Is student-centred teaching and learning being successfully implemented at a leading University of Technology? A case study of two departments

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ABSTRACT

Student-centered learning (SCL) has become a popular topic in higher education. Although the term "student-centered learning" is commonly used at universities, it is surprisingly underdeveloped as an academic construct. Given the foregoing context, the purpose of this research is to look at the experiences of students and staff, as well as the implementation of student-centered learning and the challenges to its success. The study was guided using both Starkey's 2019 model of student-centered teaching and learning and a service quality dimension model.

A mixed sequential exploratory research design - consisting of qualitative and quantitative phases was used to ascertain students' experiences and the degree of successful implementation of student-centered teaching and learning. The qualitative phase of data was first collected and analysed. This was done by conducting focused group sessions with 20 students, and semi-structured interviews with two staff (Heads of department) before administering the questionnaire. A non-probability snowball sampling method was used for the selection of the participants for the focus group discussion (with students) while purposive sampling was used in the selection of the academic staff (heads of department). The findings were used to drive the development of a quantitative instrument (questionnaire). Strands of data were collected and analysed separately and integrated sequentially to address the research objectives.

The quantitative phase, by contrast, uses a probability sampling method in which stratified sampling was applied in the selection of the two departments and students' levels. A questionnaire was administered to four hundred and eighty-six (486) students. Ethical clearance was obtained from the Faculty Research Ethics Committee (FREC) while written consent was obtained from each participant, who was assured of anonymity and confidentiality.

The research identified that while student-centered teaching and learning are embedded in the university's Envision 2030, it is, however, not clearly communicated nor defined among the university stakeholders. More so, the study identified that the implementation of student-centred teaching and learning at the selected university is

occurring piecemeal and in isolated pockets within the university. While the SCL approach recognizes students' strengths and capabilities, allowing them to make decisions about their education and future, the data suggests that several obstacles such as resource constraints, and large student enrolment may be impeding the full application of this learning strategy, limiting the benefits to students that it is intended to provide.

Furthermore, the focus group sessions uncovered that students, particularly 1st year, were dissatisfied with the teaching skills of the lecturers, overcrowding of the classrooms, excessive workload, and state of the infrastructure such as bathrooms and lecture venues.

The study proposes a student-centered teaching and learning framework that may be implemented in the selected university to fully adopt SCL education. The proposed framework may allow the implementation process to concentrate the efforts on general good administration, allowing students to experience "well-being," autonomy, and empowerment throughout their educational journey.

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DECLARATION

I, Khanyisile Nelisiwe Ntuli, hereby declare that this dissertation is wholly my work and that all the references to the best of my knowledge, are accurately reported. This work has not been submitted for a degree at any other university.

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Khanyisile Nelisiwe Ntuli

DEDICATION

I dedicate this study to my late grandmother, Mrs. Nokwenziwa Esther Ntuli for her silent inspiration.

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All thanks and praises are onto God almighty for making the completion of this research work a reality. My profound appreciation to him, my maker, my saviour, and my provider for his incomparable love and help in times of need. I thank you, Lord.

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ACRONYMS

ANOVA	Analysis of Variance
CAO	Central Application Office
CE	Chemical Engineering
CELT	Centre for Excellence in Learning and Teaching
CEQ	Course Evaluation Questionnaire
CFA	Confirmatory Factor Analysis
CHE	Council on Higher Education
CUT	Central University of Technology
DHET	Department of Higher Education and Training
DUT	Durban University of Technology
EFA	Exploratory Factor Analysis
FRC	Faculty Research Committee
FREC	Faculty Research Ethics Committee
HE	Higher Education
HEI's	Higher Education Institutions
HELTASA	Higher Education Learning and Teaching Association
HODs	Head of Departments
HEQSF	Higher Education Qualifications Sub Framework
ICM	Information and Corporate Management
IWB's	Interactive White Boards
LLL	Life-Long Learning
SATN	South African Technology Network
SCL	Student-Centred Learning
SEM	Structural equation modeling

SPSS	Statistical Package for the Social Sciences
UoT	University of Technology
WIL	Work Integrated Learning

CHAPTER ONE - INTRODUCTION

1.1 BACKGROUND AND CONTEXT OF THE STUDY

Since the achievement of democracy in 1994, South African higher education has undergone a major transformation characterised especially by an increase in access to previously disadvantaged groups. Globally, this period has also seen major changes in higher education (HE) with the onset of the "knowledge society" and increasing globalisation. Despite these changes, Scott *et al*. (2007:41) alleged that the traditional educational approaches that were evident in pre-democratic South Africa, including the course design methods and content, curriculum frameworks, lecture delivery practices, and uniform timetabling of lectures, continued to prevail in the South African higher education system, and similar observations have also been documented more recently by other scholars, including Nyamupangedengu (2017:114) and Tandlich *et al.* (2018:15). To redress these drawbacks, Dorasamy and Balkaran (2013:268) recommended that Higher Education Institutions (HEIs) should be committed to promoting the quality of students' total learning experience in a well-supported environment.

In recent years, student-centred teaching and learning in higher education has generated a lot of research interest in academia and among public commentators (Wright 2011: 92; Baetan *et al.* 2016: 43; Xulu-Gama *et al*. 2018: 1302; Mckenna and Quinn 2020: 108). A study conducted by Le Roux and Van Rendburg (2014:01) indicated that students get a positive experience on campus from this kind of teaching which can increase their satisfaction levels. This result is an increase in the propensity for them to pursue further studies, and also to develop a sense of loyalty, and thus promote the university to others. Essentially, Jaiswal and Al-Hattami (2020:6) saw that student-centered learning is about seeing students as 'active participants' in the classroom, and as partners who contribute to reaching the required outcomes of a course or program. Oinam (2017:30) agreed that student-centered learning requires seeing students as people who have a certain 'personal autonomy', and they advocated that HEIs evaluate their existing academic programs from the context of both subjects offered and teaching methods.

As outlined in the university's Strategic Plan for 2015-2019," The notion of student-centredness is that the university exists to provide its students with the kind of learning environment that helps them to grow intellectually, socially and emotionally" (Bawa, 2014:5). More recently, however, the Vice-Chancellor and Principal in his "State of the University Address" (SOUA, 2019) expressed concerns about the challenges of increasing student numbers as compared to the limited resources available. This affects the need for student-centeredness which is "one of the most important strands in the university's DNA".

HEIs are increasingly relying on students' ratings of teaching as a key indicator of quality and the selected university is no exception. Here student ratings of lecturers and subjects are part of the annual quality monitoring process undertaken by departments. While this is seen as contentious among many in academia, the key significance of this exercise is to provide a framework for proper interpretation and use of students' ratings to evaluate the programs (Nasser and Hagtvet, 2006:560). Amongst the most educationally respected evaluations of university teaching and learning internationally is the Australian National Course Evaluation Questionnaire (CEQ) which students complete at the end of a degree program in all public universities. This specifically focuses on recent graduates' experience of the degree of student-centeredness in the teaching and learning they experienced. This approach is, however, not understood to be adopted widely in South Africa. Student evaluations may therefore not focus specifically on SCL while Mthembu (2012: 185) in his editorial contribution to the 4th Annual South African Technology Network (SATN) indicated that the quality of teaching and learning at the Technological Universities tend to be taken for granted. The report from this conference also advocated that teaching and learning ought to be student-centred in technical universities as the practical learning outcomes expected in the workplace demand this. The purpose of this study was to explore students', and key staff, experiences of current strategies aimed at achieving student-centred learning at selected University of Technology, and the barriers to its achievement.

1.2 RESEARCH PROBLEM

Already some years ago, Palli and Mamilla (2012:432), noted that higher education institutions were faced with fresh responsibilities and challenges to prepare students for their future in the 21st century, especially when considering the rapid changes taking place worldwide, and it has become increasingly important that universities have a strategic plan indicating the kind of graduates they wish to produce. Mocinic (2012:97) recommended that the goals of education should be defined through the outcomes of learning or competence development and cannot be realised by sheer usage of traditional didactic strategies, approaches, and methods. Student-centered learning is seen as addressing these issues. However, substantial concerns about the difficulty of achieving this have been expressed by Moodley (2015:151) and Tandlich *et al.* (2018:10) who note the advances in technology, the high demands of a knowledge economy, shrinking resources, issues with curricula, and simultaneous pressures to increase enrolments, as some of the significant challenges facing South African higher education sector. These, as mentioned above, are also acknowledged to be affecting the selected university. Van der Merwe (2012:6) conducted a study on student-centred learning at the Central University of Technology (CUT). The study revealed that many HEIs claim to put student-centered learning into practice, however, they are not in practice achieving this. Similarly, a concept paper on student-centeredness in 2017 at the selected university, revealed that despite its Strategic Plan, student-centeredness is not in fact projected in its practice.

1.3 AIMS OF THE STUDY

This study aims to explore students', and key staff, experiences of current strategies aimed at achieving student-centred learning at selected University of Technology, and the barriers to its achievement.

1.4 STUDY OBJECTIVES

a. To identify student-centered curriculum policies and strategies that currently exist in two departments of the selected university, specifically with promoting student autonomy and lifelong learning skills.

b. To establish students' (1st and 3rd years) experiences of these strategies from the perceptive of the students studying in two departments and two different year cohorts using the Service Quality Model.

c. To enquire from academic staff tasked with oversight of the implementation of these SCL strategies in the two departments, about the successes and impediments to their implementation.

d. To recommend improved implementation strategies, should these be seen to be necessary.

The following questions were asked to address these objectives:

a. What SCL teaching and learning strategies, are currently being implemented in the two departments?

b. What are 1st and 3rd-year students' experiences of the implementation of these strategies?

c. What are curriculum specialist experiences of the successes and pitfalls associated with the implementation of these strategies?

d. If challenges are found to exist, how can implementation strategies be improved?

1.5 RATIONALE/SIGNIFICANCE OF THE STUDY

As South African universities compete amongst themselves to attract and retain highly qualified students that will project their image, Dorasamy and Balkaran (2013:261) cautioned that higher education institutions like the Durban University of Technology must be concerned not only with developing the skills and abilities of its graduates but also with determining students' feelings about their educational experience. Oinam (2017:29) therefore believes that to achieve the desired learning outcomes for the students in the most effective way, it is important to identify and promote the most effective student-centered teaching practices. While the student-centeredness approach to learning has generated much research interest in recent years (Baetan *et*

al. 2016: 43; Xulu-Gama *et al*. 2018: 1302; Mckenna and Quinn 2020: 108), a concept paper on student-centeredness in 2017 at DUT, however, revealed that the DUT community has been criticised that despite its Strategic Plan, student-centeredness is not in fact projected in its practice. This throws more light on the need to adopt student-centred learning at DUT. Bearing this in mind, the study aims to explore the challenges facing a key administrative and educational policy initiative that appears to face intractable barriers at present and to suggest ways forward as seen by the key stakeholders in the initiative.

1.6 DELIMITATION OF THE STUDY

The study was conducted at the DUT, using students as participants and some selected staff in the study. The target population only included registered students from the Departments of Information and Corporate Management and Chemical Engineering.

1.7 STRUCTURE OF THE THESIS

This study consists of five chapters:

Chapter 1: Introduction

This chapter provides a general overview of the study. The sections covered discussion on the broader definition of student-centred teaching and learning. This enabled the research to focus on general good administration and student wellbeing beyond the strictly academic definition of student-centered. Introduction and rationale for the study, research problem, critical research questions, aims, and objectives were also discussed.

Chapter 2: Literature Review

This chapter outlines the review of the related literature for the study by providing a concise overview of what has been studied, argued, and established on this topic. It provided a study background on teaching and learning as a service aspect in higher education. Different scholarly articles within the higher education sector concerning service delivery were discussed. The challenges or barriers to implementing the SCL are discussed. The concept of service quality delivery was also covered as higher education institutions have to acknowledge that they are in a “market” where students

are seen as “customers” and their expectations of good service delivery are to be considered. The last section reviews the literature relating to the theoretical framework for the study.

Chapter 3: Research Methodology and Design
This chapter describes the research process in-depth, including the research design, sampling method, data collection method, and data analyses.

