it and stylize or simplify it.*" **(Participant 5)**

The literature explains that the evidence of the process the students are making use of in the production of a final artefact is seen in their visual diaries (journals). The visual diaries

inevitably range in effectiveness, depending on the student (2.3.3: Life and Career Skills). This is a way in which they can analyse their mistakes and work through the technical difficulties they encounter.

5.2.3 Theme C: Procedural Information

Procedure refers to the process taken by the student in order to complete an artwork or project. In order to discover how the lecturers approached this aspect of their instruction, the responses to the thematically related questions are analysed and discussed in this section.

It is commonplace for students to be given assessment opportunities in the form of briefs which they complete during the year. These are followed by formative assessment and feedback in a studio environment. Because students come with various interests, background knowledge and abilities, the following question was asked in support of this:

> **Do you feel that the briefs (assignments) given to the students are appropriately challenging, or are they too easy or too difficult?**

Most of the participants agreed that the briefs given to the students were adequate for first-year level. This could be an indication that the level outcomes were appropriate for a first-year subject (SAQA Level 5) (2.4.1.2: Curriculum Design). It could also be that the briefs were well developed and complied with theory. As is seen in the literature, the student should always be guided and equipped to investigate and research, consider and develop, communicate a solution and evaluate the outcome (2.4.1.1: Instruction).

"*The focus on the first-year level is mainly on developing required skills that they will need in later studies. Students that show interest in the field will for the most part be able to master the required skills irrespective of different backgrounds or knowledge. I think the difficulty level is appropriate.*" **(Participant 1)**

"*I think it is fine on first-year level because for some students if you make it too difficult they won't be able to do it. I think the majority of the students are able to do the projects and it is sufficiently challenging for everybody.*" **(Participant 4)**

"*No, it's not too easy and it's not too difficult. I think they can all cope with it. It's appropriate for their backgrounds. Some of them manage immediately, but then there are some that take a while to grasp the theme. Some themes are not in their frame of reference, so they will find these more challenging.*" **(Participant 5)** (4.2.3: Section C: Conceptualisation Process). This

correlates with literature that states that the briefs were well developed and complied with theory. The student should always be guided and equipped to investigate and research, consider and develop, communicate a solution and evaluate the outcome (SQA 2005:2).

In their practical studio classes students are expected to understand that art-making is a process that uses informed and critical decision-making to determine outcomes to problems.

> **What are your feelings regarding the time allocated for the production of an art piece as well as the materials and equipment provided?**

The literature emphasizes that through direct lecturer instruction, emphasis is placed on the production of objects (art pieces). Here the students also understand that art-making is a process that uses informed and critical decision-making to determine outcomes to problems (2.5.2.2: Teaching and Learning Activities: 2-D and 3-D Design).

Six of the students strongly agreed (31%) and agreed (16%) respectively that the time allocated to the completion of the final product was sufficient (Table 4.5: Meta-cognition).

Most of the students agreed that the time allocated for the production of the art piece was adequate.

"*The time is enough and students have access to the necessary materials.*" **(Participant 1)**

One participant also noted that the student bursaries could be problematic as the students sometimes had to wait for their funds to be processed and were thus unable to buy the necessary materials.

"*Five weeks is enough time to produce an art piece. The student must go and buy his/her own material. This year I found that to be a problem because they don't have money or they are waiting for their bursaries.*" **(Participant 2)**

"*I think in my department we have a problem because it takes so long to get your materials prepared. Because there are a lot of students and everybody has to do the same thing at once it creates a bottleneck. It frustrates some of the students.*" **(Participant 4)** (Table 4.4: Educational Strategies).

The literature reiterates that the main challenge for novice students is that of time management, and with each transition, students are expected to become more self-reliant and assume more responsibility for things such as being organized, planning ahead, or meeting

deadlines without assistance or reminders from lecturers (2.3.4: Productivity and Accountability).

Work-based learning is centred around reflection on work practices; it is not merely a question of acquiring a set of technical skills, but a case of reviewing and learning from experience (Raelin 2000). Thus students have technical making skills to master as well as reviewing skills. The following question addressed technical skills acquisition.

> **In your experience, do students find the technical skills difficult to master?**

The findings presented in Chapter 4 indicate that students were encouraged to exercise more control over their learning. The majority of the students felt that the lecturer had encouraged them by continually motivating them to do better. Although this contrasts with the findings in that it appears to be obvious that the students generally need an ongoing form of guidance and encouragement from the lecturer, this might be seen to be largely due to their inexperience at first-year level and their lack of confidence (4.2.4: Section D: Educational Strategies). The literature emphasizes the fact that work-based learning does not merely consist of acquiring a set of technical skills, but a case of reviewing and learning from experience (2.4.1.1: Instruction).

Eleven students strongly agreed (62%) and agreed (22%) respectively that the technical skills learnt in class were of great value to them (Table 4.4: Educational Strategies).

The findings showed that some of the students found the technical skills difficult to master – especially at the beginning of the module. Generally, however, the students managed quite well.

"*Most students that show interest in the field will master the required skills.*" **(Participant 1)**

"*In the beginning the technique is a bit difficult.*" **(Participant 3)**

"*They find the technique challenging in the beginning.*" **(Participant 4)**

"*Some of them do find it challenging. It depends on the student's personal ability to learn something new.*" **(Participant 5)**

The literature states that an invention or a creative idea becomes an innovation only once it has found a market or at least a practical way to apply that idea (2.3.1.1: Creativity and Innovation). Work-based learning also views learning as arising from action and problem-solving within a working environment. It is therefore centred on real-world projects and is

meant to challenge the individual. Here people discuss ideas and share problems and solutions (Raelin 2000). In an attempt to see if the students were able to apply the skills learnt through problem-solving, the following question was asked:

> **After the above process has taken place, are the students able to apply the skills they have learned in the production of the art piece?**

"*Yes totally. With the basic skills they have learnt, they can definitely apply it and directly improve their final product.*" **(Participant 3)**

"*Yes. We applied certain techniques they had learned onto the final products and they coped very well.*" **(Participant 5)**

In answer to the above question, all the participants agreed that the students were able to apply the skills they learned in the production of the art piece. A high percentage (Table 4.4: Educational Strategies) found the demonstration by the lecturer valuable in the production of their final product/art piece. The literature supports this whereby the student worked closely with the lecturer in order to develop their skills and knowledge (2.4.4: Reflection and Assessment).

Even though the methods of working and the attitudes towards the solving of problems may be very different to other professionals, creativity remains central to designers' thinking (Hagemann 2010:4). Specific outcomes refer to the specific knowledge, attitudes and understanding which should be displayed in a particular context (2.5.2.1: Learning Outcomes: 2-D and 3-D Design).

> **What is your observation regarding the students' attitudes and feelings towards the**
>
> **production of their artworks?**

The students reported being immensely proud of the production of their work (4.2.4: Section D: Educational Strategies). In Table 4.4 one can see that a large percentage of the participants strongly agreed (62%) and agreed (15%) respectively. However, the participants found that it again depended on the student as not all the students were positive about producing their own artworks.

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"*It depends on the student and their attitude towards the specific field. Students that are interested in art are very proud of their achievements and will in many cases produce more work than what is expected of them.*" **(Participant 1)**

"*Well, most of them are really happy to see what they have done. They are very positive because they can see the final product and how the product can apply to it. And they are usually quite proud of it and walk around and show people because it's the first thing they have ever made that actually looks like a real product.*" **(Participant 3)**

"*They are very proud, especially if they have finished the work in time. There are always some students that don't finish so they are a little bit negative, but the students that actually finished have thought it out and they have managed their time.*" **(Participant 4)**

It was evident that the students were positive regarding the production of their work. Due to the varying techniques used, the students had to take into consideration time factors such as preparation of the different materials, e.g. drying time of clay or waiting their turn to use equipment in class.

Davies explains (2003:3) that it is vital that one be open about what one wants the students to learn, especially in the context of moving towards a learning standard which supports self-directed education. By demonstrating to the student what is expected from them (modelling strategy), the lecturer contributes towards the student's success. This coincides with the literature indicating students working closely with the lecturer in order to develop their skills and knowledge (2.4.4: Reflection and Assessment). The literature shows us that it is important that students see a final example of what the end product will look like (2.3.2: Information, Media and Technology Skills). It was thus found that on first-year level students still require a step-by-step learning experience through which they can obtain basic skills (2.4.1.1: Instruction).

> **What are your feelings towards the modelling strategy approach?**

All the participants agreed that the modelling strategy is the best way to show the students what is expected from them in a way that they can understand.

"*It is a good approach because students go through the entire process from visualizing, designing to development.*" **(Participant 1)**

"*It won't be safe for them to work with certain equipment if they do not get shown what to do.*" **(Participant 4)**

In learner-centred lecturing practices, learners are assessed on an ongoing basis (Van der Horst & McDonald 1997:28) (Fig 2.5: Traditional versus learner-centred lecturing practices). The literature emphasizes that first-year level students should arrive at an understanding that art-making is an ongoing process (4.2.4: Section D: Educational Strategies). Participants were asked the following question:

> **Do you find it necessary to manage and maintain an ongoing (beginning, middle and end) review process throughout the module?**

Further outcomes showed that a step-by-step approach was vital in the various stages of the projects (2.4.1.1). The emphasis on time and effort in order to successfully complete a project was also highlighted. Continuous monitoring and assessing by lecturers also became apparent as a necessity (Breytenbach & Johnston 2011:35). The literature argues that learning from websites and online discussion groups is very different from learning in formal courses, where learning is formed in a step-by-step manner (2.4.1.1: Instruction).

All the participants agreed that the students found an ongoing review process necessary and very beneficial. Breytenbach and Johnston (2011:28) conducted a study highlighting the aim of the integration being to strengthen the connection between first-year modules as well as to include participation from a related design discipline in the Faculty of Art, Design and Architecture at the University of Johannesburg. It was evident that the vast majority of students require a step-by-step learning experience.