Chapter 4: Analysis and Presentation of qualitative results
This chapter presented the raw data, analysis, and presentation of the data and the findings of the study. The data gathered from the students’ responses to student-centered curriculum policies and strategies that currently exist in two departments and student experiences of these strategies were discussed using the Service Quality Model.

Chapter 5: Analysis and Presentation of quantitative results
This chapter presented quantitative data analyses and interpreted the study findings by drawing from relevant literature to support the results.

Chapter 6: Discussion
This chapter provides a discussion of the results in line with the research objectives. The framework developed was also detailed in this chapter.

Chapter 7: Summary of findings, conclusions, and recommendations.
The study was summarised based on the results obtained, and recommendations for future research.

A list of works cited is included after the dissertation.

1.8 SUMMARY

Chapter one has provided a review and the background to student-centeredness in the departments of Chemical Engineering and Business and Information management at DUT. The chapter brought about awareness and the importance of student student-centred teaching and learning in higher education institutions.

CHAPTER TWO - LITERATURE REVIEW

2.1 INTRODUCTION

“Tell me and I forget, teach me and I may remember, involve me and I learn” Benjamin Franklin (1706-1790). Drawing from this statement, and within the context of student-centred teaching and learning in higher education, Wright (2011:94) states that students learn by doing, and so involving them in the learning activities promotes learning. His words are supported by the work of Starkey (2019:375) who advised that students should be allowed to be active, rather than passive participants in their learning.

The literature review is a critical summary of research on a topic of interest, prepared to put a research problem in context thereby enabling the researcher to make a positive critique of previous research (Subhan 2015:3). Researchers such as Hart (2008:320) and Wright (2010:64), define it as the “existing scholarship” to refer to the existing body of knowledge or range of research products produced by other scholars in the field that is being studied. A literature review assists the researcher to identify the work that has already been done and identifying the gaps in the existing research.

The research literature on student-centred teaching and learning in higher education is copious and extensive, with various contributions from numerous researchers over the past few years. This chapter will outline the literature regarding the research problem presented in the previous chapter. It will review literature related to student-centred teaching and learning in higher education.

Overall, this chapter will be structured into eleven sections. Section One introduces the chapter. Section Two, presents the overview of teaching and learning, particularly as it relates to higher education. Section Three will broadly look at teaching and learning as service delivery issues within higher education. Section Four discusses student-centered teaching and learning in higher education institutions. Section Five discusses student-centered policies and frameworks in South Africa. This will be narrowed down to a student-centered policy that is adopted at the selected university in Section Six. Section Seven covers the characteristics of student-centred teaching and learning in higher education institutions. Importantly, the current teaching and

learning strategies will be discussed in Section Eight, as this is the underpinning factor in measuring student academic performance, success rate throughput, and understanding student experiences. Section Nine discusses the implementation of student-centered teaching and learning in higher education as well as challenges, particularly in developing countries such as South Africa. Section Ten examines students' needs and expectations from student-centered teaching and learning service delivery in higher education. The last section presents the theoretical framework that was adopted in this study. In this section, the Service Quality Model and Starkey's model of teaching and learning will be explained. Then the chapter summary concludes the chapter.

2.2 OVERVIEW OF TEACHING AND LEARNING IN HIGHER EDUCATION

Ng'ambi *et al.* (2016:843) reveal that the South African higher education system has experienced significant changes, influenced by global trends, national development goals, and pressure from local educational laws. Similarly, Khan and Law (2015:66) advised that there is a growing need for higher education institutions to respond to the changing environment. The current COVID 19 outbreak that arose on December 31, 2019, in Wuhan, China has also posed surmounting challenges and changes in the higher education sector. These changes have affected more than 91% of the world's student population which according to Pragholapati (2020:2) resulted in the national closure of higher education institutions. This had a significant impact on the service delivery of teaching and learning worldwide.

Given the above, the need to reflect on changing definitions of effective teaching includes changing student needs, new modes of teaching and learning delivery, changing employer needs, and technological innovation (Greatbatch and Holland, 2016:5). Importantly, Ganyaupfu (2013:29) investigated and asserts that regular poor academic performance by many students is, to a certain extent, linked to the application of ineffective teaching and learning methods and strategies adopted by the lecturers. However, to ensure effectiveness, lecturers need to be acquainted with various strategies that take cognition of the magnitude and complexity of the concepts to be covered (Ganyaupfu 2013:29).

In response to the above realities, Toquero (2020:1) emphasises a greater need for HEIs to reinforce the practices in the curriculum and the use of innovative teaching

and learning techniques and approaches that are more responsive to the learning needs of the students even beyond the conventional classrooms.

2.2.1 CONCEPTUALISATION OF THE TERM 'STUDENT-CENTRED LEARNING'

Although the literature on SCL is well known within the field of higher education, nonetheless, it has not been thoroughly addressed (Moate and Cox 2015:379). Glowa and Goodell (2016:10) concur and state that while a wealth of information has been written about SCL in higher education, pulling this information together to determine what student-centered learning means is yet to be comprehensively addressed. In recent years some education reformers and researchers have sought to define the term with greater precision.

- SCL refers to an educational process whereby students are no longer seen as empty vessels to be filled with knowledge, but as seekers to be guided along their intellectual developmental journey (Zeki and Guineyli 2014:14).
- According to Stefaniak and Tracey (2015:96), "student-centered learning provides students with increased responsibility, promotes critical thinking, and supports student development".
- SCL is collaborative learning where both the lecturer and the students are actively involved in the content and process of learning (Singhal 2017:5126).
- Ndlovu (2017:2) defines SCL as "a variety of learning strategies in which knowledge is constructed by the student while the lecturer serves as a facilitator of the learning process".
- Al Said *et al.* (2019: 2) define it as an approach that "allows students to shape their educational paths and places upon them the responsibility to actively participate in making their educational process a meaningful one".
- The notion of student-centredness is that DUT exists to provide its students with the kind of learning environment that helps them grow intellectually, socially, and emotionally (DUT assessment policy, 2019).

From the above explanation of SCL, it can be deduced that student-centered learning is the positioning of the student in the center of their learning process. Thus, it can be said that students are the central theme of the teaching and learning process in higher education.

2.3 TEACHING AND LEARNING AS A SERVICE DELIVERY ISSUE WITHIN HE

Student-centered teaching and learning as service delivery are one of the major strands in the selected university's strategic plan. This makes it a core service it provides to the community (students). Green (2014:131) points out that students' educational experiences have become increasingly important, as HEIs have attempted to become more student-centered. The report from Green (2014: 131) suggests that it is particularly important for new universities, such as UoTs, in ensuring that the culture of student-centred learning is fully implemented and is aligned with the rest of South African Universities.

The concept of service quality delivery was largely alien to the HE sectors before the 1990s, but now it is seen as important for higher institutions to acknowledge that they are in a "market" in which students can expect to be seen as "customers" and their expectations of good service delivery be considered. Oldfield and Baron (2000:86), and Khan *et al*. (2011:161) concur with this, stating that the quality of service delivered by HEIs is significant for marketing institutions and increases their financial performance. Moreover, Gupta and Kaushik (2018:580) ascertain that this has made higher education attain the upper edge not only in knowledge creation but also act as a major driver of economic competitiveness.

As defined by Van der Westhuizen (2014:409) service delivery in the context of HE is a "measure of how well the service level has been achieved or matches customer expectations". Similarly, Green (2014:131) defined it as the extent to which a service meets or exceeds the expectations of customers.

Drawing from the above information, Abidin (2015:185) argued that service quality delivery in the field of education, particularly in higher education, is not only essential, but it is also an important factor of educational excellence. His words support the work of Oldfield and Baron (2000:86) who noted that higher education institutions in over a decade, have experienced dramatic changes. This condition necessitates that departments should address the issue of service delivery, not only through the traditional route of accreditation, the course review, student feedback, and questionnaires but also through evaluating what students themselves consider to be the elements of excellent service quality. Hence, and as pointed out by Malik, Danish and Usman (2010:2) students seek empathy, responsiveness, and assurance during

their academic development process, which then facilitates them to gain the extra potential to compete in the market.

2.4 STUDENT-CENTERED TEACHING AND LEARNING IN HIGHER EDUCATION INSTITUTIONS

As previously stated, the South African higher education system has undergone tremendous changes post-democracy. This is buoyed by global trends as well as national development goals. This is also recognised in the Council on Higher Education monitor 2017 which asserts that there have been considerable changes in the higher education landscape in South Africa since the transition to democracy (Leibowitz *et al.* 2017: 20). However, the shift from an industrial to a knowledge economy requires that Higher Education and Institutions adopt more student-centered approaches to meet the needs of the 21st century (Mocinic 2012:97; Kaput 2018: 9). As documented in the literature (Samoff 2001:19; Bunting and Cloete 2004:9; Ivy 2008: 288) universities in South Africa have experienced stagnating and declining budgets (Strategic framework, 2015– 2019:3), as well as simultaneous pressures to increase enrolments.

While the pressure to increase enrolments is influenced by the desire to address the injustice of the apartheid system, (Singhlal 2017:5123) cautions that the need for universities to adopt a student-centered learning environment and learning engagement is of critical importance. This resonates with the advice by Khan and Law (2015:66) that there is a growing need for higher education institutions to respond to the changing environment in a positive and student-centered manner through quality curricula which include the use of student-centered strategies (collaboration with others, discovery learning and solving authentic problems) that could enable students to further their studies independently.

Hibbert and Van der Walt (2014: 54) assert that there has been a decline in student numbers in certain disciplines at South African universities giving rise to students having a greater choice (Bigalke and Zurbuchen 2014:217), and greater pressure being placed on higher education institutions regarding student-centred teaching and learning service delivery. Additionally, Gbadamosi and de Jager (2008:10) alleged that due to increased competition between higher education institutions in South Africa, it

becomes imperative to use effective teaching and learning strategies that adopt student-centeredness in their service offerings. The underlying idea is that HE institutions should slowly move away from rigid traditional lecture-based teaching to more student-centered concepts of encouraging active learning, with more diverse methods.

While it can be argued that students are not educational experts whose decisions can be used to inform the university, Sajjad (2010:29) agrees that there is substantial research linking student satisfaction to effective teaching and learning. Moreover, research indicates that students are the most qualified sources to report on the extent to which the learning experience was productive, informative, satisfying, or worthwhile (Sajjad 2010:33). However, Henard and Roseveare (2012:7) warned that universities might be reluctant to entrust students with a role in contributing to or reviewing academic-related matters. They, however, acknowledged that students are continuously making their assessments of teaching and learning experiences (Henard and Roseveare 2012:7).

2.5 STUDENT-CENTRED POLICIES AND FRAMEWORK

Tan and Chua (2015: 686) assert that a major movement in education reform today is for policymakers to introduce educational changes based on their students' performance in international testing and national assessment. The tendency is to borrow education policies and practices that are perceived to have worked elsewhere. Policy-makers also refer to 'innovative methods of teaching that involve students as active participants in their learning. There is a strong conviction within the education research literature that student-centred approaches to teaching and learning make a positive difference in the outcomes of all students (Harris *et al*. 2013:5).

Moreover, global research and policy literature suggests that a student-centered approach to developing engaged learning makes a significant difference for students, particularly those in disadvantaged contexts (Harris *et al.* 2013:5) or who have not responded to more traditional teacher-centered practices. Given these concerns, jurisdictions around the world have developed standards and capability frameworks for school leaders and teachers as part of a wider global training, development, and accountability agenda (Harris *et al.* 2013:5). According to the aforementioned authors,

standards describe a common body of knowledge, skills, and dispositions, therefore, ensuring the quality of the professional preparation and development of leaders (Harris *et al.* 2013:12). The positioning of the student at the centre has become very important. This reflects the belief that the individual student experiences, interests, and learning styles should be the fundamental focus of the student-centered environment. This study will draw on the Australian student-centered policy. The researcher believes that it would be interesting if South African universities can benchmark themselves against this country.