"*Yes, that is very important, otherwise the student will not progress.*" **(Participant 2)**

"*Yes, you definitely have to. Because of time restraints the students have to attend class regularly and manage their time.*" **(Participant 4)**

"*Yes, you definitely have to. I even refined my time schedule at the beginning of every module. I tell them every week what must be done, and what they must bring for the next session.*" **(Participant 5)**

It is evident from past studies that the lecturer has to stimulate interactivity in the class and with the educator, and time must be given for the students to reflect on their work and learn from each project's feedback (2.3.1.2: Critical Thinking and Problem-solving) (Table 4.4: Educational Strategies).

The literature shows us that the curriculum design process, called constructive alignment, involves aligning the content and process of learning, and the assessment of learning to these

objectives (2.5.2: Curriculum Design: 2-D and 3-D Design). The following question was asked in an attempt to determine what the participants' feelings were regarding the assessment structure:

> **What are your feelings concerning the assessment structure and if you had to suggest changes, what might they be?**

Some of the participants felt that the structure was adequate while others had some suggestions. Some of the themes were not appropriate to the materials used, e.g. metal fabrication. One participant was of the opinion that there should be one rubric for all the subjects. It was also suggested that computer skills be taught at the beginning of the module, in order to assist the students in their digital work. It was also felt that time was very limited with, for example, metal fabrication and which took longer for the students to master. It was also suggested that the critique sessions be held with all the students present – not only per separate group.

"*I think the visual diary (journal) must count more marks. Because the visual diary is the starting point of the design, this is where the basic knowledge and proof of progress comes from.*" **(Participant 2)**

"*I think it is adequate. The structure is good. But I also think theory is a bit low. Maybe 10% is low but I also think the project is also extremely important – the end product and the visual diary are very important because it shows you the steps. I think maybe if we were all more informative of each other's projects and know exactly what the project was and then we can start marking. I think we all need to know a bit more about each other's background knowledge.*" **(Participant 3)**

"*I think they can put more emphasis on the theoretical knowledge. I am happy with the rest of the testing. The theory should count at least 20%. Because that means you know how to design but you don't know the background behind it. Because you have to have a basis to get to an end product. I would feel a knowledge conceptualization and end product must almost have the same weights.*" **(Participant 5)**

From the findings it is clear that the students were positive about the manner in which their work was assessed (Table 4.5: Meta-cognition).

5.2.4   Theme D: Meta-cognitive Information

Meta-cognition refers to an awareness and understanding of one's own thought processes, especially in learning. The outcomes related to abilities and skills include, among others, time management (2.5.2.2: Teaching and Learning Activities: 2-D and 3-D Design), while the literature further states that the total psychological environment which the person intuitively experiences embraces, among others, goals (2.4.3: Learning Environment). In order to discover how the lecturers perceived this phase of the students' learning, the following questions were asked:

> **In the critique sessions is it clear to you that the students have been successful at managing their time and setting their own goals?**

A high percentage of students strongly agreed (54%) and agreed (30%) respectively and indicated that overall they were very positive about the critique sessions as well as that they were made aware of their time management during these sessions (Table 4.5: Meta-cognition).

The participants reported that during the critique sessions it was apparent, through the exhibiting of the work, that not all the students were able to manage their time successfully. They were able to set goals for themselves but it then depended on the student's ability to effectively manage his or her own time.

"*It is clear that students who do not set goals or manage their time will not be able to produce the required artefacts. The quality of the end product is very dependent on the attendance in class and achieving set goals.*" **(Participant 1)**

"*Yes, it depends on the student. I would say that students that really were in class every time always finished their work and their visual diaries were done. The attendance is very important – you can really see a difference.*" **(Participant 4)**

"*Yes, definitely. There are students that sometimes don't apply them to their own rules and they fall behind but it's because they couldn't manage their time. But most students could manage. It's time management problems with the students themselves. I always tell them this week you have to be done with this and that.*" **(Participant 3)**

Eight of the students (31% and 30% respectively) felt they command the vocabulary to skilfully engage in valuable critiquing. The literature shows us that lecturer, student and peers should all be involved in the critique process (2.3.3: Life and Career Skills). The students' ability to

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articulate their own ideas must first be developed in order to understand the material world within the confines of a particular discipline (2.4.1.1: Instruction). Students will also be expected to make decisions about their own actions and have the ability to evaluate their own performance against given criteria (Table 4.5: Meta-cognition).

The students are encouraged to use design vocabulary during these critique sessions and in which they observe and discuss each other's work. This helps the students gain understanding and confidence when discussing their own work. Students should be able to understand concepts of visual expression and be able to construct an object using the appropriate materials and methods. Students will also be expected to do self-reflection and write notes on their experiences during and after the process of creating each project. Participants were asked whether this was so:

> **Do you think the students have the insight to critique, based on their training up to here?**

Group critiques take place at the completion of each of the six projects (2.5.2.3: Reflection and Assessment of 2-D and 3-D Design). Research shows that critique is an integral component of studio education (2.4.4: Reflection and Assessment). Critique ultimately acts as a means of discovering what must and can change and be transformed in people's lives (4.2.2: Section B: Educational Content). The students (61%) were of the opinion that they did have the necessary background knowledge to critique each other's work (Table 4.5: Meta-cognition).

This is in contrast to the findings of the lecturers. The opinion was unanimous that at first-year level most of the students did not have the insight to critique.

"*No, I wouldn't say yes. Not totally.*" **(Participant 2)**

"*On first-year level most students do not have enough insight, but it is critical that they go through the process to learn this ability.*" **(Participant 1)**

"*No, I don't think so.*" **(Participant 4)**

"*No, not really, I don't know if they are scared to comment on each other's work. Generally they are reserved.*" **(Participant 5)**

Only one respondent reported the opposite: "*Yes. When they start seeing problems sometimes one will notice and say:* '*I had this problem,*' *and then he can share it with someone else.*

Maybe the others were not aware of that problem. Then they learn from each other in this way." **(Participant 3)**

The ideal is for the students to use design vocabulary during these critique sessions, while they observe and discuss each other's work. This helps the students gain understanding and confidence when discussing their own works (2.5.2.3: Reflection and Assessment of 2-D and 3-D Design). The following question was asked in support of this:

> **Do you as the lecturer feel the student has the vocabulary to engage in valuable critique skills?**

The students' ability to articulate their own ideas must first be developed in order to understand the material world within the confines of a particular discipline (2.4.1.1: Instruction).

Again the students (62%) were of the opinion that they had the vocabulary to engage in valuable critique skills (Table 4.5: Meta-cognition).

This is again in contrast to the findings of the lecturers.

The majority of the participants reported that at first-year level most of the students did not have the vocabulary to critique.

"*Most students do not.*" **(Participant 1)**

Only one participant felt that the students were able to.

"*Most of them can. Critiques are usually friendly and they really enjoy the sessions. In most cases they will also say why they don't like it, but because they are first-years they are generally still scared of critiquing each other's work.*" **(Participant 3)**

It seemed as if the students were not always able to verbalize their critique of each other's work using design vocabulary, but rather used random words to express themselves. (The researcher witnessed this during the observations of the participants in the studio.)

The literature shows us that the vast majority of students need to obtain basic perceptual and conceptual skills (2.4.1.1: Instruction). The following question aimed at discovering the extent of the students' conceptual skills knowledge:

> **In your opinion, do you think the student has the conceptual skills to be successful in the critique of his/her own work?**

Most of the participants were of the opinion that at first-year level most of the students did not have the conceptual skills to critique.

"*Most students do not. Conceptualization is a focus area on second-year level.*" **(Participant 1)**

"*I don't know – at first-year level? No, I don't think so.*" **(Participant 2)**

"*I am not sure. In the critique sessions they sometimes tell me that if they were to do the work over they would do it differently. Because they have seen the hindrances, which is important.*" **(Participant 3)**

"*Some students have, but not all of them.*" **(Participant 5)**

From the findings in Chapter 4 (4.2.3: Section C: Conceptualisation Process) it can be concluded that students do not have a problem with the theory but seem to find the conceptualization part challenging. This can be defined as the part where the designer is expected to not only interpret the problem, but also to solve it. Conceptually the students are still learning. The researcher is of the opinion that it will take them a while to be able to assess their own work in a conceptual manner. Their conceptuality still has to be developed. At this stage they still find it difficult to critique their own work realistically.

The literature reiterates that rich environments for active learning (REALs) must encourage the growth of student responsibility, initiative, decision-making, and intentional learning and cultivate collaboration among students and lecturers (4.2.2: Section B: Educational Content).

The main challenge for most students is to become more self-reliant and assume more responsibility for things such as being organized, planning ahead, or meeting deadlines without assistance or reminders from lecturers. The literature further states that life and career skills predict the individual to be able to apply knowledge to potential real-world situations as well as the ability to develop into flexible team players demonstrating or showing evidence of initiative (2.3.3: Life and Career Skills).

The following question attempted to find out more regarding this:

> **What is your feeling regarding the students taking initiative when it comes to their own learning?**

It was again strongly felt that it depended on the student.

"*Students that are interested in art will mostly take initiative and even produce more than what is expected.*" **(Participant 1)**

"*No, there is no initiative. If you don't tell them to do it, they won't do it. You must force them.*" **(Participant 2)**

"*Yes. One or two students sometimes need a push but most students are usually really involved and come up with something original. It depends on the student. Some are really creative and they compete with each other. In this way they challenge each other.*" **(Participant 3)**

Some students can work on their own and motivate themselves. Some will always be rushed and just want to get finished. It again depends on the student. Students are nonetheless expected to become more self-reliant and assume more responsibility for things such as being organized, planning ahead, or meeting deadlines without assistance or reminders from lecturers (4.2.4: Section D: Educational Strategies). In typical learner-centred learning practices, learners take responsibility for their learning (Fig. 2.5: Traditional versus learner-centred lecturing practices).

> **Do you get the impression that the students are self-motivated, or do they design simply to meet deadlines and assessments?**

It appears that the main challenge is that of time management and with each succeeding transition, students are expected to rely more and more on self-motivation (4.2.4: Section D: Educational Strategies).

It was again strongly felt that being motivated depended on the student, as evident in the following remarks by the participants.

"*It depends on the attitude and the level of interest of each student.*" **(Participant 1)**

"*Some students hand in assignments merely because they have to. But I really do have students that go all the way and that are motivated. It depends on the student.*" **(Participant 3)**

"*I think it varies from student to student. You do get students that are extremely motivated. And in different groups it's also different. In some groups there are a lot of students that are just doing it because they have to. You can see it. They influence each other. Sometimes I get a group that is very motivated but sometimes not.*" **(Participant 4)**

It thus largely depends on the student. Some are more motivated than others and will put in more time completing work. Others will be rushed to finish.

The literature emphasizes that deeper learning takes place when students are able to "transfer" theoretical knowledge to new situations (the making of art pieces) in order to solve new problems (4.2.2: Section B: Educational Content). Design curricula, therefore, need to find the balance between cognitive problem-definition activities and cognitive problem-solving activities. This can be seen as the tension inherent in the synergies of "thinking" and "making" (2.3.1.2: Critical Thinking and Problem-solving).

> **In your experience, do you feel that the students are enjoying the (new) designing and making process? Which one would you say do they prefer?**

Eleven respondents (84%) strongly agreed and agreed respectively and 77% reported that they enjoyed the designing and the making process (Table 4.5: Meta-cognition).

All the participants agreed that because the subject was new to them, they were enjoying it very much.

"*Yes. They are exposed to a lot more. The subjects are different and they are also exposed to more lecturers.*" **(Participant 5)**

In response to the second part of the question, the respondents reported that the students largely preferred the making process.

"*I think they are enjoying the making process because it's something that they have never done before.*" **(Participant 1)**

"*The making. I think mainly because it is something new and they are enjoying it because they have never done before.*" **(Participant 4)**

"*Some like the designing more and others the making. Once again it depends on the personality of the student.*" **(Participant 5)**

It again appears that most of the students enjoy the production part, because they are able to see the outcome of their hard work.

Research (Meiring 2013:167) shows that students thrive on interactivity and receiving feedback immediately after having performed an action. Because of the fast-paced nature of the digital world leaving no time for reflection, this is an urgently needed part of any thought or design process. The literature states that critique is a question of discovering what must

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and can change and be transformed in people's lives (2.4.4: Reflection and Assessment). A holistic assessment approach is designed to evaluate product, person and process all at the same time (4.2.5: Section E: Meta-cognition). A wide variety of assessment activities is applied in this module to test the student's knowledge about the content and to ensure that the desired skills are mastered. Fifty per cent is allocated for studio projects, 10% for theory tests, 30% for visual diary (conceptualization) and 10% for group critique sessions. The following question was asked to determine the participants' feelings regarding this:

> **Do you feel the critique session as it is currently run is of value to the student or not? Please provide your reasoning for your decision.**

One participant reported that the students were required to have a discussion regarding the applicability of the design elements and principles on an artwork. This approach encouraged the students to think more broadly.

"*The critique sessions include a discussion regarding the applicability of the design elements and principles on an artwork of an expert in the field.*" **(Participant 1)**

"*Yes. It helps the student think out of the box. Because different personalities are viewing your work, you learn to look at your work in a different way as well.*" **(Participant 2)**

5.3 Presentation and discussion of the observations

In this section data collected from the observations made by the researcher is analysed and the findings discussed. In this study observations serve as a check against participants' subjective reporting of what they believe and do and what the students' reactions and experiences were reported on. The reason for the researcher selecting participant observation was to foster an in-depth and rich understanding of the behaviour of the students concerning conceptualization and to explore and describe the lecturers' feelings, knowledge and observations regarding the outcomes of the 2-D and 3-D Design subject.

5.3.1 Introduction

The observations took place in the respective studio classes. Through direct lecturer instruction twice a week (five periods respectively in total), emphasis was placed on the production of art pieces. The units of the module were divided into five-week cycles, the

duration of the classes being eight hours per week in total. Artworks were produced in the respective studios by means of specific techniques and appropriate materials in the different fields of fine arts and graphic, interior, fashion and jewellery design. Students completed six projects throughout the year, each exploring different elements and principles of 2-D and 3-D design. Students were introduced to studio practice through intensive conceptual, visual and material investigations. For the purpose of this study the researcher, as the observer, only selected one group (Group A) out of a total of 5 possible groups to be part of the observation group. The observations will subsequently be discussed under the following themes: *Factual*, *Conceptual*, *Procedural* and *Meta-cognitive*. The three steps below indicate the following: Step 1 is the actual observation process as described by the researcher. Step 2 is the researcher's interpretation of the observations, while Step 3 explains how the findings have, or have not, correlated with the preceding two steps.

5.3.2   Theme A: Factual Information

Step 1: What I observed is that when some of the students are shown what to do they are generally able to carry out the given task in class. I further observed that they are working with materials that require them to take into consideration the texture and tactile properties of those materials. The students are given exercises to do in class in order to comprehend depth, as well as line and shape, which are some of the key elements in this module. They also have to gather information away from the studio and bring it to class the following lesson. Some students remember to bring the work the following lesson, while others forget. Images of objects they are going to make are shown to them on PowerPoint presentations. The students are very involved in the class and participate eagerly, asking questions confidently. Others start off by making rough pre-sketches in their visual diaries. Not all of them have their visual diaries or drawing materials with them, so they have to use sheets of drawing paper and pencils given to them by the lecturer. Some students have to be encouraged to use their visual diaries. The students are observed having group discussions of the specific theme. Some prefer to work on their own, while others enjoy collaborative discussions. In this way they encourage each other by asking questions relating to the theme. From here the students make use of drawing techniques to further develop their ideas. Some students do a lot of drawings, while others just do the minimum necessary to complete the task satisfactorily.

Step 2: From the observations it became obvious that because the materials were so unfamiliar to the students, the lecturer had to show them what to do and how to do it. Time planning was of the essence as they were working with various materials that had different properties. Because of this some of the students showed signs of uncertainty and the lecturer

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had to continually repeat the instructions as well as inspire them. Group work always has the potential to allow less enthusiastic students to let the stronger ones take the lead. Because the students are not used to recording their progress, they need encouragement to use their visual diaries.

Step 3: Although most of the lecturers reported that the students could not connect the key elements to their practical work, the students felt that in fact they were able to (Table 4.2: Educational Content). Participant 3 reported that although some students are on the level they should be, some are struggling (5.2.1: Theme A: Factual Information). The literature supports group work by stating that the instructor fosters a responsibility among the students for having a successful learning experience. One of the outcomes in the 2-D and 3-D syllabus is effectively working in a group (Fig. 2.9: Learning Outcomes of 2-D and 3-D Design). This was implemented and worked well in the studio. The team-based learning (TBL) technique stressed the importance of using small groups (2.3.1.3: Communication and Collaboration Format). By stimulating the student's creativity as well as interactivity in the class, the students are taught principals that enable them to be self-reliant (2.3.1.2: Critical Thinking and Problem-solving).

5.3.3   Theme B: Conceptual Information

Step 1: I witnessed that most of the students have a very positive attitude in class. Most of them are involved in their tasks and manage their time during idea generation. Some students daydream and waste time getting started. The students' behaviour is very good and their class attendance positive. A few students arrive late, with various excuses. Some are absent, and as a result are falling behind. The lecturer launches the project the first week, after which the students go out and do research on their ideas. A few students fail to bring their research with to the studio. The students only start on the actual project after around the third week.

Most of the students are showing a lot of interest in the new materials and techniques, are positive and show persistence and effort. Some students are working on their visual diaries. The lecturer encourages them through a presentation of valid examples and not merely pictures. The students are encouraged to make use of brainstorming to generate ideas. The lecturer first considers the students' work and then approves the progress. I noticed that the whole design process needs to be reinforced. Some students can work in groups while some prefer working on their own. I furthermore noticed that the students mostly use the Internet and magazines as sources of inspiration. The lecturer and the students make use of group discussions in order to best discuss the theme for that specific module. Some encourage each

other to see the less obvious things in relation to the theme by asking questions. I observed that the students prefer drawing techniques and sketches. The students use their phones, while a few use magazines to acquire ideas. Most of the students seem to be able to follow the lecturer's guidance in applying their ideas. From the drawings in their visual diaries the students, together with the lecturer, select the best ones to further develop into final products. They mostly enjoy making use of sketches in their visual diaries and do not make use of mind maps.

Step 2: It appears that the students were allocated sufficient time in which to generate their ideas. Because the techniques are all new to them, the students need to be introduced to the basics. During the observations it was once again evident that the lecturer has to continually inspire the students to gather information for their ideas. Some of the students do not use their visual diaries as much as they should or could. They are provided with visual diaries at the beginning of the year, so they do not have to purchase it themselves. The reason they do not have them is because they have forgotten them at home, or in some instances forgotten them on the bus or the taxi. The design process needs to be emphasised the whole time. Because students daydream and waste time during class, they get behind; however, this never influenced their behaviour in class. They were always very positive. Some of the students nonetheless seemed to have a very relaxed attitude towards their attending of classes.

Step 3: Participant 2 indicated in the interviews that the students needed a lot of inspiration (Theme B: Conceptual Information). In their questionnaires the vast majority of students (92% and 84%) made use of drawings and the Internet respectively to generate ideas (Table 4.3: Conceptualisation Process).

Participant 1 responded that the students do their design planning in their visual diaries (Theme B: Conceptual Information). The literature states that not all students use the creating of a visual diary as an opportunity to enrich their learning (Giloi 2011:104). The visual diaries inevitably range in effectiveness, depending on the student (2.3.3: Life and Career Skills). This is a way in which they can analyse their mistakes and work through the technical difficulties they come across. Some students get over-involved in some aspects of their visual diaries, such as the cover page, for example.

Some students need more guidance than others, but this is a natural phenomenon, as students differ in their background and experience (2.4.2: Professional Development). The literature tells us about the importance of rich environments for active learning (REALs). These encourage the growth of student responsibility, initiative, decision-making as well as intentional learning to name only a few (2.3.1: Learning and Innovation Skills).