2.5.1 The Australian context

It is worth acknowledging that there are powerhouse countries with strong education systems that are adopting the student-centered learning approach, for example, Asian and European countries. However, failures such as slow implementation process, non-compliance with the policy, and poor definition, to name a few, have been documented in the literature (Hoidn 2016:451). Australia is well known for its strong reputation for academic excellence. Student-centered teaching and learning are widely advocated by education systems in Australia and internationally (Yonezawa, McClure, and Jones 2012: 41). A student-centered approach occurs "whenever students are actively and directly involved in a real-life experience, involved in planning what they will be doing, and involved in reflecting on their own lives" (Black 2007:15). In Australia, student-centeredness focuses on designing learning experiences that recognise and respond to the individual needs of each student. Therefore, students are encouraged to be active participants in their learning. The research on the Australian teaching and learning council's criteria for excellence in university teaching indicates that standards and metrics used to identify and measure effective teaching need to be reviewed continuously (Greatbatch and Holland 2016:5). While SCL is influencing most countries internationally it is not always finding the transition from other methods easy, hence the next section will discuss the specific difficulties faced by South Africa.

2.6 STUDENT-CENTRED POLICY ADOPTED AT THE SELECTED UOT

Although most South African students come from a schooling system that promotes teacher-centeredness (Mungal and Cloete 2016:203), however, the higher education mandate, including the selected university, now generally supports student-

centeredness. In 2015, for example, the selected university hosted an assessment policy workshop to enhance learning at which participants expressed satisfaction about the opportunity to engage with "student-centeredness" and how it is being experienced and understood in the teaching and learning spaces. During the discussions, it was highlighted that there are varied interpretations of student-centeredness and the greatest concern was around what staff perceived students expected out of a student-centered learning experience (Centre for Excellence in Teaching and Learning 2015).

Similarly, Xulu-Gama *et al.* (2018:1306) qualitatively explore students' understanding of the term "student-centeredness" at the same university. It was significant that these study findings revealed that out of 45 students interviewed, 37 of the students did not know what the term meant, while some said they had never heard of the term used before. This also indicates that the implementation of the policy is patchy and often not fully understood. Therefore, and despite policy initiatives undertaken in recent years, a detailed research study appears to be needed to understand students' experiences of SCL in general and at this university amongst others most importantly, to find out if they are experiencing real student-centered education at the selected university.

The selected university has an existing official policy that is documented on student-centred teaching and learning. The policy clearly states, "student-centeredness as a pedagogical approach and an all-embracing institutional philosophy is a defining feature of the organisational culture of the selected UoT assessment policy 2019. The policy further state that, the "philosophy of student-centeredness informs and pervades all institutional policies, rules, and procedures, including those relating to learning, teaching, and assessment". Regarding the policy as a regulatory framework, it promotes self-directed learning, student autonomy, and critical self-reflection (DUT assessment policy, 2019).

2.7 CHARACTERISTICS OF STUDENT-CENTRED TEACHING AND LEARNING IN HEI's

Stefaniak and Tracey (2015:96) assert that student-centered teaching provides students with increased responsibility, promotes critical thinking, supports student development, and peer teaching and learning. Weimer (2012: 439) identified several characteristics of student-centered teaching and learning in higher education. These are elaborated in the section below.

2.7.1 Explicit skills instruction

Weimer (2012:439) believes that student-centered lecturers teach students how to think, solve problems, evaluate evidence, analyse arguments, and generate hypotheses. Students are not expected to develop the necessary skills completely on their own rather, they need to be taught and directed (Marinov and Borenic 2016:146). Lecturers assume that students cannot master these skills on their own. The existing body of research confirms that learning skills develop faster if they are taught clearly along with the content (Weimer 2012: 439). Weimer (2012:441) further advises that lecturers should teach students vital skills that they need to learn. For example, design and include more activities that allow students to practice. Ndlovu (2017:18) cautioned that if students are not properly guided much time can be lost without meaningful learning happening. In addition, it may be time-consuming since students may take a long time to grasp the concepts on their own.

2.7.2 Encouraging students to reflect on what they are learning and how they are learning it

Weimer (2012:440) mentions that student-centered lecturers talk about learning. In casual conversations, they ask students what they are learning. In class, they may talk about their learning. They challenge students' assumptions about learning and encourage them to accept responsibility for decisions they make about learning. Student-centered lectures include assignment components in which students reflect, analyse and review what they are learning and how they are learning it. The goal is to make students aware of themselves as learners and to make learning skills something students want to develop. Weimer (2012: 440) suggests that students must be able to develop the skill of reflection. For example, the lecturer can include questions in assignments and activities that ask students about the process they went through to complete the task or about how they addressed any learning challenges.

2.7.3 Motivating students by giving them some control over learning processes

Weimer (2012:440) claims that lecturers normally decide what students should learn, how they learn it, the pace at which they learn, and the conditions under which they learn. Students are not offered an opportunity to decide what content should be included in the course or which textbook is best. As a result, the lecturer makes all the

decisions, the motivation to learn decreases, and learners become dependent. Weimer (2012: 440) noted that this calls for empowering students to take part in deciding what to learn, how to learn it, and the pace at which they learn it. By doing so, they feel more motivated and part of the course content. Students feel inspired since they have some control over their learning, and their retention of the course content also tends to increase since they are questioning what they are learning and how they are learning it. Therefore, the lecturer acts as a mediator among the students, between students, and the lesson (Tsegay 2015:137).

2.7.4 Encouraging active learning

According to Tursunov (2016:65), this means that more class time, control, and responsibility are shifted for learning to the students. As a result, students are allowed to explore different learning methods and be able to develop the confidence to investigate new ideas. The courses will include an out-of-class component where students can do classwork outside the class. This results in effective learning because learning becomes more engaging rather than just transmitting the information. This is supported by the work of Zohrabi, Torabi, and Baybourdiani (2012:20) and Stefaniak and Tracey (2015:96) who believe in a constructivist idea that students learn more by experiences and active involvement rather than by observing.

2.7.5 Encouraging collaboration

Studies for example, (Weimer 2012:441; Marinov and Borenic 2016:146) claim that student-centered teaching recognises that students can learn from and with each other. Certainly, the lecturer has the expertise and an obligation to share it, but they can learn from fellow students as well. Bada and Olusegun (2015:68) hold a similar belief that when students are in charge of their learning, they generate questions about the course content, ask questions about how to learn and study, and interact with their peers to solve problems and practice critical thinking.

2.7.6 Considering students' interest first

In the SCL environment, students' voice is central to the learning experience (Singhal 2017:5126) such that the students' interest takes center stage and the lecturer gives students choice and voice, finding ways to provide learning experiences that focus on

what student's value. The fundamental idea is that students take a more "active" role in the education experience.

2.7.7 Focusing on the needs, skills, and interests of the students

Dano-Hinosolango and Vedua-Dinagsao (2014:1813) support the notion that student-centered learning is accompanied by a problem-based approach, where the problems are picked to make more robust interests and needs of the students. As a result, Stefaniak and Tracey (2015:96), recommend that this will not only improve their critical thinking skills but will also make them feel part of their learning journey and make their learning experience more productive, exciting, and inspiring. Equally so, this will also allow them to become active participants in the learning process by providing them with the avenues to become responsible students.

2.7.8 Treating students as distinct and unique individuals

Starkey (2019:379) is of the view that students as unique human beings who bring their aspirations, interests, and ways of knowing and experiences to the learning process. Concerning this study, this could include creating a learning environment that supports positive interactions among students and provides a supportive space in which the student feels appreciated, acknowledged, respected, and validated. Since each student is distinctive, and each requires a specific instructional approach appropriate to him or her.

2.7.9 Engaging students in their success and incorporating their interests and skills into the learning process

Hodge and Collins (2010:62) state that students are encouraged to take increasing responsibility for their learning, using strategies for self-regulation and reflection. They can reflect on what they have learned and be able to apply it to real-world situations. They are offered several opportunities to directly reflect and improve on their learning through formative assessments that help them understand their strengths and learning challenges.

2.8 TEACHING AND LEARNING STRATEGIES ADOPTED IN HEIs

According to Porzanik (2009:343), the fundamental idea is that HE institutions should slowly move away from rigid traditional-based teaching to a more student-centered

concept of inspiring active learning, with more varied methods. Mocinic (2012:97) postulates that to improve educational achievements and students' vocational training at university, it is required to use alternative methods and procedures of teaching, which are blended in a combination of original strategies that promote active learning. Yakovleva (2014:76) holds a similar belief and points out that currently, universities should talk more about the use of interactive methods of teaching and learning, which encourage interest in the profession, provide high motivation, strength, knowledge, team spirit, and freedom of expression, and most importantly, contribute to the complex competencies of future specialists. A study conducted by Mocinic (2012:98) discussed the various teaching and learning methods adopted at HEIs. Eison (2010) cited in Mohapi (2017:11) noted that active learning compels students to learn not only information transfer through memorisation but also higher-order thinking about the subject. Subhan (2014:28) conducted a study on current teaching methods adopted by the lecturers at KwaZulu-Natal College of Nursing campuses. The study findings revealed that most lecturers are still predominantly using didactic teaching methods such as lectures and demonstrations.

2.8.1 Common teaching and learning strategies at the selected UoT

The aim of the selected university's curriculum renewal strategies has been to be more student-centred and so to get away from the traditional teaching and learning methods. Yakovleva and Yakovlev (2014:76) hold a similar belief and point out that universities should talk more about the use of interactive methods of teaching and learning, which encourage interest in the profession, provide high motivation, strength, knowledge, team spirit, and freedom of expression, and most importantly, contribute to the complex competencies of future specialists. However, there are some indications that this has not yet been explored efficiently. As per the Department of Higher Education and Training (DHET 2013: 30) universities are required to improve learning opportunities through diverse modalities that increase student access and success in higher education. While students are considered unique in higher education institutions, Wang and Zhang (2019:583) emphasised that different teaching methods give rise to different types of learning experiences. These methods are detailed below.

2.8.1.1 Formal lecture method

According to Sajjad (2010:3), the formal lecture had so far remained the dominant method of academic teaching strategy used at HEIs. It is considered an efficient and

effective method to transfer knowledge. His study findings revealed that most of the students still considered lecturing as the best method because according to the opinion of students; “it creates new ideas, it is good for a large class group, develops creativity among students, lecturers are experienced and have mastery of the subject, explain all points and can answer all questions by students”. Similarly, Lambert (2012 cited in Sultan 2018:630) concurs that despite innovations in modern technology, lecturing is the most frequent method of instruction as it is a convenient and efficient way to deliver subject content to large numbers of students. Oinam (2017:30) declares that some students still believe that lecturer-centered education is a more effective strategy.

However, the above method has been criticised by Sultan (2018:630), who argued that this method is a very poor instructional approach for maintaining student attention. Misseyanni (2018:34) also cautioned that student concentration during lectures begins to decline after 10 to 15 minutes. Zenda (2017:179) holds a similar belief that this method is mainly lecturer-centered, as it does not allow learners to participate in class. Kim et *al.* (2019:29) suggests that this method may be appropriate in disciplines like Science, Technology, Engineering, and Mathematics (STEM) as they are mostly didactic, practical and lecturer focused

2.8.1.2 Group discussion

As defined by Eison (2010:2), group discussion is a free verbal exchange of ideas between group members or involving the lecturer and the students. For the group discussion to be effective, Aryani and Supriyadi (2018:2) advise that students should have prior knowledge and information about the topic to be discussed. According to Sajjad (2010:6) group, the discussion has been found to have many advantages. Students can develop a deeper understanding and learn to reflect on their values, dialogical approaches to learning are needed, it develops creativity among students and every student gives his or her opinion, group collaboration is encouraged. However, Sajjad (2010:7) also cautioned that the students need to be properly prepared in the skills needed to make the group operate effectively. Group discussions help the students to develop the ability to work with others, overcome communication barriers and improve their personalities.

2.8.1.3 Brainstorming

SCL encourages students to take an active role in the learning process, hence Unin and Bearing (2016:605) recommend that brainstorming is one of the ways to approach SCL because it is an open sharing activity, which is usually conducted in small groups to encourage participation. The above authors considered it a very useful technique for problem-solving, decision making, creative thinking, and team building. More interesting, more informed students could impart knowledge. In addition, it promotes active and effective learning, more participation of students where they give their opinions on a topic of interest, and encourages creative thinking. It allows students then think beyond their knowledge. Every student can get the chance to express his or her thoughts during the brainstorming session thus making the learning experience more interesting.