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Participant 1 noted that students mostly used images of artefacts as inspiration for their own works. Although magazines were used, images were also mostly searched on the Internet (Theme B: Conceptual Information). Participant 3 agreed that with the basic skills the students have learnt, they are definitely able to apply their ideas and directly improve their final product (Theme C: Procedural Information). Participant 5 was of the opinion that the time allocated was not sufficient. Especially in the first year the students still struggle to go from the inspiration part to get a design. In the 2-D and 3-D Design syllabus students first had to recognize an opportunity and define a problem-solving objective before they could commence with a design project. Possible solutions to problems were discussed during critique sessions. Only then would the final design be selected (2.5.2.2: Teaching and Learning Activities: 2-D and 3-D Design).

5.3.4 Theme C: Procedural Information

Step 1: I observed the students being shown a presentation relating to the theme, where after they were introduced of the procedures and techniques to the theme, and notes were given to them. I witnessed that it took some of them a while to grasp the concept, but after this most of them started enjoying it. Most of the students cope in class but still find the tasks challenging. The students are shown how to use the machinery and the materials. Most of the materials are given to them in class. There are, however, some materials they must bring with. They do not always do this as they either cannot afford the materials or are awaiting bursary payouts. I noticed that the students are frustrated because they have to wait their turn in using machinery and this causes a problem. Most of the students are able to master the necessary technical skills once they are shown the correct technique to use. The lecturer shows them by means of a step-by-step method and encourages and motivates them. The students cannot take their work home so they have to complete the work during their allocated time in class. The students are nonetheless given enough time to complete their work in the studio. And they appear to be able to apply the skills they have learnt through their projects. The lecturer has to monitor the students' progress in order to encourage them to complete their work. If all the students are present, tardiness or absenteeism do not interfere with the class. However, the students that arrive late or are absent from classes tend to not only fall behind with their work, but also disrupt the class as far as the rest of the student population is concerned.

Step 2: Even though the students come from various backgrounds and levels of ability, some of them seem to cope in class and the tasks are sufficiently challenging. Due to varying techniques and materials used, certain aspects of the production of the artworks have to be

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taken into consideration. Some processes are also more time-consuming than others. Again, because it is a new subject and most of the students have never used the machinery before, they are taking a while to master the technical skills. These basic skills are vital and have to be taught at the very beginning of the module. Some students need more motivation and encouragement than others. If they manage their time sufficiently, they are able to manage the workload. The time constraints on the course also make it necessary for lecturers to continually manage the students' time. Some students need to be monitored more closely than others. A consequence of them not managing their time, is that some students they tend to fall behind.

Step 3: Most of the students (77%) felt that the briefs given to them were not too difficult (Table 4.3: Conceptualisation Process) and they appear to understand the briefs. According to Participant 1, the main focus on the first-year level is on developing required skills that the students will need in later studies. Students that show interest in the field will for the most part be able to master the required skills irrespective of different backgrounds or knowledge (Theme C: Procedural Information).

Participant 3 responded that in the beginning the students found the technique a bit challenging, but after they were able to practise they started to enjoy the process. Participant 4 further responded that the students did find the technique challenging in the beginning because in the pieces that they make they have to be able to master a specific technique (Theme C: Procedural Information). The modelling strategy is the best way to demonstrate to the students what is expected of them (Theme C: Procedural Information). Especially in cases where the students have to work with potentially dangerous equipment this is the only option. Participant 4 responded that the lecturers had to implement that strategy because otherwise the students would be at risk from a safety point of view. Thus they had to be shown how to work with certain equipment. Participant 1 also stated that it is a good approach because students go through the entire process from visualizing and designing to development. Participant 5 was adamant in that the students needed to be consistently reviewed throughout the unit and that it was a good idea to review the time schedule at the beginning of every separate unit (Theme C: Procedural Information). In the 2-D and 3-D Design syllabus it is stated that the students engage in a student-centred approach which is likewise prescribed (2.5.2.2: Teaching and Learning Activities: 2-D and 3-D Design).

5.3.5 Theme D: Meta-cognitive Information

Step 1: I observed that the lecturer did most of the talking during the first 10 minutes of the lecture. Consequently, the students that arrive late or are absent miss out on valuable information. The latecomers are also a distraction to the rest of the students. The lecturer does not repeat any instructions, but leaves it up to the latecomers to determine what it is that they are supposed to do. I further noticed that most of the students' works are very neat and well presented. They are very proud of their work and feel good about the end result. Some students do more than is expected and some just the minimum that is required from them. Towards the end of the module students start working on the presentation of their work. Students are able to work on their own as well as in a group, even helping each other. Most of the students are able to apply the skills to the production of the art pieces. I noticed that the students are very proud of their works, especially when they are able to complete them in time.

In Week 5 the students give a PowerPoint presentation for the lecturer and the class in the critique session. I noticed that they discuss various elements and principles of design. They present two objects of their own choice and discuss these according to the design principles and elements. Some students are successfully able to link the theory with their practical, while others are less successful. Some of the students are nervous and anxious and only some of them are able to critique each other's work. It depends on the individual student. I observed that the students are not always able to verbalize their critique of each other's work. They use random words and phrases to explain themselves. By Week 5 some of the students are more familiar with each other and show more confidence. Some of the students are proud when they display their work. Those that are behind or have not completed their work, are less confident. They appear to be embarrassed when they see the progress their peers have made. The lecturer assesses their critique sessions according to a rubric. Most of the students regard the assessments as positive.

Step 2: Some students can work on their own and motivate themselves. It appears that the students needed encouragement and motivation to do work out of the studio. The students also do not always have the vocabulary to critique their peer's work. As with all the other modules, time management is crucial. The students who do not attend regularly do not have enough time to finish their works. Class attendance is vital, and this is evident in the critique sessions. The students that have not been attending class regularly are not well prepared. Most students show their planning phase in the critique sessions. Some students could spend more time on their work and the detail they have to focus on, but others seem more impatient. It would appear that the students as yet do not have the conceptual skills to critique each other's work and that their conceptual skills still have to be developed.

Step 3: The literature concludes that assessment has a motivational purpose more directly related to the needs of students than other purposes of assessment. It is further argued that motivational assessment may be seen as an instrument of coercion, a way of getting students to do something they would not normally be inclined to do. In this way, motivational assessment may also benefit the lecturer rather than students (2.3.4: Productivity and Accountability). Participant 2 reported that the students had to be taught and assisted on how to go out and get inspiration and information. Participant 3 felt strongly that there are students that sometimes do not apply the knowledge learnt to their own work and as a result they fall behind, but it is because they could not manage their time. Participant 5 was of the opinion that most of the students were able to achieve what they had to (Theme D: Meta-cognitive Information). It depends on the individual student as to whether he or she had the insight to critique his or her peer's work. Participant 2 was of the opinion that the students do not have the insight. Participant 3 stated that when the students start seeing problems they are then able to share them with their peers. In this way they learn from each other (Theme D: Meta-cognitive Information). Participant 2 stated that some students use the most basic manner in which to express themselves (Theme D: Meta-cognitive Information). This was supported by Participant 1 who reported that most students do not have the conceptual skills to critique each other's work as conceptualization is a focus area on second-year level. Participant 2 was undecided but felt that at first-year level it was debatable (Theme D: Meta-cognitive Information). Participant 4 agreed that the students wanted to work in class, but it was noted that when they went home they did not want to do any extra research. Participant 4 was also of the opinion that the students do not have a culture of doing work outside of studio time (Theme D: Meta-cognitive Information). Most of the students were happy with the way in which they were assessed.

In the 2-D and 3-D Design syllabus it was planned that one of the critical learning outcomes was to engage effectively using language skills and the necessary organisational activities responsibly and effectively. A critical outcome is to interrogate, interpret, and analyse visual imagery (2.5.2: Curriculum Design: 2-D and 3-D Design; Fig. 2.9: Learning Outcomes of 2-D and 3-D Design).

5.4 Conclusion

In this chapter an analysis of the qualitative data was presented, collected by means of interviews with the lecturers and observations of the students. Factual, conceptual, procedural and meta-cognitive information was investigated in both the interviews and the observations. Through the interviews it was concluded that not all the students were able to apply their basic

understanding of the visual elements to the planning of their work. It was a general conclusion that the students needed a lot of encouragement to gather information outside of studio time, as well as ongoing monitoring in order to assist them in time management. It can be concluded that even though the students were given ample time to gather information and complete their projects, it was a continuous necessity to monitor their time management as well as to demonstrate throughout. It was noted that the students made use of technology more than any other method to gather ideas and information. Their briefs were on the level at which the students were able to manage the tasks given to them. The general consensus was that the students were positive about the new curriculum.

The researcher was able to observe that once the students were shown what to do, they were able to carry out the given tasks in class. The lecturer had to be very specific in what was wanted from the students from the beginning, and they needed to be inspired to come up with something original. During the observations it was once again evident that the lecturer had to continually inspire the students to gather information for their ideas. Some processes are more time-consuming than others, and in the beginning the students found the technique a bit challenging; however, after they were able to practise they started to enjoy the process. The modelling strategy is the best way to demonstrate to the students what is expected of them, as well as being consistently reviewed throughout each unit. It depended on the students' personal motivation whether they decided to work independently at home.

In Chapter 6 the conclusions regarding the results and implications of the study will be discussed together with recommendations with a view on further research.

CHAPTER 6

CONCLUSIONS, RECOMMENDATIONS AND IMPLICATIONS OF THE STUDY

6.1   Introduction

In the literature (Freedman & Stuhr 2004:815) one notes that art educators locally as well as abroad have had to adapt the traditional approaches to make way for a broader range of visual arts and cultural issues and in doing so have moved away from the emphasis on traditional fine art disciplines. In response to the ever-changing contemporary world, a transformation of art education has been taken up by contributors to the field. The visual arts are an increasingly important part of the larger visual culture that surrounds and shapes our daily lives and as such older views of curriculum and instruction have also been replaced with an expanded view of where the visual arts fit into the human experience.

The overall aim of this study was to gain insight into the implemented balance between prescriptive and intensive skills (technique) building versus dialogue and experimentation (conceptualization) in the new 2-D and 3-D Design module offered at the Central University of Technology, Free State (CUT). This aim was realized by:

(1) conducting a literature study with a view to triangulating the theory with the outcomes and by scrutinizing and describing the students' overall impressions and experiences of the new design subject as regards time management in and out of class, their positive experiences, technical difficulties experienced as well as their strong points and shortcomings;

(2) exploring and describing the lecturers' feelings, knowledge and observations regarding the outcomes of the 2-D and 3-D Design module; and

(3) triangulating the results of the various branches of the research enquiry, namely, educational theory, curriculum design theory, the module itself, the views of the students and the experiences of the lecturers to determine the efficacy (or not) of the approaches taken to meet the specific competency demands as outlined and curricularised.

6.2 Main conclusions of the study

In this section the main conclusions of the study will be discussed.

6.2.1 Educational Content

In the new 2-D and 3-D Design module the theory forms a very important part of the module. The findings of the study revealed that all the students claimed to be able to connect the key elements taught in the 2-D and 3-D theory class, and further felt that they were able to link this knowledge to their practical project. The majority of the students were also of the opinion that the 2-D and 3-D theory and practical classes were sufficiently linked to each other. Just under half of the students questioned found the prescribed textbook to be very valuable in the module. The low positive response was due to the fact that some of the students did not purchase the book, due to financial reasons or they simply did not have the prescribed book and could not access the book through any other means. The lecturers reported that the notes and prescribed textbook were sufficient, depending on whether the students actually purchased the book. The content of the 2-D and 3-D theory classes appeared to be of great value to the students, and overall they were very positive about their theory subject as well as regarding the lecturer. Having said this, most of the lecturers, to the contrary, were of the opinion that the students were not always able to apply their understanding of the visual elements to the planning of their practical work.

In the 2-D and 3-D Design module a study guide is used is to guide students in their learning. One of the aims of the study guide is to communicate clear and specific goals that make the tasks more manageable for students. In this study guide the learning outcomes, teaching and learning activities as well as the assessment strategies are clearly outlined. Not all the students felt that the study guide encouraged self-directive learning, possibly due to the fact that they did not use the study guide as much as they could have. The lecturers, however, reported that the guidelines in the study guide were sufficient depending on whether the students actually made use of the study guide.

In this module, students are compelled to do group work as this encourages problem-solving and supports collaborative and peer-driven learning. Students tend to help one another when

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they work together on small group activities, while other students deepen their learning by explaining concepts to peers in need of support. Just over half the students preferred working on their own but also enjoyed being involved in group work, where brainstorming, which can be an effective way of generating a large number of ideas in a short period of time, was encouraged. Even though just over half the students preferred working alone, the students were observed having group discussions and encouraging each other by asking questions relating to a specific theme. Group discussions were used by both the lecturer and the students when considering the theme for that specific module.

Students need encouragement and guidance from the lecturer. This statement is reinforced by the vast majority of students claiming that the lecturer had to encourage them to generate ideas in class. All the students agreed that the lecturers were professional and well-prepared and guided them sufficiently. These findings support literature (refer to 2.4.3) in that rich environments for active learning (REALs) should inspire students to be responsible. Initiative, decision-making, intentional learning and collaboration among students and lecturers is encouraged. The lecturers similarly reported that the students needed inspiration and guidance throughout the idea development phase and the modelling approach had to be taken with regard to this. This is the area where transferable knowledge takes place and it could be largely due to the inexperience of the student at first-year level and possible lack of confidence that they need this guidance. The lecturer stimulates the student's creativity and critical thinking, and in doing so assists the student to be self-sufficient. The demographic information in this study shows that very few students had art at school level, therefore they could be classified as novice design students and very different from expert designers.

6.2.2   Conceptualisation Process

Design thinking can be defined as the different ways in which designers interlink their work and problem framing. The findings concluded that in general the students were not familiar with the concept of combining design with planning and organising; this being the part where the designer has to not only interpret the problem, but also to solve it. Research has shown (refer to 2.4.1.1) that learners are empowered through problem-based learning to solve problems through research, integrating theory and practice as well as applying knowledge and skills.

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During the problem solving phase, it was observed that students were able to reflect and identify problems with the support of the lecturers. The students furthermore reported that they learnt a lot from the mistakes they made during the reflection of their own work. While working with new materials, students experimented, took risks and pushed themselves to "think outside the box" and not merely accept the first solution that presented itself. Overall the students felt that the practical class was very informative and that they learnt a lot from reflecting on their practical work.

As indicated by the demographic table (Table 4.1), the majority of the students did not have art as a subject at school level. Because of this the students were not accustomed to recording their progress and needed encouragement in using their visual diaries (portfolios). Literature (refer to 2.4.4) reinforces this in that the progress the students are making in the production of the art works needs to be recorded in their visual diaries as evidence. This statement is supported in that most of the students stated that the visual diary greatly contributed to their learning. Having said this, not all the students always brought their visual diaries or drawing materials with them to class, having forgotten them at home or in the public transport they used that day, although they were provided with visual diaries and drawing materials at the beginning of the year.

As is noted in 2.3.1.1, one of the core competencies that is critical in helping students to thrive in the industry today is creativity and innovation. Creativity begins with idea development and refinement, as is further described (refer to 2.4.2) as being a process of developing and expressing original ideas which are then applied. The lecturers reported that most of the students used the drawing technique to generate ideas and started off by making rough pre-sketches in their visual diaries. It was also observed that most of the learners were able to develop their ideas according to the brief given to them, however, the whole design process needed to be reinforced as well as the students needing guidance in applying their ideas. It has been shown that a need exists for implementing various methods such as mind-mapping and brainstorming during the design process. Even though the visual diaries ranged in quality, depending on the student, it was an effective way in which they could analyse their mistakes and work through the technical difficulties they encountered. Very few students made use of mind-mapping to generate ideas, while the vast majority made use of the Internet. They also relied on modelling, brainstorming, and group discussions to generate ideas.

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6.2.3   Educational Strategy

In this module a student-centred learning approach is followed instead of a teacher-centred approach of merely instructing the students. At the beginning of every project the students are given a brief in which the requirements and constraints of the theme are set out for them. Most of the lecturers agreed that the briefs given to the students were adequate for first-year level (SAQA level 5). Most of the students felt that the briefs they were given were not too difficult. Initially the students found the procedure challenging, but after they were able to familiarise themselves with the technique they started to enjoy the process. Short briefs and a beginning, middle and end assessments are effective strategies in this module, and should be continually followed in the future.

For students to become more self-reliant and assume more responsibility for things such as being organized, planning ahead, or meeting deadlines without assistance or reminders from lecturers, they need to be able to take responsibility for themselves. In typical learner-centred learning practices, learners are led to take such responsibility for their learning. Just under half the students stated that they found it difficult to gather visual and factual information successfully out of the studio without the guidance of the lecturer. However, in contrast to the perception of the students, the lecturers were of the opinion that it depended on the individual student whether they were able to work independently and gather information in the studio as well as out of the studio. Some students felt they were able to work on their own and motivate themselves, which coincided with the observations by the researcher, as it appeared that under half the students needed encouragement and motivation to do work out of the studio.

Basic technical skills are vital and have to be taught at the very beginning of the module. It was apparent that a step-by-step learning experience was required by the majority of the first year students, and that through the knowledge and skills they acquired they received a foundation from which they could further develop their knowledge and skill base and problem-solving techniques. The researcher observed that a presentation of the theme was shown to the students, after which they were introduced to the procedures and techniques relating to the theme, and notes were given to them. Initially it took some time for them to grasp the concept, and because the materials were unfamiliar to them, students were shown what to do, they were generally able to carry out tasks given in class. Some of the students showed signs of uncertainty and the lecturer had to continually repeat the instructions as well as inspire them. Most of the students found the demonstration by the lecturer valuable in the production

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of their final art piece, especially in cases where the students had to work with potentially dangerous equipment.

Literature substantiates this (refer to 2.4.2), indicating that students working closely with the lecturer are encouraged to develop their skills and knowledge. It seems that lecturer instruction on the first-year level of the course remains an integral part of learning, with students wanting to see a final example of what the end product will look like. All the lecturers further agreed that the modelling strategy is the best way to show the students what is expected from them in a way that they can understand. Further outcomes showed that continuous monitoring and assessing by lecturers was needed for the students' progress as well as to encourage them to complete their work. The students were observed managing their time and work-load sufficiently, which is important as emphasis is placed on the student successfully completing their projects. Most of the students reported that the techniques learnt in class were of value to them. Research again shows that student-centred learning supports this practice of placing the student at the centre of the learning experience. It can be said that it is a very positive aspect of instruction to still be able to have contact time with the students as it is becoming the tendency to have less and less interaction with the student with the introduction of more technology and on-line courses and the potential move to blended learning.

An essential part of the students' foundation is daily planning and goal setting. In this study it was found that students need to be taught how to set their own goals and to do time management. In order for the successful completion of their studies, they needed to master core skills, one of which was time management. Even though it depends on the student's ability to effectively manage his or her own time, they were encouraged to set goals for themselves. Another core competency that students need to be successful in the design industry is to be productive and accountable. Normally when students undergo the transition from school to Higher Education, they experience increased pressure in academic expectations and time management. It is expected of students in Higher Education that they are more self-reliant and take on increasing responsibility for things such as being organized, planning ahead, or meeting deadlines without assistance or reminders from lecturers. Almost half the students agreed that the time they were given to complete their art pieces was sufficient. The more improved the practical skills are, the more improved the productivity will be. The lecturers also stated that the time allocated to practical work was sufficient. It was, however, noted novice students spent too much time gathering information, instead of continuing with the solution generation phase. This is reinforced (refer to 2.3.1.2) in that it is

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common for novice students to lack visual literacy skills which enable them to effectively find, interpret, evaluate, use and create images and visual media.

The observation showed that most of the students have a very positive attitude in class. It appears that even though the techniques were new to them the students were allocated sufficient time for idea generation, and they appeared to enjoy the designing process of the module.

Literature (refer to 2.5.2.2) reinforces the fact that the art production phase is a process that involves informed and critical decision-making to determine outcomes to problems. The students were positive regarding the production of their final art piece, and a large majority of the students responded that they enjoyed the actual making of the art piece.