2.8.1.4 Case studies

Case-based learning, as referred to by Subhan (2014:28), is a teaching method that involves the application of didactic content to analyse a real case. Cases do not offer their own analysis Yakovleva and Yakovleva (2014:77), but instead, they are meant to test the ability of the students to apply the theory they have learned to a real-world situation. Bonney (2015: 98) advised that it is a highly flexible style of teaching that involves problem-based learning and promotes the development of analytical skills.

The use of case studies as a teaching and learning method has proven to have many advantages. Habasisa and Hlalele, (2014: 1001) identified the following advantages viz. it encourages the stimulation of critical thinking such that, it allows students to bridge the gap and turn theory into practice during a learning process that improves retention and recall of information. According to Bonney (2015:100), it also allows for the correlation of theory with practical work and allows for the presentation of lecture material in a more practical approach.

On the other side, the above author maintained that this method has been criticised as being time-consuming, and sometimes the case does not provide real experience as it could be inconclusive, and insufficient information can lead to inappropriate results. Case studies require good questioning skills and students who are poorly prepared will learn less and which may cause frustration for students who prefer

traditional teaching. The author asserts that the existing body of literature lacks direct evidence that the case study method is an effective tool for teaching.

2.8.1.5 Role-play

Role-play is a character-driven teaching strategy such that students would take on the roles of others which Subhan (2014:64) declares as an effective teaching and learning instructional method when planned and facilitated efficiently. Camangian (2015:424) located several perceived benefits associated with the use of role-playing such as arousing student interest and engagement, providing a realistic and relevant way for students to connect essential course contents to their personal and or professional lives, teaching students to develop and apply critical thinking skills, creating opportunities for knowledge transfer.

2.8.1.6 Interactive White Board (IWB)

Van Niekerk (2015:8) defines Interactive White Board (IWB) as a large display that connects to a computer, and a projector that projects the image onto the whiteboard where the users control the action by using an e-pen or a finger. Yang *et al.* (2012:330) affirm that the use of the IWB has already shown real academic potential such as flexibility and adaptability, improving teaching efficiency, improving students' learning motivation, and improving students' understanding. According to Bernabeo and Michaelides-Mateou (2017:80), IWB does have the potential to enhance an effective collaborative teaching and learning environment if used correctly.

2.8.1.7 Flipped or "inverted" classrooms

Researchers such as Sohrabi and Iraj (2016:516) and Limniou and Schermbrucker (2018:798) define flipped classrooms as "an educational approach where activities that have traditionally taken place inside the classroom, have to take place outside the classroom and vice versa". The lecturer's role is supportive and facilitating with students in the stronger role of goal setting and monitoring. Ultimately, this allows students to demonstrate a high degree of autonomy and independence in their learning, therefore, allowing them to focus on the learning process (Jenkins *et al.* 2017:65). As such, students become more active participants than they are in the

traditional classroom as they are required to gain the initial knowledge themselves before coming to the class.

Despite all the benefits highlighted above, Sultan (2018:631) identified the following limitations associated with the use of flipped classrooms. The method may require a qualified and experienced facilitator. Students may need a lot of support to ensure they understand the material provided. Students may not be able to clarify any queries that may arise while watching the video or listening to the recording unless the instructor is present. It can pose a challenge for second language students or those with learning problems or challenges.

2.8.1.8 Electronic learning

In today's universal digital environment, e-learning plays an important role in enhancing and facilitating teaching and learning (Turnbull *et al.* 2020:1). It has become a viable alternative to traditional methods and adopted by many educational institutions in recent years (Simo *et al.* 2015:605). The start of 2020 brought significant changes, and challenges in almost all spheres of life. Forced closure of universities, due to the COVID 19 pandemic has resulted in an unprecedented change which according to Yan (2020:2) has led to several university staff and students being pushed to embrace online teaching and learning more than ever before.

Mohapi (2017:32) in his study acknowledged that the selected university has invested seriously in developing, delivering, and administering e-learning programs and training lecturers and support staff to become competent in E-learning activities. However, the university is still striving to have a strategy in place to meet the needs of the students and institutional goals. The use of E-learning platforms for assessment is regarded as an inherently student-centered approach to learning and teaching primarily because of the various ways in which it promotes self-regulated and independent learning (DUT assessment policy 2019). As recommended by Pete *et al.* (2017:301) before implementing e-learning, educational institutions need to ensure that they set clear objectives for the new strategy, consider the benefits and disadvantages and assess students and staff readiness.

Due to the recent COVID 19 pandemic that has changed teaching and learning drastically (Naciri 2020:1), almost all universities have been left with no viable option

other than to deliver the service of teaching and learning using online platforms. Yan (2020:3) advises that effective online engagement is thus no longer the exclusive concern for the few scholars or early adopters of education technology. It has become a high-stake priority that deserves the attention of all university stakeholders such as students, staff, university management as well as policymakers. Therefore, the next section will briefly discuss the E-learning methods currently adopted by SA HEIs.

2.8.1.9 Modular Object-Oriented Dynamic Learning Environment (Moodle)

Yildiz *et al.* (2018:98) define Moodle as a dynamic modular learning environment. It is an e-learning platform, a didactical tool that is used through the web and supports traditional teaching methods. The method allows lecturers to publish and share learning materials, create lessons, exercises, and tests, and engage students in their learning. A report by the Center for excellence in learning and teaching (CELT 2019) revealed that the selected university has embarked on a journey to increase opportunities to share the best practice and innovations in teaching and learning.

As noted by Evgenievich Egorov et al. (2021: 1), Moodle has many advantages. To mention a few, it only requires a single entry for users, students can be able to easily access relevant online courses from anywhere in the world at any given time, it offers improved multimedia learning resources, communicative and collaborative learning-based activities. However, Sadikin *et al.* (2019:132) identified technical difficulties, system incompatibilities, software design, human error, poorly designed courses, lack of student support, insufficient knowledge, and the limited capacity of the network infrastructure as the shortfalls of using Moodle. The implication of this to learning is that the problem encountered with Moodle violates a pre-defined class schedule which could increase the burden of workload on the lecturers, as well as, compromise the learning outcomes (Sadikin *et al.* (2019:132).

2.8.1.10 Microsoft Teams

Poston *et al.* (2020:1) define Microsoft Teams as a hub for all Microsoft apps that allows for real-time interaction and collaboration regardless of where students are located. It is a great tool for meeting virtually, collaborating, and even recording class sessions. This means that students do not have to be physically in the lecture venue to be part of the lesson but may join the class meeting live or watch at a later time. MS

Teams has proven to be the most commonly used online teaching and learning technique in most higher education institutions nationally, especially during this time when social distancing is encouraged. Given all the above benefits, Poston *et al*. (2020: 1) cautioned that using Microsoft teams may harm attendance and participation. There is a concern about the number of participants that can join the meeting, internet coverage in some parts of the country, students' inability to use the platform during lectures, etc. Students may miss lecture sessions indicating that they will watch later, and then fail to follow through. The next section discusses the implementation and challenges associated with SCL.

2.9 THE IMPLEMENTATION OF STUDENT-CENTRED TEACHING AND LEARNING IN HE

The importance of student-centred teaching and learning for effective education is well established but universities are still struggling with its implementation (Glowa and Goodell 2016:4). According to Altena (2017:2), there is a growing body of evidence that student-centered approaches are predominantly occurring piecemeal, and in isolated pockets within the universities. To successfully implement a student-centred learning approach to education, Van der Merwe (2012:4) and Glowa, and Goodell, (2016:4) advocate that all stakeholders in the education process must be focused on student experiences during the learning process. Although the implementation of SCL has the potential to improve students' educational outcomes in higher education, studies have found some students are often highly resistant to the implementation of such an approach or disappointed with the learning experience (Lea, Stephenson, and Troy 2003: 324). Implementing student-centred learning sounds great in theory, but putting it into practice is a different story. The following section will discuss the challenges and barriers to its implementation.

2.9.1 CHALLENGES OF IMPLEMENTATION OF STUDENT-CENTRED LEARNING

According to Tekle and Fesshaye (2017:20), the major challenge in implementing SCL has been the transition and the paradigm shift required to move from the traditional teacher-centered approach to SCL. Tekle and Fesshaye (2017: 30), alluded that the successful implementation of SCL requires adequate learning resources, provision of adequate facilities and services that support SCL, teaching aids, digital libraries, internet connectivity, and infrastructure improvements. In a student-centered class,

lecturers must be able to flexibly employ various but appropriate teaching methods to cater to students' diverse learning needs rather than just deliver the lesson content (Shrivastava and Shrivastava 2020:53-54). They should be properly trained and the teaching conditions must be well prepared. Most academics are experts in their fields but not necessarily lecturers by formal training (educationists) and therefore, when it comes to implementing a comprehensive change in pedagogical practice such as SCL, many of them become vulnerable. Manqele (2017:44) cautioned that these challenges not only hamper effective teaching and learning but also disrupt a critical mode of implementing self-discovery learning, which is an integral part of the student-centered approach. These challenges have been more prominent in the educational systems of most developing countries like South Africa and hinder the successful implementation of student-centred education.

2.10 STUDENTS' NEEDS AND EXPECTATIONS FROM STUDENT-CENTRED TEACHING AND LEARNING IN HE

Jones (2018:1041) declares that the term 'student experience' has become an area of academic investigation in higher education over the past decade. However, it is remarkably underdeveloped as a construct in the academic literature. Establishing the total student learning experience at a university is still a great concern, not only nationally but also internationally (Lekena and Bayaga 2018:159). Each student brings unique strengths and weaknesses to their learning environment (Stefaniak and Tracey 2015:95) and must be treated as unique human beings who bring their aspirations, interests, and ways of knowing and experiences to the learning process (Starkey 2019:379).

This is evident from a study that was conducted in Australia by Baik *et al*. (2019: 526) which sought to examine the experiences of first-year students. The study findings revealed that many students find it challenging to transition with great concern of uncertainty about what to expect on their academic journey. As a result, approximately one-third of Australian first-year students consider withdrawing during their first semester of study.

Drawing from the context of this study, students' experiences may differ from department to department based on how they encounter the level of student-

centeredness. These experiences influence how they respond to their environment and act as precursors to the learning process as they make their academic decisions.

Lea *et al*. (2003:324) recommended that the process of teaching and learning should consider the students' needs and expectations such that, the process needs to be fundamentally student-centred rather than lecturer-centered. Furthermore, and according to the aforementioned authors, it is expedient that institutions of higher learning move from an 'inside out' approach (where those on the inside know what is best) to an 'outside-in' approach (where students' expectations are serviced). However, successful service industries think 'outside-in', researching the needs and expectations of their target market and responding accordingly (Lea *et al*. 2003:324). Relating to this study, it is assumed that students will be both fascinated by and more motivated to stay with a course that meets their learning needs and also courses, that they perceive, will make them competitive in the corporate sector.

The selected university has a proposed policy on learning and teaching strategy (DUT Learning and Teaching Strategy 2020-2024). The main purpose of this policy is to provide a framework for faculties, schools, and disciplines for the delivery of the best possible learning experience for all students. It is important to note that, students are unique individuals who enter higher education with their perceptions and expectations of learning experiences, how the university meets these expectations is of paramount importance.

2.11 THE THEORETICAL FRAMEWORK

Grant and Osanloo (2016:13) define a theoretical framework as the "blueprint" for the entire dissertation inquiry. Most importantly, Adom, Hussein and Agyem (2018:438) advise that the theoretical framework in a study should resonate with every aspect of the research process from the definition of the problem, literature review, methodology, presentation, and discussion of the findings as well as the conclusions that are drawn. This study was underpinned by two theoretical frameworks: (a) Starkey's 2019 model of student-centred teaching and learning, and (b) the Service Quality Model**.**

2.11.1 THE SERVICE QUALITY MODEL (SERVQUAL)

Zeithaml, Parasuraman, and Berry, first developed the Service Quality Model in 1988. It was further developed and discussed by Devinder and Datta (2003:235), Jusoh *et al.* (2004:28) and Ahmed *et al.* (2010:2527). The research from the aforementioned authors revealed that service quality is having five dimensions, namely: reliability; assurance; responsiveness; empathy; and tangibility.

According to Gronroos (2008:300) quality of services delivered to customers could be grouped into two distinct components, namely: technical (outcome) quality and functional (process) quality. Concerning quality service in higher education, Devinder and Datta (2003:235), noted that the service of giving a lecture could be divided into what is delivered (content) and how it is delivered (process). Resonating with them, Palli and Mamilla (2012:431) pointed out that the quality of educational services will be the dominant element in customer evaluations. As shown in Figure 2.1, a conceptual framework that explains that service quality is linked to five dimensions, students' perceptions attributes, and satisfaction. Palli and Mamilla (2012:431) note that students judge the quality of services on the premises of their perception of the outcome quality, interactions quality, and environmental quality. It therefore can be said that students will be more satisfied and motivated to complete their studies if the institution provides a learning environment that facilitates learning. As mentioned in the previous chapter, this study will, therefore, be anchored on the underlining service quality dimensions. These dimensions are briefly discussed below by Berry, Ziethaml and Parasuraman (1990: 29).

Tangibility - Tangible conditions and facilities like equipment and facilities equipped laboratories; adequately stocked library with textbooks; updated computer facilities, comprehensive information systems, and; support facilities like sports and recreation centers

Reliability – It concerns keeping promises, handling complaints, giving resolutions, and solving problems for the customers. Ability to perform the service dependably and with accuracy

Assurance –The ability of staff to provide courteous and secured service. It relates to the employees' knowledge, courtesy, and ability to convey trust and confidence.

Empathy – Showing care and providing individualised attention to students.

Responsiveness – Promptness, and willingness of staff during the service encounter.

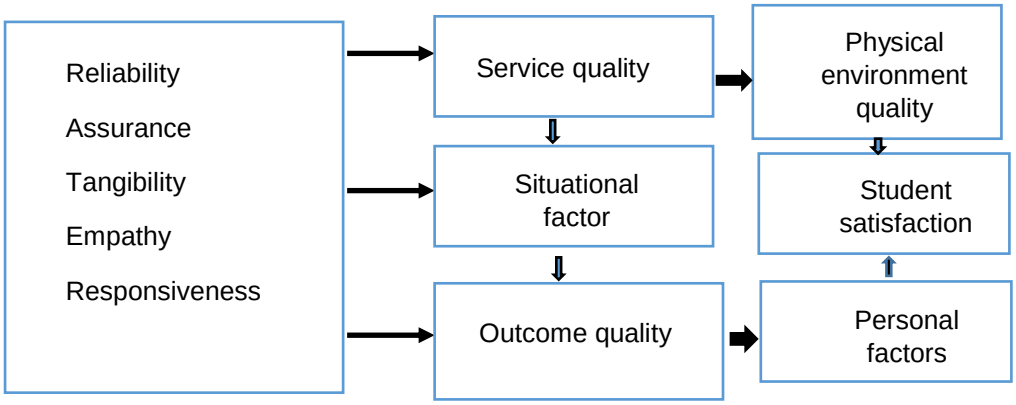


Figure 2. 1: A schematic illustration of the theoretical framework showing the service quality links to five dimensions (adapted from Palli and Mamilla 2012).

2.11.2 STARKEY'S 2019 MODEL OF STUDENT-CENTRED TEACHING AND LEARNING

Starkey (2019: 379) suggests that student-centred education could be synthesised into a conceptual framework that includes three overlapping dimensions – that is humanist, agentic, and cognitive. According to Starkey (2019: 379), each of these dimensions has a distinct focus that influences how student-centered policies could be implemented. The three dimensions are discussed in detail below.

2.11.2.1 The Humanistic Dimension: Knowing the students as individual humans

Starkey (2019:379) explains that the humanistic dimension encompasses getting to know students as unique human beings who bring their aspirations, interests, and ways of knowing and experiences to the learning process. Starkey (2019:384) further clarified that humanistic dimension entails knowing the students as people and their interests and passions. This provides a good teaching and learning environment where each student is recognised as an individual who is an inquisitive, creative, culturally located human being. This dimension also considers developing intrinsic motivation and positive self-efficacy through topics of interest that can stimulate students' thinking. Drawing from the context of this study, this may include lectures learning about students' interests, enthusiasm, and aspirations to inform their teaching. This is relevant given that one of the most debatable issues relating to providing students with individualised attention is the overpopulation of classes where one lecturer is responsible to teach 400 students. In such conditions/settings Learning

about students' interests, enthusiasms and aspirations are hard to achieve. So, these are some of the issues that hamper the fluidity of implementing SC.

2.11.2.2 The Agentic Dimension: Focuses on empowering students

In terms of the agentic dimension, Starkey (2019:379) argues that students should be allowed to be active, rather than passive, participants in their learning. Starkey emphasised that students should be given greater agency based on two elements viz-behavioural ideal and a constructivist notion. The behavioural element is based on the premise that students who experience limited agency within an educational institution may become less interested in school and behave in ways that are harmful to their learning. This may include non-attendance at lectures, non-compliance, or misconduct that could include violence against other students, staff, or property, whereas, the constructivist notion focuses on students actively participating in and being aware of their cognitive development (Starkey 2019:379). Concerning this study, this dimension may be adopted in empowering students to be agentic in their learning progressions and help to develop a sense of belonging and empowerment.

2.11.2.3 The Cognitive Dimension: Focuses on student learning progress

Regarding the cognitive dimension, (Starkey 2019:379) explains that this dimension is premised on the constructivist idea that during the teaching and learning process, meaning or understanding is derived by the individual student. It focuses on the learning progress or cognitive development of each student and tailoring teaching interventions or learning strategies to enhance each student's academic achievement. Concerning this study, this could include lectures analysing students' cognitive development to inform their learning experiences.

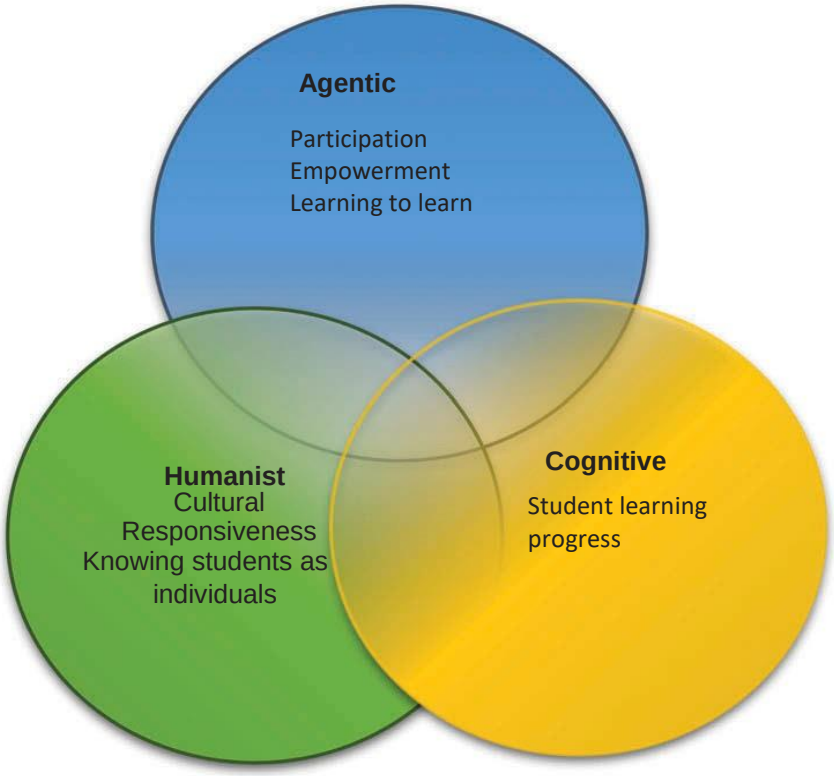


Figure 2. 2: A schematic illustration of the student-centred education conceptual framework indicating how it is being framed within the context of higher education, (*adapted from Starkey 2019).*

2.12 Summary

This chapter presented an overview of literature related to student-centred teaching and learning as a service within South African Higher education. The reviewed literature revealed that student-centeredness is about putting students' interests at heart, and acknowledging student voice as central to the learning experience. It was illustrated that good teaching and learning methods help students to question their preconceptions, and motivate them to learn, by putting them in a situation in which they come to see themselves as the authors of answers and the agents of responsibility for change.

Lastly, the chapter discussed the service quality model and Starkey's 2019 model of student-centred teaching and learning as the supporting theoretical frameworks for the study. The next chapter will discuss the research methodology used in this study.

CHAPTER THREE – RESEARCH METHODOLOGY AND DESIGN

3.1 INTRODUCTION

Chapter two presented the literature related to the study. The review uncovered that student-centeredness is central to a student learning experience. It was uncovered from the extant literature that good teaching and learning methods help students learn thereby making them take responsibility for their future. In this chapter, attention will be given mainly to methods that were used to analyse and collect data for the study. The chapter will describe the research process in-depth, including the research design, as well as the methodology. Areas such as data collection and instruments will be covered explaining how questionnaires were administered to the participants and how the interviews were conducted. The target population, and sampling procedure, will also be discussed in detail. Moreover, the approach and design of the research measurements used to collect and analyse data, pilot study, ethical considerations, validity, and reliability will be explained further. Data analysis will provide information on how data was coded and analysed to present the research findings.

3.2 RESEARCH DESIGN

As explained by Terre Blanche, Durrheim, and Painter (2010:162) research design is a strategic framework or plan that guides the research activity to ensure that sound conclusions are reached. Van Wyk (2012:13) is in the notion that the research design focuses on the end product because of how the study will be planned to achieve the study goals. It is the overall strategy that the researcher chooses to integrate the different components of the study coherently and logically (Gray 2020:144) thereby ensuring that the research problem is effectively addressed.

This study adopted a mixed sequential exploratory research design to ascertain the degree of successful implementation of student-centred teaching and learning. According to Creswell and Plano Clark (2011: 15), this design is appropriate for a research problem when there are few or no earlier studies to refer to. Even though the concept of student-centred teaching and learning and its implementation has generated some research interest in higher education, the literature indicated that the term still lacks definition (Moate and Cox, 2015:379). As a result, this design was

beneficial to use because it allowed the researcher to gain new insights into a phenomenon and familiarity with the research problem. An initial qualitative phase of data was collected and analysed. This was done by conducting focused group interviews with the students before administering the questionnaire. The findings were used to drive the development of a quantitative instrument (questionnaire) to further explore the research problem. Strands of data were collected and analysed separately and integrated sequentially to address the research questions (Figure 3.1).

3.3 RESEARCH METHODOLOGY

Van Wyk (2012:13) explains that research methodology focuses on the selection of research processes and the kind of tools and procedures to be used. To address the key research objectives, this study, adopted a mixed-method design (phase one: qualitative approach and phase two: quantitative approach). Creswell (2015:207) believes that combining both approaches provides the researcher with an in-depth look at contexts, processes, and interactions, which makes it possible to obtain a more precise measurement of attitude and outcomes than a single method would achieve.

The research method adopted in this study used both inductive processes (developing ideas from observations) and deductive processes (testing ideas against observations). As explained by Creswell and Plano-Clark (2011:86) and Check and Schutt (2012:154) inductive processes are generally associated with qualitative research whereas deductive procedures are quantitative. By combining both inductive and deductive processes, the investigation was based on knowledge obtained on reasonable grounds. The ideas gathered from the participants (students and staff) were tested/set against the policy/ies found at the selected university on student-centredness.