Most of the students felt that the skills they learnt in the 2-D and 3-D Design module were of great value to them as an artist and designer. All the lecturers agreed that the students were able to apply the skills they learned in the 2-D and 3-D Design module in the production of the art pieces. As a result of students having moved away from merely being taught towards a more learner-centred mind-set, they have been encouraged to have more control over their learning. Because the students were given most of the supplies, they felt the materials provided in the class were sufficient. There were, however, some materials they had to bring themselves, which they sometimes did not always do as they could not afford the materials.

Due to the varying techniques used, the students had to take into consideration time factors such as preparation of the different materials, e.g. drying time of clay or waiting their turn to use equipment in class. The students were nonetheless given enough time to complete their work in the studio. The students in effect actually produce an art piece at the end of their module, and do not simply go through the planning phase. The findings in the research reveal that the extent of designers' understanding of skills they have learnt directly affects what they understand about design and how they go about the act of designing.

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6.2.4 Metacognition

Students with consciousness and self-awareness have the ability to make sense of what they are learning. In the 2-D and 3-D Design Module learner-centred assessment correlates with holistic assessment, essentially evaluating product, person and process (refer to 2.4.4). Learner-centred and process-centred approaches such as formal assessments are regarded by the students as positive and motivational. The majority of the lecturers found the formal assessment method to be a fair process.

Reflection is a very important part of learning and this coincides with the literature (refer to 2.5.2.3) that states that students need to be given time to reflect on their work to encourage self-study outside the class. Students thrive on interactivity and receiving feedback immediately after having performed an action, so, where possible, immediate response to the individual and the student group should be given. Critique sessions provide a way to give immediate feedback to the individual and the class group, and most of the students agreed that during these sessions they were made aware of the importance of time management. The majority of the students found the critique sessions of value to the learning process, as they were made aware of their time management. They were positive about the manner in which their work was assessed, as well as being able to successfully critique each other's work, despite their lack of experience and confidence. It is recommended that the lecturers include critical self-reporting in portfolio's, checklists and informal self-reflection feedback discussions.

6.3   Recommendation and Implications

The research identifies several factors that relate to core competencies that are considered critical in helping students to thrive in industry.

6.3.1 Educational content

For students to be able to transfer knowledge they have acquired in the theory class and be able to apply it in the practical class lecturers could, through experimentation and risk taking, encourage students to push their boundaries. All the lecturers agreed that the time allocated for the theory class was sufficient, but it was observed that the basic knowledge taught in theory needs to be emphasised more. Because theoretical knowledge forms the basis of all

conceptual knowledge this will benefit the students in bridging theory with their practical work. At present the weight of the 2-D and 3-D theory component is 10% (refer to Fig.2.11). It could be recommended that the theory be increased to a more substantial weight. The implication can be that the theory class could be increased with one period (40 minutes) and the practical component decreased with one period.

Not all the students use their study guides to the fullest extent, therefore the study guide could be combined with the visual diary and given equal status. In this way the student will attach equal importance to both as the study guide could be changed into a working document.

Communication is one of the most fundamental aspects of any process, specifically when it comes to art and design. Students need to be able to convey thoughts, feelings and ideas through the creative use of art and design materials and techniques as well as academic writing. Collaboration and collaborative learning are also essential in maintaining good working environments. In industry communication and collaboration skills are some of the most fundamental aspects. Group work unfortunately always has the potential to allow less enthusiastic students to let the stronger ones take the lead.

Tutorials and group work outside the studio are ways in which students could be encouraged to collaborate and communicate more effectively. The implication for the CUT could be the appointment of lecturer's assistants to facilitate tutorial sessions which include group work.

6.3.2 Conceptualisation Process

Because novice students are still inexperienced and lack self-confidence, it is recommended that they practice brainstorming and other idea generating techniques. As the Visual Culture and Professional Practice subjects in the Diploma of Design and Studio Art carry equal weights of 24 credits each, it would be advisable to introduce these techniques into the Professional Practice subject. Almost half the students claimed to have found idea development and refinement a challenge. To enable students to be successful in the world of work, it is recommended that the whole design process should also play a more prominent part in idea development in the form of introducing more techniques. Listing and verbal diagramming, among others, are examples of idea generation that will assist the student in the design process.

Designers should ultimately strive towards a strategy aimed at finding solutions to obscure problems within a design thinking framework. Creativity is developing and expressing original

ideas. It would be advisable that lecturers give students more practice in setting their own goals and to manage their time. Without giving students too much freedom, lecturers could establish a framework within which students are given choices in which they can be in control of their own learning.

6.3.3 Educational Strategy

A vast majority of the students claimed that the lecturers had to guide them in the studio. If the students are given increasingly more out of studio activities to do, this will broaden their outlook. To encourage the students to become more self-reliant training could be given to the students on how to use Blackboard more effectively, and online videos of course components be made available to them. With the advent of the Internet and social media art has become a more hands-on experience, and art audiences have become more diverse. The internet has also pushed the boundaries of what is considered to be art. Students' engagement increases when they are encouraged to think broadly. As it is possible that not all students have access to laptops and computer devices as well as data at home the CUT has made student centres available on the campus where students have access to the Internet. An implication could be that the E-learning and Educational Technology department at the CUT has to offer training in Blackboard to the students.

6.3.4 Metacognition

For students to gain a deeper understanding and confidence when discussing their own work, immediate feedback is essential. Class exercises can provide the platform for this feedback to stimulate students and to encourage further self-study outside of the classroom. The researcher recommends that the lecturers include suitable formal and informal feedback discussions. Because time for reflection was not always enough and as this is an urgently needed part of any thought or design process, it is recommended that lecturers specifically make time for reflection in class. Self-reflection, especially self-assessment of performance could help students to develop self-regulatory learning strategies. It is further recommended that the lecturers include critical self-report in portfolio's, checklists and informal self-reflection feedback discussions.

Further research in this area should:

- Include extended research to the full period of the first year and not only to two sessions.

- Include the second and the third year levels of this module.

6.4   Delimitations

A possible limitation to this study is that it was limited to the School of Design Technology and Studio Art at the CUT and only one group of first-year students was included in the study. As the study was conducted at the CUT, the results cannot be generalized to other UoTs. The length of the intervention could also be a possible negative aspect as the students were observed over a period of only 5 weeks. Another factor is the possible lack of determining the "follow through" into the second year of study. The diversity of the group in terms of demographics, background and prior art schooling can also be regarded as a shortcoming.

6.5 Conclusion

In this last chapter a short overview of the main findings of the study have been discussed. The objectives of the study are summarised and recommendations and implications are given. It is hoped that both the approach to assessing the efficacy of the module (in terms of methodology) will be of use to further researchers, and that the findings of this specific project, although small, have identified key concerns in designing and implementing such a module. Such re-evaluations from time to time allow for university-wide introspection, but also foster an engagement with changing student profiles and professional (industry) requirements.

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ADDENDUM A

STUDENT QUESTIONNAIRE

2-D and 3-D Design at a university of technology: A Retrospective Outcome questionnaire

Researcher: Hilda Faber

M Tech: Design

Aim of this study: To gain insight into the balance between prescriptive and intensive skills (technique) building versus dialogue and experimentation (conceptualisation) in the new 2-D and 3-D Design module.

As part of my research into the new curriculum I would like you to fill in the below questionnaire. Please answer as honestly as possible.

This research aims at gaining insight into the balance between prescriptive and technique building and conceptualisation in the new 2-D and 3-D Design module.

All information obtained during the course of this study is strictly confidential. The study data will be in no way linked to your name and your identity will not be revealed while the study is being conducted. Your answers will be totally anonymous and your identity will not be revealed under any circumstances.

All the data sheets that have been collected will be stored in a secure place. The information received during the project will only be used for research purposes and will not be released for any other purposes. Only the researcher and the supervisors will have access to the filled-out questionnaires.

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1.   Demographic Information

1.1   What is your age?

18-19	20-21	22-23	24 or older

1.2   What is your gender?

Male	
Female	

1.3   Did you take art at school level?

Yes	
No	

1.4   Which of the following did you make the most use of to gather data for projects?

Internet	
Library	
Magazines	
Other	

1.5   Did you attend private art classes / art community programs at school level?

Yes	
No	

1.6   Is this your first year studying this module at the CUT?

Yes	
No	

2. Educational Content

INSTRUCTIONS

Mark only one with a X

1. Strongly Agree

2. Agree

3. Undecided

4. Strongly Disagree

5. Disagree

		1	2	3	4	5
2.1	I was able to connect the key elements (line, shape, focal point, etc.) that I learned about in the 2-D & 3-D theory class, to the practical project.	1	2	3	4	5
2.2	I felt that the 2-D & 3-D theory and the2-D & 3-D practical classes were far removed from each other.	1	2	3	4	5
2.3	I found it difficult to gather visual and factual information, out of the studio.	1	2	3	4	5
2.4	I found the 2-D & 3-D theory classes to be of great value in this module.	1	2	3	4	5
2.5	I enjoyed participating in the group.	1	2	3	4	5
2.6	I preferred working on my own.	1	2	3	4	5
2.7	I was able to concentrate during class.	1	2	3	4	5
2.8	I enjoyed being involved in the class with tasks given to me by the lecturer.	1	2	3	4	5
2.9	I was confident to speak up in class when necessary.	1	2	3	4	5
2.10	I felt the study guide encouraged self-directive learning.	1	2	3	4	5
2.11	I did more than was expected from me.	1	2	3	4	5
2.12	The lecturer guided me in a professional manner.	1	2	3	4	5
2.13	The lecturer was knowledgeable and well prepared.	1	2	3	4	5

2.14 I found the prescribed textbook to be very valuable in the module

Yes	
No	

Please give a reason for your
answer:_____

_____
___

2.15   I was always present in class.

Yes	
No	

If the answer is NO please give a reason for your answer:

_____

_____
___

2.16   I found it easy to comply with the rules of the class.

Yes	
No	

If the answer is NO please give a reason for your answer:

_____

_____

___

2.17   I found the duration of the practical class to short.

Yes	
No	

Please give a reason for your answer:

_____

_____

___

2.18   I found the duration of the theory class too short.

Yes	
No	

Please give a reason for your answer:

_____

_____

___

3.   Conceptualization Process

INSTRUCTIONS

Mark only one with a X

1. Strongly Agree
2. Agree
3. Undecided
4. Strongly Disagree
5. Disagree

| 3.1	I found it difficult to **develop** my ideas according to the brief	1	2	3	4	5
3.2	I found it difficult to **refine** my original ideas into a final design	1	2	3	4	5
3.3	The briefs given were too difficult.	1	2	3	4	5
3.4	The lecturer has to encourage me to generate my ideas in class.	1	2	3	4	5
3.5	I feel positive about being in the class.	1	2	3	4	5
3.6	The pre-sketches I did as part of my planning was of great value to my learning.	1	2	3	4	5

3.7	The visual diary that formed part of the theme greatly contributed to my learning.	1	2	3	4	5
3.8	I made use of mind-mapping to generate my ideas.	1	2	3	4	5
3.9	I made use of drawings to generate my ideas.	1	2	3	4	5
3.10	I made use of the internet to generate my ideas.	1	2	3	4	5

4. Educational Strategies

INSTRUCTIONS

Mark only one with a X

1. Strongly Agree

2. Agree

3. Undecided

4. Strongly Disagree

5. Disagree
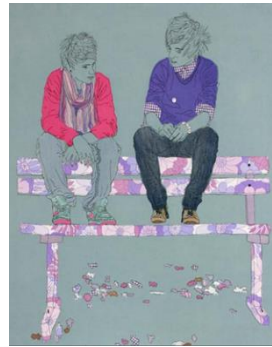
4.1	I found the demonstration by the lecturer valuable for me to be able to produce my final product / art piece.	1	2	3	4	5
4.2	I only do the minimum amount of work expected from me.	1	2	3	4	5
4.3	The techniques learnt in class were of value to me.	1	2	3	4	5
4.4	The lecturer has to continuously show me examples of what can be done in this specific module.	1	2	3	4	5
4.5	The time allocated to the completion of the final product / art piece was sufficient.	1	2	3	4	5
4.6	The materials provided in the class were sufficient.	1	2	3	4	5
4.7	It is of value to me if the lecturer maintains an ongoing (beginning, middle and end) review process throughout the module.	1	2	3	4	5
4.8	The practical class was very informative and I learnt a lot from the testing of my practical work.	1	2	3	4	5
4.9	I am positive regarding the production of my final product / art piece.	1	2	3	4	5
4.10	I feel very proud of the fact that I have possibly produced something new for the first time.	1	2	3	4	5
4.11	The skills I learnt in 2-D & 3-D were of great value to me as an artist/designer.	1	2	3	4	5

4.12   I could work through the technical obstacles that arose in class during the production of my final product / art piece.

Yes	
No	

Please give a reason for your answer:

_____

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4.13   I found the technical side of the production of the final product / art piece difficult to master.

Yes	
No	

Please give a reason for your answer:

_____

_____

____

5.   Meta-cognition

INSTRUCTIONS	
Mark only one with a X	
1. Strongly Agree	
2. Agree	
3. Undecided	
4. Strongly Disagree	
5. Disagree	

		1	2	3	4	5
5.1	In the critique sessions I was made aware of the importance of time management.	1	2	3	4	5
5.2	I feel that I have the necessary background knowledge to critique another student's work.	1	2	3	4	5
5.3	I have the vocabulary to engage in valuable critique skills.	1	2	3	4	5
5.4	I enjoyed the designing process of the module.	1	2	3	4	5
5.5	I enjoyed the making of the actual art piece.	1	2	3	4	5
5.6	I find the assessment method to be a fair process.	1	2	3	4	5
5.7	I learnt a lot from the mistakes I made during the testing of my work.	1	2	3	4	5
5.8	The evaluation of my work was done in a satisfactory and fair manner.	1	2	3	4	5
5.9	If I could re-do my project I would execute it differently.	1	2	3	4	5

5.10   I found the critique sessions of value to the learning process.

Yes	
No	

If the answer is NO please give a reason for your answer:

_____

_____

Thank you for taking part in this study.

Central University of Technology, Free State

ADDENDUM B

INFORMATION LEAFLET AND CONSENT LETTER
Students' Observations and Questionnaires

Dear Student,

My name is Hilda Faber and I am currently engaged in Masters research on the impact of various aspects of the new curriculum in the department. My supervisors are Prof Allan Munro and Ms Nelia Venter.

As part of my Masters studies I am conducting a participant observation study in order to gain reliable and truthful knowledge for qualitative research. The main aim of this kind of research approach is to foreground specific information and interactions, and to identify phenomena through how they are perceived by the participants in a given situation. In this case this involves the experience of the students involved in the 2-D and 3-D Design subject.

If you agree to participate:
1. You will be **observed** in your natural classroom setting.
2. A **questionnaire** will be handed out to you at the end of a 5 week cycle. The questionnaires will be handed out by an impartial assistant and you will be given 20 minutes in which to complete them. The questionnaire is designed to gauge your experiences (both positive and negative) about the course. You will not be "tested on your knowledge gained" in the course.

The following Group will be observed during the following periods:

Group A - 4 May 2015 – 4 June 2015
Group A - 20 July 2015 – 20 August 2015

If you decide to take part in this study, you will be required to do the following:

- To sign this informed consent letter
  To allow me to sit in on you classes in the relevant group so that I can observe and make notes (please note these classes are NOT the classes that I t each. Furthermore, the lecturer who is offering the class in which you are working has granted permission for me to be there).
- To complete a demographic questionnaire

The role of the researcher in this study is that of Participant Observer. Please note, therefore:

I acknowledge the Tshwane University Of Technology: Information Leaflet and Informed Consent document, in preparing this document

1. Your participation in this study is entirely voluntary.
2. You have the right to withdraw at any stage without any penalty or future disadvantage whatsoever.
3. All information obtained during the course of this study is strictly confidential. The study data will in no way be linked to your name. Your identity will not be revealed – you will be given a code number for research cross-reference purposes only. The only people who will be able to link your name to your code will be myself, the two supervisors, and the person (coder) appointed to check my work, and this person has signed a confidentiality clause
4. All the data sheets that will be collected will be stored in a secure place For 5 years after which is will be destroyed

PLEASE NOTE:
I DECLARE THAT
The information received during the project will only be used for research purposes and will not be released for any other purposes.

Only the researcher and the supervisors will have access to the filled-out questionnaires. Your answers will be totally anonymous and your identity will not be revealed under any circumstances unless the law demands it. The results of this study might be published, but again without revealing the identity of any research participant. The original questionnaires will be stored in a safe place for three years, after which they will be destroyed.

In short, your participation, your comments, and any part of your involvement in this study will in no way impact on your academic progress through this course Therefore, *there is no risk involved in your participation.*

You will *not be paid or gain any direct benefit* from your participation in this study except to know that you will be part of the evaluation and eventual improvement of the course being offered, so that future generations of students will be better able to contribute to South Africa because of your involvement.

If you have any concerns around your participation you may contact me at (0823778437) or my supervisor Ms Nelia Venter at CUT at (051-5073991), or my supervisor Prof Allan Munro at (082 823 0819) or the Head of Department Prof F van Schalkwyk at (051-5073185)

I thank you in advance for your consideration

Sincerely

Hilda Faber

I acknowledge the Tshwane University Of Technology: Information Leaflet and Informed Consent document, in preparing this document

ADDENDUM C

SEMI-STRUCTURED QUESTIONNAIRE FOR LECTURERS'
INTERVIEWS

INFORMAL LECTURERS INTERVIEW
Good morning / afternoon. Thank you so much for the time you are giving to this interview. It is much appreciated. The interview will not take longer than an hour. This is a very informal interview / conversation regarding the outcomes of the 2-D and 3-D Design module. This interview is by no means a critique session, or any form of criticism aimed at your teaching methods. Your answers should be considered as contributing to a developmental approach to the new curriculum and as such your views on its strengths and weaknesses are sought.
Before you start will you please read the accompanying consent letter and be so kind as to sign it.
The overall aim of my study is to gain insight into the balance between technique building versus conceptualization in the new 2-D and 3-D Design module.
The 2D and 3D Design module consists of two sections: Firstly students attend a theory session after which they go to the respective studios to master specific techniques and materials in the different fields of art and design. In your studio students do module 2-D & 3-D.

1.   Factual:
         The students attend an 80 min formal lecture per week where they discuss the 2D &3D design elements and principles, sources of design inspiration and the design process.

1.1   What is your experience regarding their basic understanding of the visual elements as well as their ability to apply this knowledge to the planning of their practical work?

1.2   What are your feelings regarding the time allocated for the theory class as well as the prescribed textbook and notes that are supplied by the lecturers.

1.3   What is your observation regarding the students' approach to gathering information in- and out- of the studio?

2.   Conceptual:
         The module consists of 3-hour and 4-hour contact sessions respectively, per week.

2.1   What are your feelings regarding the time allocated for idea generation?

         In the 2D & 3D module a problem based learning and teaching approach is followed.
         Students are given a brief according to which they are expected to develop a personal and unique visual diary demonstrating the mastery of design.
2.2   In your experience, how does the student go from idea generation to idea development in your studio? For example, do you need to inspire the students

(and if so why do you think this is so, and how do you go about it) or do you find they do not need your guidance or input directly?

2.3   **Designers make use of various techniques to generate ideas. In your studio, do you find it necessary to make your students aware of various methods such as mind-maps, brainstorming, drawing techniques, images or other technology, or do you find that they do this on their own? Explain.**

2.4   **Through your observation what would you say would be the techniques most used by the students?**

2.5   **In the design process, students generate ideas by considering ways to make the idea a reality. How do the students apply this (idea generation) to further developing their ideas?**

2.6   **Do you feel that the basic framework and guidelines in the study guide are appropriate in order to give the students autonomy and help them develop skills for self-directive learning? If not, what would you have done differently?**

2.7   **Students come with various interests, background knowledge and abilities. Do you feel that the briefs (assignments) given to the students are appropriately challenging, or are they too easy or too difficult? Please justify your views.**

3.   **Procedural:**
After students have completed their designs according to the brief they, together with the lecturer, discuss and choose the best design. The next step is placing emphasis on the production of an art piece.