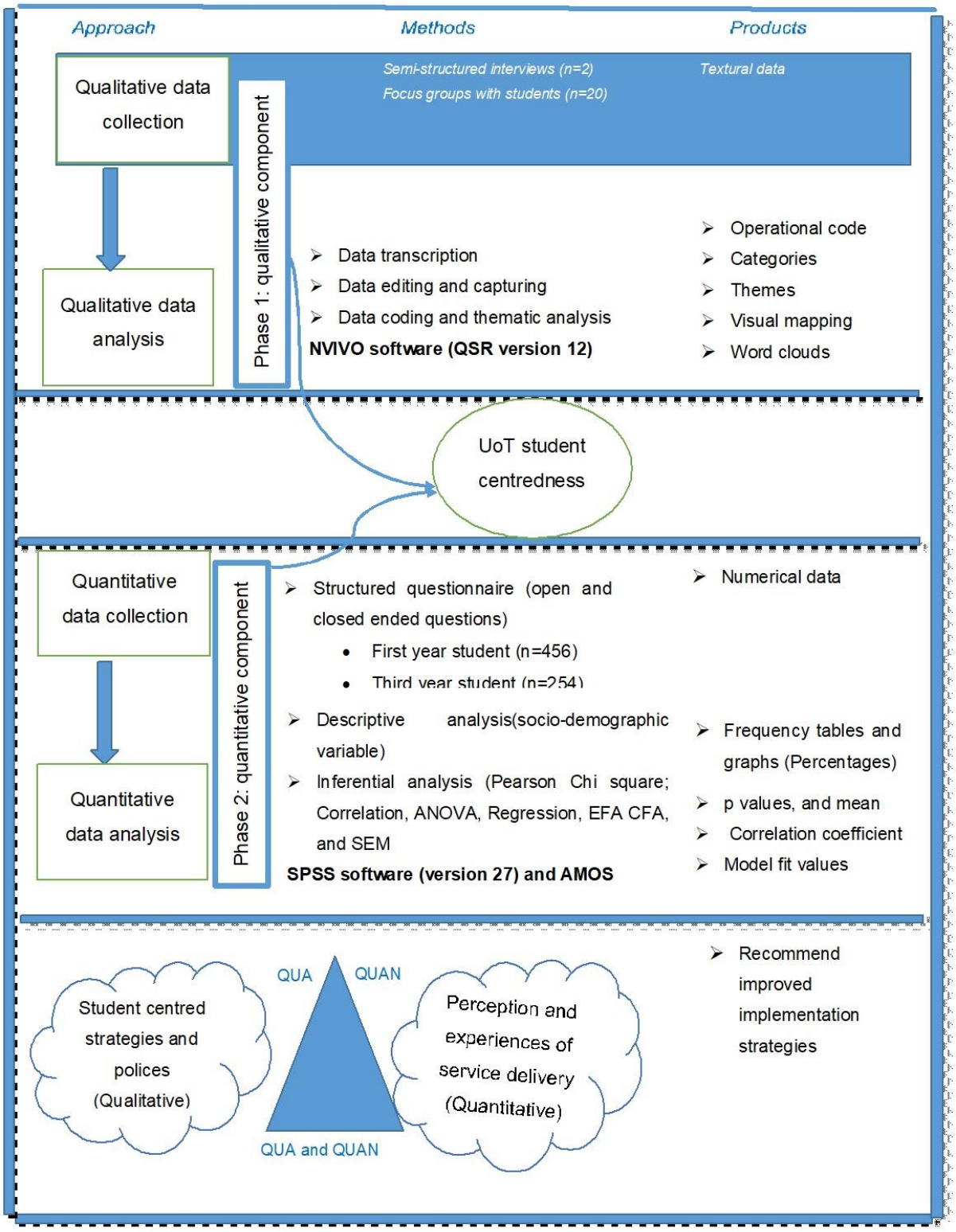


Figure 3. 1: Research design (designed by the researcher)

3.4 MIXED RESEARCH METHODS

As stated earlier in this chapter, this study adopted a mixed research method of inquiry that allows the collection of both qualitative and quantitative data (Leedy and Ormord 2014: 76). According to Schiffman and Kanuk (2010:44), a mixed-method is a technique used when a researcher employs both quantitative and qualitative techniques in investigating, analysing, and interpreting the same underlying phenomenon. Creswell and Creswell (2018: 309) concur with this by explaining that a mixed-method approach is an approach to knowledge (theory and practice) that strives to minimise the limitations of both qualitative and quantitative techniques (Creswell and Creswell 2018: 309). The motivation behind using a mixed-method in this study was to obtain an in-depth perspective on the research problem. Therefore, and in agreement with (Bhattacherjee 2012: 35), the nature of the research problem which is the challenge of implementing student-centered teaching and learning required a more comprehensive approach to answering the research questions and addressing the research objectives than using one of the two techniques (qualitative or quantitative) alone. This echoes the sentiment of Schiffman and Kanuk (2010:44) that mixed-method inquiry is more effective as the results content is richer and more robust.

The above view on mixed-method research inquiry led the researcher to use this technique as the study aimed to explore students', and key staff, experiences of current strategies aimed at achieving student-centered learning at the DUT, and the barriers to its achievement. The mixed-method approach sought to gain more in-depth insight into the university strategies and policies (qualitative) as well as students' perceptions and experience of the service delivery (quantitative). Creswell and Plano Clark (2018: 4) support the use of mixed-method research by stating that researchers should employ a technique and philosophy, which attempts to incorporate the insights afforded by the two approaches for breadth and depth of understanding and corroboration. Hence, it is practical to assume that by using a mixed-method the researcher stands to gain a more holistic understanding of student-centered teaching and learning from the perspective of both the students and the university representative, and, by so doing, capitalize on the strengths of both quantitative and qualitative components of the study.

Accordingly, and in line with Migori and Magangi (2011: 3759), the mixed methods approach in this study complemented each other, as the results from one inquiry

method were used to elaborate on the results from the other. The researcher used the knowledge gained during the literature study to find common ground for the empirical research findings.

3.4.1 QUALITATIVE COMPONENT OF THE MIXED APPROACH

Qualitative research is a field of inquiry in which the core goal is to gather information through detailed interviews, focus groups, and observations. Creswell and Creswell (2018: 309) state that a qualitative method is characterised by the researcher's intense presence with the participants. This consequently allows the researcher to elicit detailed information from individuals or groups regarding a problem (Creswell and Creswell 2018: 309). In this study, a qualitative research approach was used to achieve the research objective, which is to enquire from academic staff tasked with oversight of the implementation of student-centered strategies about the successes and impediments to their implementation. Hair *et al.* (2017: 78) state that a qualitative method allows the researcher to probe deeply to uncover unexpected findings and reactions. Their view further supports the assertion of Leedy and Ormrod (2014: 145) that qualitative research is more creative and emotional. According to the aforementioned authors, a qualitative research method investigates concerns such as interpersonal relationships, values, meanings, beliefs, thoughts, and feelings (Leedy and Ormrod 2014: 145). Hence, it is sufficient to say that data collected through a qualitative method of approach is much richer, deeper, and more dynamic as it seeks meaning, with a much more holistic focus to form a whole picture.

Moreover, the qualitative method is more appropriate if the research question becomes exploratory and interpretive (Leedy and Ormrod 2014: 101). A qualitative method was used in this study because the research question asked were broad and not specific to help uncover the student-centered strategies and implementation at the selected university. Allen (2017:111) noted that questions in a qualitative method are broad rather than specific questions, which thus allows the researcher to ask the participants different questions. For this reason, qualitative research seems attractive for this study, as some of the questions posed in the interview guide may not be within the academic interviewed staff scope of responsibilities. Despite the inherent benefits of qualitative research to explore a deeper understanding of the research problem, the approach still has some limitations. For example, qualitative employs a smaller sample

size and the research instrument is less structured which thus limits the generalization of the outcome (Queirós, Faria, and Almeida 2017: 370). To compensate for this, the qualitative information was supplemented by the use of a quantitative approach.

3.4.2 QUANTITATIVE COMPONENT OF THE MIXED APPROACH

Quantitative research methods, by contrast, are systematic and structured and include structured data collection techniques, as well as the quantification and measurement of concepts (Connaway and Powell 2010: 3). Resonating further, Saunders *et al*. (2016:166) noted that quantitative methods examined the relationship between variables measured numerically, which are then analysed using statistical and graphical techniques. According to Leedy and Ormrod (2010: 94), quantitative methods use surveys, which consist of measurement scales to measure the phenomena under study. In this study, a quantitative approach was appropriate to assess the perception and experiences of the respondents on student-centred teaching and learning strategies using a service quality model. Leedy and Ormrod (2014: 101) stated that data collected in quantitative research is analysed using statistical methods and the results involved quantifiable numbers, which could then be interpreted using statistics and graphs and subsequently communicated as aggregated data. Owing to this, and in agreement with Saunders *et al.* (2016: 179), it is easier to explain and understand the results obtained using quantitative methods. This made it easier to compare the collected data. Thus, quantitative methods place great emphasis on objectivity and reliability of the study outcome and encourage replication (Bhattacharyya, 2012:129).

3.5 TARGET POPULATION

Collis and Hussey (2013: 97) state that a study population is an aggregate of all people or objects under consideration for research purposes. Cooper and Schindler (2014: 388) refer to a study population as people or objects sharing common characteristics that the researcher aspires to conclude based on the sample. Terre Blanche *et al.* (2010:133) and Newman (2018:247) define a population as a large pool from which sampling elements are drawn and from which the researcher generalises the findings. It is worth stating here that the research objectives, formulated questions, and background of the study helped informed the researcher in the selection of the target

population. Alvi (2016:10) defines the target population as all the members who meet the criterion specified for a research study.

Class registers obtained from the university system in 2020 were used as a sampling frame that was representative of the population. As defined by Terre Blanche *et al*. (2010:133) a sampling frame is a list of all the members of the population who are eligible for inclusion in a sample. A list of all first and third-year students registered under the Departments of Chemical Engineering, and Information and Corporate Management were used. This was used to obtain views from different pools of students.

The notion was that first-year students were new to the system and still trying to adapt and find their space in the new environment. On the contrary, third years were settled and have been exposed to the higher education learning environment for some time. Hence, this provided good differences and similarities in the experience of student-centered education.

These two departments were conveniently chosen since they are in the same university and offer different educational programs. The researcher in her capacity as a secretary in the Chemical Engineering department is inundated with queries on the concerns faced by students regarding service deliveries in the department. Owing to this, and as a registered student in Information and Corporate Management, it is critical to know whether the department implements a student-centric approach in the teaching and learning process as contained in the strategic plan code-named “Envision2030” of the DUT.

As illustrated in Table 3.1, the sample frame is made of first- and third-year students drawn from Chemical Engineering and Information and Corporate Management. However, for this study, it is not practical to use the whole target population due to cost and time constraints. Hence, the sample size was estimated from the target population, which was used to generalise the research findings.

Table 3. 1: Target population at selected departments

Department(s)	Population	
	First-year	Third-year
Chemical Engineering	103	65
Information and Corporate Management	356	189
Total	**456**	**254**

3.6 SAMPLING DESIGN AND SAMPLING TECHNIQUE

A sample is a set of cases a researcher selects from a large pool and generalised to the population (Newman 2018:246). According to Terre Blanche *et al.* (2010:48) sampling is the selection of research participants from an entire population and it involves decisions about which people, settings, events, behaviours, and /or social processes to observe. As advised by the aforementioned author, effective sampling ensures that the elements selected for a sample accurately resemble the parameters of the population they were selected from. Check and Schutt (2012:96), mention that sampling involves a process of selecting a sub-section of a population that represents the whole population to obtain information regarding the phenomenon of interest. The main aim was to select a sample that was representative of the population, which according to Newman (2018:246) allowed the researcher to conclude.

There are two types of sampling techniques, which are probability sampling and non-probability sampling. In probability sampling, there are higher chances that each member of the target population will be selected. Non-probability methods, by contrast, use the researchers' judgment, and there is no assurance that each element of the target population will be represented in the target sample (Leedy and Ormrod 2010: 212). For this study, both probability and non-probability sampling were utilized in the selection of the study sample.

3.6.1 PROBABILITY SAMPLING TECHNIQUE

According to Leedy and Ormrod (2015: 177), the probability-sampling method ensures that each sampling unit in the defined population has a chance to be selected. In this study, probability sampling was used in the selection of respondents in the quantitative

phase. Kumar (2014: 175) explained that in quantitative research, the researcher selects a sample in a way that is unbiased and representative of the population from where it is selected. While there are different types of probability sampling strategies such as simple random, stratified, systematic, and cluster sampling, the researcher used stratified sampling to choose the respondents of the study. In stratified sampling, the researcher stratifies the population in such a way that the population within a stratum is homogeneous concerning the characteristics to which it is being stratified (Kumar 2014: 186). Crossman (2018: 1) added that stratified sampling involves dividing the population into sub-groups or strata. In this study, the population was divided into two separate groups based on the departments and level of study. The purpose of using stratified sampling was to compare the perceptions and experiences of the two selected departments and levels of study on student-centred teaching and learning service delivery.

3.6.2 NON-PROBABILITY SAMPLING TECHNIQUE

According to Alvi (2016:13), non-probability techniques allow the researcher to choose the sample elements as they wish or wherever they can find them (Alvil 2016: 13). Kumar (2014:188) listed non-probability sampling to include quota sampling, accidental sampling, purposive sampling, expert sampling, and snowballing sampling. A non-probability snowball sampling method was used for the selection of the participants for the focus group (with students). This method was chosen because according to Taherdoost (2016:22), it uses a few cases to help encourage other cases (using networks) to take part in the study, thereby increasing the sample size. As advised by Etikan and Bala (2017:216), this method is useful when the researcher knows little about a group or organisation to study. This approach was most applicable as it was not easy to access the participants due to the social distancing issues and non-physical contact caused by the impact of the COVID 19 pandemic. Therefore, the researcher requested the class representatives to encourage the students in their respective classes to participate in the study.

For the interviews with HODs, purposive sampling was used in the selection of the HODs for the two departments. Purposive sampling is a technique where respondents are chosen based on their unique characteristics of interest to the researcher

(Bhattacherjee 2012: 69). Kumar (2014: 189) added that purposive sampling is based on the researchers' judgment in selecting participants who can provide the best information to achieve the objectives of the study. Hence, the various HODs were deemed appropriate to uncover the strategies and extent of the implementation of student-centred teaching and learning strategies in the selected departments.

3.7 THE SAMPLE SIZE

According to Shapiro (2008:2), the sample size most typically refers to the number of units that were chosen from which data were gathered. A sample size of 254 Chemical Engineering (1st and 3rd year) and 456 Information and Corporate Management students (1st and 3rd year) was used. Therefore, a total sample of 710 full-time registered students from both departments was used. As advised by Terre Blanche *et al.* (2010:49) the sample size must be large enough to allow the researcher to make inferences about the population. Therefore, this was considered sufficiently large and in line with a previous study of a similar nature conducted by Donlagic, Fazlic and Nuhanovic (2015 352). However, it was worth stating here that due to the effect of the COVID19 pandemic which made it a challenge to reach the target population hence a 50% distribution from each level in the department was considered representative.

The second sample was the key academic staff members who are involved in the implementation of SCL strategies. A senior staff from the Chemical Engineering (CE) Department who is a departmental quality and curriculum champion was interviewed. A head of the department from the Information and Corporate Management department was also interviewed. These staff members were interviewed to get some information on whether the SCL is being implemented in their departments and to identify the barriers to its achievement.

3.8 DATA COLLECTION METHODS AND INSTRUMENTS

Data is any information that has been collected, observed, generated, or created to validate original research findings. According to Kabir (2016:202), data can be categorised into two groups namely, primary and secondary data. Primary data refers to data that has been collected from first-hand experience or directly from the participants. This data has not been published. It is said to be more reliable, authentic, and objective. Sources can include experiments, surveys, questionnaires, focus group

interviews, and observations to count a few (Sileyew 2019). The author further noted that secondary data is collected from a source that has already been published (Sileyew 2019). This can include but is not limited to books, records, biographies, newspapers, data archives, and journals. In this study, the researcher combined both primary and secondary data sources. Firstly, secondary research was conducted to get the theoretical framework of the study using journal articles and books. This was then followed by primary data where the researcher used the appropriate data collection instruments. Here, questionnaires and focus group interviews were conducted.

3.9 FOCUS GROUP INTERVIEWS

During the qualitative phase, focus group interviews were conducted with the students. As suggested by Cohen *et al.* (2007:353), a change of opinion might arise from participants during the qualitative interviews. Loseke (2017:98) defines a focus group interview as a discussion conducted by a researcher with a group of participants and usually focused on a particular issue or set of issues. Newman (2018:471) define it as a special qualitative research technique in which people are informally interviewed in a group discussion setting. In most cases, these participants share a similar type of experience. According to Thomas (2013:203), the main idea of conducting a focus group is to get the understanding, beliefs, and values of the participants.

Loseke (2017:98) advises that a focus group interview can contain any number of participants. However, three is considered a minimum and more than ten often reduces the amount of interaction. Hence, for this study, a group of five students in each cohort was invited to participate in the focus group interview. For Chemical Engineering, it was easy to get access to the information since the researcher is a secretarial staff in the department. The lists had the names and student numbers of all the students. Students were contacted telephonically and via their dut4life email addresses inviting them to participate in a group discussion. Five participants in each level showed interest and there were emailed the study approval letter which was accompanied by the letter of information and they gave consent to be interviewed and signed the consent forms (Appendix B). Before the interview commenced, participants were notified that participation was voluntary and that they can withdraw at any given time. All participants granted their permission to be recorded during the interview

sessions. The interviews were held in August 2020 via Microsoft Teams to adhere to the social distancing measures.

For ICM's third year, the interviews were held in October 2020. Initially, when the invitation was sent out, half of the class showed interest to participate in the discussion. However, when the meeting was scheduled, only 10 students confirmed their availability to participate. The class representative indicated that most third-year students had started their WIL training and were unable to participate during the day. The session was split into two groups. Some of the students left before the conversation finished. It was discovered that they were affected by poor network connectivity. The researcher had to continue the discussion with the other students remaining. The interview sessions lasted for 45 minutes which is within the guidelines proposed by Ghauri and Gronhaug (2010:40). As in most qualitative research traditions, it is strongly recommended to have a full record of the interview (King *et al*. 2018:74). Online focus groups are becoming a more popular and accepted method for collecting qualitative data (Richard *et al*. 2021: 32). Therefore, the interview process was audio recorded via Microsoft Teams and was later transcribed. A research assistant was present during the interview process to ensure that the study and the interview conversation stayed within the research ambit.

3.10 SEMI-STRUCTURED INTERVIEWS

Kabir (2016:212) noted that semi-structured interviews are often preceded by observation, informal and unstructured interviewing. This is to allow the researcher to develop a keen understanding of the topic of interest necessary for developing relevant and meaningful semi-structured questions. Hence, the researcher conducted semi-structured interviews with one staff member that is responsible for overseeing the implementation of SCL in the respective departments. For the Chemical Engineering department program, the interview was held in August 2020 with a senior staff member who is a program accreditation and quality champion in the department and at a Faculty level.

For ICM, the head of the department was invited in October 2020. Staff were interviewed to ascertain their experiences of the successes and challenges faced in

the implementation of SCL. A set of six closed-ended questions were compiled (Appendix C) and forwarded to the staff before the interview. These questions were used as an interview guide to monitor the interview process towards the satisfaction of the research objectives. This also allowed the participants to familiarise themselves with the questions and prepare for the responses before the interview. Nevertheless, additional questions were included during the interview process. Interviews were held online via Microsoft Teams. With permission from the participants, the sessions were audio-recorded on MS Teams and lasted between 30 to 45 minutes. It is worth mentioning that all conversations flowed smoothly and pleasantly.

3.11 DESIGN AND LAYOUT OF THE QUESTIONNAIRE

A questionnaire is regarded as the most common tool for gathering data. Terre Blanche *et al.* (2010:484) define it as a group of written questions that are used to gather information from the respondents. As advised by Brosnan (2021:125) a questionnaire has to be properly designed to ensure that the research questions are addressed and that accurate and appropriate data is collected. In this study, the questionnaire was designed and distributed to obtain primary data from each of the target groups. The questionnaire included both open-ended and closed-ended questions. Open-ended questions were included to allow the respondents to record their personal views and experiences. Closed-ended questions required the respondents to select an answer from a list of options provided by the researcher.

During the quantitative phase, data were collected through a closed-ended questionnaire (Appendix A) measured by a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). This measured the beliefs, attitudes, and perceptions of the participants and ensured easy coding and analysis. The survey questionnaires consisted of three sections, namely, section A, which asked for demographic details; section B, close-ended questions that required information on students' experiences of the service delivery of student-centred teaching and learning. Section C consisted of an open-ended question suggesting ways on how SCL implementation strategies can be improved.

The study adopted both questionnaires and interviews as the measuring instruments. The instruments were derived from an extensive literature review based on the theoretical frameworks for the study. Other previous studies, along with the researcher's understanding of the study context were used as background information to formulate the questionnaire. It is worth noting that the questionnaire was only available in English, as all participants were proficient in English.

3.11.1 ADMINISTRATION OF THE QUESTIONNAIRE

This study employed an online platform to administer the questionnaires. This was necessary given the global pandemic brought about by COVID-19 and the need to maintain social distance to minimise the spread of the virus. Given this challenge, class representatives in each level were approached to assist in distributing the questionnaire by email to all students in their respective levels. This was done professionally as the researcher telephonically contacted the class representatives and fully explained the purpose of the questionnaire, context, confidentiality, and anonymity. Each questionnaire was accompanied by a covering letter, which explained the purpose and context of the research study, voluntary participation, confidentiality, and anonymity. The contact details of the researcher were also provided on the covering letter for further inquiries. On completion, participants returned the completed questionnaire to the researcher by email. Participants were given two weeks to complete the questionnaire.

Despite follow-up on the progress that was made from time to time by the researcher with the use of email and telephone calls, the response rate was very low. The researcher left other questionnaires at the department reception which were personally collected at weekly intervals. This improved the response rate as students were completing as they come for their queries. The third-year students had started their Work Integrated Learning (WIL) training in August 2020 so it was not easy to access them. With the assistance of the class representative and the WIL coordinator, the researcher was able to access the list of all students who had gone for WIL. From the list, most of the students were placed within the university in various departments. The researcher personally administered and collected the questionnaire from all these students. This improved the response rate positively. Collecting data from the

Chemical Engineering students took a week as the researcher is a secretarial staff member in the department. Although students were attending lectures online, they were allowed on certain days to come for practicals in the laboratories. Therefore, the questionnaires were distributed to them personally in the laboratories before the practical's session and were collected the same day. Therefore, it was easy and quick to collect data.

The data collection period lasted from September to December 2020. The researcher believes that this length of time can be attributed to online learning and students having limited access to campus.

3.12 PILOT STUDY

According to Terre Blanche *et al*. (2010:490), it is recommended that a pilot study be conducted to check the study before it is administered to the final sample. The researcher requested permission from the lecturers to visit their lecture venues and administer the questionnaire. It is worth stating here that this approach was used in both departments. The permission was granted and the students participated voluntarily in the exercise. From the target population, 10% of students who were willing to participate in the pilot study were selected to pre-test the questionnaire. A total of 55 students (13 from Chemical Engineering and 42 from Information and Corporate Management) participated in the pilot study. Using the class lists, the students who participated in the pilot phase were excluded from the main. Piloting the study significantly increased its reliability, validity, and practicability. There were no major issues raised from the pilot study, as respondents understood the questionnaire therefore, no amendments were required. The pilot study was conducted before the COVID19 pandemic.

3.13 RELIABILITY AND VALIDITY

The questionnaire was pre-tested for validity and reliability. The reliability of the instrument was tested using Cronbach's alpha to check for internal consistency.

3.13.1 RELIABILITY OF THE QUANTITATIVE PHASE

According to Thomas, (2013:138) reliability refers to the extent to which a research instrument will give the same results on different occasions. Mohajan (2017:58) explains that in quantitative research, reliability refers to the consistency, stability, and repeatability of results, that is, the result of a researcher is considered reliable if consistent results have been obtained in identical situations but different circumstances. However, in qualitative research, it is when a researcher's approach is consistent across different researchers and different projects. The trustworthiness of the qualitative results and inferences was achieved by using a peer examiner. Creswell (2015:95) believes that using peer briefing validates the study as it involves the interpretation of data beyond the researcher. Also, this increased transparency and minimised the opportunities to insert the researcher bias in the qualitative phase. The reliability was measured using Cronbach Alpha, to measure internal consistency.

3.13.2 VALIDITY OF THE QUANTITATIVE PHASE

According to Mohajan (2017:58) and Gray (2020:164), validity is the extent to which any measuring instrument measures what it is intended to measure. Thomas (2013:140) refers to the two types of validity viz, Instrument-based validity and experimental validity. Instrument-based validity includes (construct validity, content validity, predictive validity, face validity and ecological validity). For this study during the quantitative phase, the validity was ensured using construct validity. Thomas (2013:140) defines construct validity as the extent to which the results of a test (or another instrument) correlate with the theoretical construct for which it is seeking to act as an assessment. Terre Blanche *et al*. (2010:151) noted that construct validation includes three steps viz, specify a set of theoretical relationships between constraints, test the hypothesis empirically, and interpret the pattern of relationships in terms of how they clarify the construct validity of the measure.