The module consists of 3-hour and 4-hour contact sessions respectively, per week.

3.1   **What are your feelings regarding the time allocated for the production of an art piece as well as the materials and equipment provided?**

3.2   **In the studio practical class the instructional strategy of "modelling" is followed, namely that the students watch the lecturer perform a skill, then they duplicate the skill where-after they practice the skill that they have observed and emulated in the studio. In your experience do students find the technical skills difficult to master?**

3.3   **After the above process has taken place are the students able to apply the skills they have learned in the production of the art piece?**

3.4   **What is your observation regarding the students' attitudes and feelings towards the production of their art works?**

3.5   **What are your feelings towards the modelling strategy approach (as explained above)?**

3.6   **Do you find it necessary to manage and maintain an ongoing (beginning, middle and end) review process throughout the module? Motivate. Probing hints: (time management, planning, strategies, goal setting)**

4.   **Meta-cognitive:**

Group critiques occur after the completion of the project. Students observe and discuss each other's work under the guidance of the lecturer.

4.1 **In these critique sessions is it clear to you that the students have been successful at managing their time and setting their own goals?**

4.2 **Do you think the students have the insight to critique, based on their training up to here?**

4.3 **Do you as the lecturer feel the student has the vocabulary to engage in valuable critique skills?**

4.4 **In your opinion do you think the student has the conceptual skills to be successful in critiquing his/her own work?**

4.5 **What is your feeling regarding the students taking initiative when it comes to their own learning?**

4.6 **Do you get the impression that the students are self-motivated, or do they design simply to meet deadlines and assessments? Please provide examples to illustrate your   answer.**

4.7 **In your experience do you feel that the students are enjoying the (new) designing and making process?**

4.8 **Which one would you say do they prefer?**

4.9 **Do you feel the critique session as it is currently run is of value to the student or not?   Please provide your reasoning for your decision.**

4.10 **A wide variety of assessment activities is applied in this module to test the student's knowledge about the content and to ensure that the desired skills are mastered. Fifty per cent is allocated for studio projects, 10% for theory tests, 30% for visual diary (conceptualisation) and 10% for group critique sessions.**

4.11 **What are your feelings concerning the assessment structure?**

4.12 **If you had to suggest changes what might they be?**

Thank you for your time. This research is going to be of great value for generating results on my study.

INFORMATION LEAFLET AND CONSENT LETTER: LECTURERS

FACULTY OF HUMANITIES
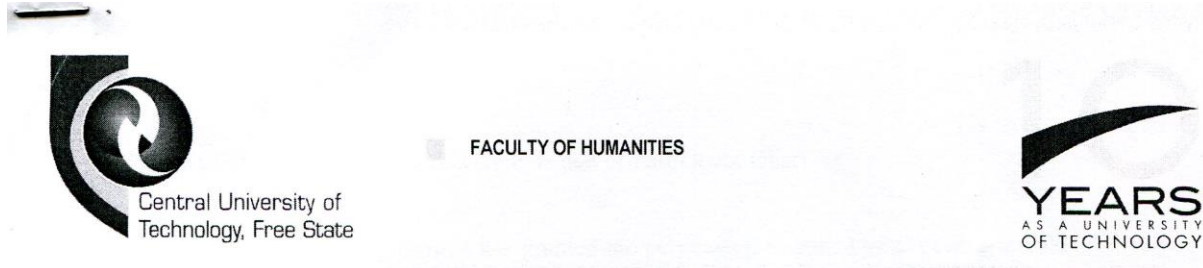
INFORMATION LEAFLET AND CONSENT LETTER
Lecturers

Dear lecturer,

I am Hilda Faber and I am doing research on the impact of the changes in the curriculum as part of my Masters degree here at CUT. My supervisors are Prof Allan Munro and Ms Nelia Venter.

You have been approached because you are part of the group of lecturers involved in the specific course mentioned below.

As part of my Masters studies I am conducting a participant observation study (with interviews) in order to gain reliable and truthful knowledge for qualitative research. The main aim of this kind of research approach is to highlight the specific and to identify phenomena through how they are perceived by the participants in a given situation. In this case the experience is of the students involved in the 2-D and 3-D Design subject. The students will be observed in their natural human setting and in this case it translates into gathering 'deep' information and perceptions through inductive, qualitative methods such as interviews by the researcher, and a representation from the perspective of the research participant(s), in this case the students. When these observations are conducted in a natural setting it becomes a process of building a complex and holistic picture of the interest of the phenomenon. Participant observation in this case will be conducted in class. A questionnaire will be handed out to the students at the end of a 5 week cycle. The questionnaires will be handed out and you will be given 20 minutes in which to complete them. The following Group will be observed during the following periods:

Group A - 4 May 2015 – 4 June 2015
Group A - 20 July 2015 – 20 August 2015

If you decide to take part in this study, you will be required to do the following:

- To sign this informed consent letter .
- To allow me to sit in on your classes when this is necessary for the participant observation. I shall simply sit at the back and observe and make notes.
- To take part in an individual interview with you of no less than one hour concerning your experiences in teaching this course and related matters.
- To give me consent to audio-record the interview I am going to conduct with you.

I acknowledge the Tshwane University Of Technology: Information Leaflet and Informed Consent document, in preparing this document

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1. Your participation in this study is entirely voluntary.
2. You have the right to withdraw at any stage without any penalty or future disadvantage whatsoever.
3. All information obtained during the course of this study is strictly confidential. The study data will in no way be linked to your name. Your identity will not be revealed – you will be given a code number for research cross-reference purposes only. The only people who will be able to link your name to your code will be myself, the two supervisors, and the person (coder) appointed to check my work, and this person has signed a confidentiality clause
4. All the data sheets that will be collected will be stored in a secure place For 5 years after which is will be destroyed

PLEASE NOTE:
I DECLARE THAT
The information received during the project will only be used for research purposes and will not be released for any other purposes.

Only the researcher and the supervisors will have access to the filled-out questionnaires. Your answers will be totally anonymous and your identity will not be revealed under any circumstances unless the law demands it. The results of this study might be published, but again without revealing the identity of any research participant. The original questionnaires will be stored in a safe place for three years, after which they will be destroyed.

In short, your participation, your comments, and any part of your involvement in this study will in no way impact on your academic progress through this course Therefore, *there is no risk involved in your participation.*

You will *not be paid or gain any direct benefit* from your participation in this study except to know that you will be part of the evaluation and eventual improvement of the course being offered, so that future generations of students will be better able to contribute to South Africa because of your involvement.

If you have any concerns around your participation you may contact me at (0823778437) or my supervisor Ms Nelia Venter at CUT at (051-5073991), or my supervisor Prof Allan Munro at (082 823 0819) or the Head of Department Prof F van Schalkwyk at (051-5073185)

I thank you in advance for your consideration

Sincerely

Hilda Faber

I acknowledge the Tshwane University Of Technology: Information Leaflet and Informed Consent document, in preparing this document

ADDENDUM E

OBSERVATION GRID

ADDENDUM D: Observation grid

Questions:	Observation: Line and Shape: Ceramics	Observation: Pattern and Texture: Metal Fabrication
	GROUP A	**GROUP A**
1. 1.1 What is your experience regarding their **basic understanding of the visual elements** as well as their ability to **apply** this knowledge to the planning of their practical work?		
1.3 What is Your observation regarding the students' approach to gathering information **in- and out- of the studio?**		
2.1 What are your feelings regarding the time allocated for **idea generation**?		
2.2In your experience, how does the student go from **idea generation** to **idea development in your studio**? For example do you need to inspire the students (and if so why do you think this is so, and how do you go about it) or do you find they do not		

need your guidance or input directly?		
2.3 Designers make use of various techniques to generate ideas. In your studio, do you find it necessary to make your students aware of various methods such as **mind-maps, brainstorming, drawing techniques,** images or other technology, or do you find that they do this on their own? Explain.		
2.4 Through your observation what would you say would be the **techniques most used by the students?**		
2.5 **How** do the students **apply** this (idea generation) to further developing their ideas?		
2.7 Students come with **various interests, background knowledge and abilities.** Do you feel that the **briefs** (assignments) given to the students are appropriately **challenging,** or are they **too easy or too difficult?** Please justify your views.		

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3.1 What are your feelings regarding the **time allocated for the production of an art** piece as well as the **materials and equipment provided?**		
3.2 In your experience do students find the technical skills difficult to master?		
3.3 After the above process has taken place **are the students able to apply the skills they have learned in the production of the art** piece?		
3.4 What is your observation regarding the students' attitudes and feelings **towards the production** of their art works?		
3.5 What are your feelings towards the **modeling strategy approach?** (as explained above)		
3.6 Do you find it necessary to **manage and maintain an ongoing (beginning, middle and end) review process throughout the module?** Motivate. Probing hints: (*time management, planning, strategies, goal setting*)		
CRITIQUE SESSIONS		
4.1 In these critique sessions is it clear to you that the students have been successful at managing their time and setting their own goals?		
4.2 Do you think the students have the insight to critique, based on their training up to here?		
4.3 Do you as the lecturer feel the student has the vocabulary to engage in valuable critique skills?		

4.4 In your opinion do you think the student has the conceptual skills to be successful in critiquing his/her own work?		
4.5 What is your feeling regarding the students taking initiative when it comes to their own learning?		
4.6 Do you get the impression that the students are self-motivated, or do they design simply to meet deadlines and assessments? Please provide examples to illustrate your answer.		
4.7 In your experience do you feel that the students are enjoying the (new) designing and making process?		
4.8 Which one would you say do they prefer?		
4.9 Do you feel the critique session as it is currently run is of value to the student or not? Please provide your reasoning for your decision.		
4.10 A wide variety of assessment activities is applied in this module to test the student's knowledge about the content and to ensure that the desired skills are mastered. Fifty percent is allocated for studio projects, 10% for theory tests, 30% for visual diary (conceptualisation) and 10% for group critique sessions.		
4.11 What are your feelings concerning the assessment structure?		
4.12 If you had to suggest changes what might they be?		