3.13.3 CREDIBILITY FOR THE QUALITATIVE PHASE: SEMI-STRUCTURED INTERVIEWS AND FOCUS GROUPS

While reliability and validity are attributed to quantitative methods, the terms that best address validity in qualitative research are trustworthiness, authenticity, and credibility (Creswell 2014: 201; Creswell and Creswell 2018: 482). Kumar (2011: 137) explained

that credibility involves establishing that the results of qualitative research are believable from the participant's perspective. To improve the credibility of the qualitative data, the interview guide was developed based on the constructs identified during the literature review. The interview guide was modified from previous study such as the Australian Higher Education and Course Experience Questionnaire that addressed similar constructs (Talukdar, Aspland and Datta 2013: 27), which thus ensures the interviews' credibility. The participants are presumed to give an actual account of their perceptions and experiences regarding the delivery of student-centred teaching and learning in the selected departments. Another point that ensured credibility was that the HODs who participated in the interviews were people responsible for implementing policies in the departments.

The researcher recorded the MS Teams interview with the participants to capture interviewees' responses, thereby ensuring undivided attention. The whole interview was captured and provided complete data for analysis. During data analysis, the researcher quoted verbatim from the participant's responses. The researcher used the tape recorder to pick up cues missed during the interviews. To guard against bias and perspectives that the researcher might have when analysing the data, the researcher asked two peers from the two departments to verify data and interpretation accuracy. The researcher also made sure that there is an audit trail available about the entire data process. This assisted in ensuring the credibility of the qualitative study.

3.14 ETHICAL CONSIDERATIONS

According to Collins and O'Brien (2003:168), ethics refers to the study of right and wrong action. Participants were fully informed about the project and the research process. As recommended by Henning (2004:118) participants need to be reassured that their privacy, sensitivity, and confidentiality will be guaranteed throughout the inquiry and research procedures. Hence, the information provided by the respondents was treated confidentially to protect their privacy and identity. Given the importance of ethics, it is worth mentioning that the study complied with the ethical standards of academic research. After obtaining permission, the research proposal, which was approved by the Faculty Research Committee (FRC), was submitted together with the data collection instrument (appendix E), consent forms, letter of permission, and

covering letter to the Faculty Research Ethics Committee (FREC) for ethical clearance (appendix F). The application for permission to conduct research at the selected university was obtained from the university through the University's Research Postgraduate Support Office (appendix D). Informed consent in the form of written approval was obtained from respondents which indicated their willingness to participate in the study. This study did not target any ethnic or community group and met with all the university's ethics policies and guidelines.

3.14.1 ANONYMITY AND CONFIDENTIALITY

According to Coffelt (2018:2), confidentiality refers to separating or modifying any personal, identifying information provided by participants from the data. While, anonymity refers to collecting data without obtaining any personal, identifying information. For this study, written consent was obtained from each participant, who was assured of anonymity and confidentiality. The identity, such as the names and student numbers of the participants, were not included in the questionnaire.

3.14.2 RESEARCH BIAS

The potential perplexity factor of the Hawthorne effect also known as the observation bias was considered. This is described by Chiesa and Hobbs (2008: 67) as the effects of being researched which may influence the way participants perform in the presence of the researcher. As previously stated, the researcher is employed as an administrative staff member in one of the departments under the research study but her employment in that office had a minimal influence on the responses received during data collection. The researcher also believes that her level of working relationship and trust with students enabled them to feel free and be open to discussing critical aspects of teaching and learning service delivery.

To minimise the possible risk of bias in this study, the researcher explained to the student participants that the purpose of the research project was to establish their experiences of student-centered learning. Students were requested to be as honest and objective as possible when responding. No questions were directly about themselves or lecturers so it was unlikely that they would be biased. For staff, the element of biasness could be possible because the researcher is a staff member in

one of the departments being researched. This was minimised as both students and staff were involved in the study. This provided views, opinions, and experiences from both sides. So, any possible bias was counteracted.

3.15 DATA PREPARATION

Research indicates that the data preparation process is estimated to take up to 80 % of the overall analysis time. Aguinis *et al.* (2019:8) noted that data preparation takes place after data collection and before data analysis. It includes editing, coding, and entering data. It ensures the accuracy of the data and the conversion from raw form to reduced and classified forms that are more appropriate for analysis. The questions and responses were coded and captured by the researcher using the excel spreadsheet. All questions were numbered**.**

3.16 DATA ANALYSIS

As noted by Bradley (2013: 319), it is critical to analyse and interpret obtained data to provide answers for the research objectives. Data analysis is defined as the statistical and qualitative consideration of data collected by the researcher (Lester *et al.* 2020:98). Creswell and Plano Clark (2018: 279) advise that in a mixed-method approach, the qualitative and quantitative data must be analysed separately. Combining different data analysis techniques enhances the study's credibility and trustworthiness (Nieuwenhuis, 2006:122). Particularly, the research objectives could only be achieved by determining the meaning of the data and its significance to the research problem (Leedy and Ormond 2014: 315). In this study, a statistical method was used in the analyses of the quantitative data while thematic content analyses were used for the qualitative method.

3.16.1 DATA ANALYSIS - Qualitative phase

The data collected from the qualitative phase (focus group interviews and semi-structured interviews) was transcribed and analysed by the researcher using thematic content analysis. According to Braun and Clarke (2006: 79), the thematic analysis focuses on identifiable patterns (themes) within the texts while minimally organising and describing data sets in detail. Castro *et al.* (2010: 354) explain that interpretation of themes and phrases will enable the researcher to make stories that give voice to

people who state them. The data that emerged from the interview were deductively coded with a software aid (NVIVO version 12). The researcher follows the step of thematic analyses as highlighted by Saldaña (2021:44). In this process, the researcher developed operating codes to create categories to theme the data. The researcher read the transcripts in full and then derived codes from the data. Thereafter, the transcript was read again and sections of the text were highlighted and deductively coded as per the appropriate code, and quotations were then placed in separate documents. This process allows the researcher to identify both themes and sub-themes in the interview transcript.

3.16.2 DATA ANALYSIS - Quantitative phase

Data collected from the evaluation questionnaire was analysed using the Statistical Package for the Social Sciences (SPSS® - Version 27 Chicago, IL, USA). Both descriptive and inferential statistical procedures were used to analyse the survey data. Grand-Clement, Baruch, and van Gorp (2018: 57) define descriptive statistics as a statistical method that is useful to organise, summarise, and describe a set of survey data. In this study, univariate descriptive statistical procedures were used to analyse the demographic information and the student's answers to separate items on each of the survey data. Bar graphs and frequency tables were used to present the data.

Inferential statistical analysis, by contrast, uses the laws of probability to make inferences and draw conclusions about the sample data (Johnson and Christensen, 2012: 4). In this study, arithmetic means, and standard deviations, Chi-Square tests were computed to test the relationship between the demographic data and the association between the demographic data and students' experiences of teaching and learning strategies adopted in their departments.

More so, factor analysis was computed to identify constructs among observed variables and provide valid evidence. Factor analysis is a statistical procedure used for data reduction through a linear combination of different variables with similar characteristics (Mooi and Sarstedt 2011:202; Boslaugh 2013: 291). Pallant (2011: 181) explains that factor analysis is beneficial for refining measurement scales.

Equally, Analysis of variance (ANOVA) was computed to test the relationship between the demographic variables and the identified constructs. According to Leedy and Ormrod (2015: 259), ANOVA is a statistical procedure used to calculate variation (difference) within a set of data and then assess how that variation translates into variation across the groups.

Added to the above, structural equation modeling (SEM) was computed to identify which of the constructs predicts service quality in the selected university. Structural equation modeling is a statistical procedure for testing relationships between observed (measured) and unobserved (latent) variables (Little 2013: 203; Leedy and Ormrod 2015: 259). When using structural equation modeling, all scales should have a minimum of three measurement items (Hair *et al*., 2014: 614). Therefore, the researcher considered a five-point scale. The SEM was analysed using AMOS software (IBM version 27).

3.17 SUMMARY AND CONCLUSION

This chapter presented the research design and the methodology for the study. The research methodology chapter is an important feature of the whole research process as it details how the research study was carried out. Questionnaires were distributed to the respondents. The collected data were captured and analysed using SPSS. Chapter four describes the analysis of the collected data to explore students' and key staff experiences of the current strategies aimed at achieving student-centred learning at the selected university and the barriers to its achievement.

The next chapter discusses the analysis and interpretation of qualitative results.

CHAPTER FOUR – QUALITIAVE PHASE RESULTS

4.1 INTRODUCTION

This chapter discusses the data findings and results obtained from the qualitative phase of the study. The analysis consists of two parts. The first part discusses the finding obtained from the focus group discussion with first and third-year students purposively drawn from the departments of Chemical Engineering (CE) and Information and Corporate Management (ICM). The second part incorporated semi-structured interviews with selected staff from the two departments. The data that emerged from the interview were deductively coded with the aid of software (NVIVO version 12).

4.2 Focus group discussion

This section details the emerging responses from the focus group discussions

4.2.1 Response from the focus group

Table 4.1 shows the number of participants per focus group and the assigned pseudo names given to each of the focus groups. Overall, the participants were 20 in the number who participated in the interviews.

Table 4.1: Number of participants

Table 4. 1: Focus group

Focus group	Abbreviated	Number of participants
Focus group 1	#CE, first year	5
Focus group 2	#ICM, first year	5
Focus group 3	#CE, third year	5
Focus group 4	#ICM, third year	5

4.2.2 Emerging themes and subthemes from the semi-structured interviews with focus group participants

The analysis of the data obtained from the open-ended questions resulted in the identification of the themes and subthemes highlighted in Table 4.2.

Table 4. 2: Themes and sub-themes emerging from focus-group interview

Theme	Sub-theme
1. Understanding of student-centeredness	1) *Lack of understanding of the meaning of student-centeredness* 2) *Understanding the meaning of student-centeredness*
2. *Factors that influenced the choice of selected courses*	1) First offer acceptance 2) Influence of DUT communication 3) Passion for the course 4) The practicality of the course
3. Teaching and administrative staff support structure	*1) Administrative staff support* 2) *Teaching staff support*
4. Learning environment	*1) Student experience in a learning environment* *2) Relationship between learning environment and experience* *3) Student expectations of the learning environment*
5. Teaching and learning experience	*1) Satisfied experience* *2) Dissatisfied experience*
6. *The Link between academic curriculum and industry*	
7. Student centredness recommendation	*1) Recommendations for teaching and learning* 2) *Recommendation for administrative services*

4.2.2.1 Theme 1: Understanding of student-centeredness

Even though student-centered teaching and learning in higher education have generated a lot of research interest in academia and among public commentators in recent years (Wright 2011: 92; Baetan *et al* 2012: 43; Mckenna 2013: 1; Xulu-Gama *et al* 2018: 1302), it was uncovered that many of the participants had no understanding of its meaning. The excerpt from the focus group discussion with students drawn from two departments and two levels are summarised below.

Subtheme 1: Lack of understanding of the meaning of student-centeredness

It was uncovered that none of the first-year students from CE has heard of the term "**student-centeredness**" nor had any idea of its meaning.

> *I have not heard of the term before nor know what is it means **(#CE, first year)**.*

The first-year participants from Information and Corporate management equally have no idea of what student-centeredness means.

> *We have not heard of the term in DUT or what it means **(#ICM, first year)**.*

Similarly, most participants third-year CE students have never heard of the term student-centeredness. One of them revealed to only heard of it the first time during the focus group discussion.

> *No understanding of the term and it is the first time I heard of the term **(CE, third year).***

More so, some third-year students from Information and Corporate Management revealed not to have heard of the term before and they do not have an idea of what it means.

Subtheme 2: Understanding the meaning of student-centeredness

While it was uncovered that many of the participants across each year and departments had no understanding or meaning of the term student-centeredness", however, some of the student participants did express a level of understanding of what student-centredness means.

> *In general, that is about prioritizing students' educational needs **(#ICM, first year)***

> *It is where the learning environment, teaching material, and curriculum are designed with students in mind **(#CE, third year)**.*

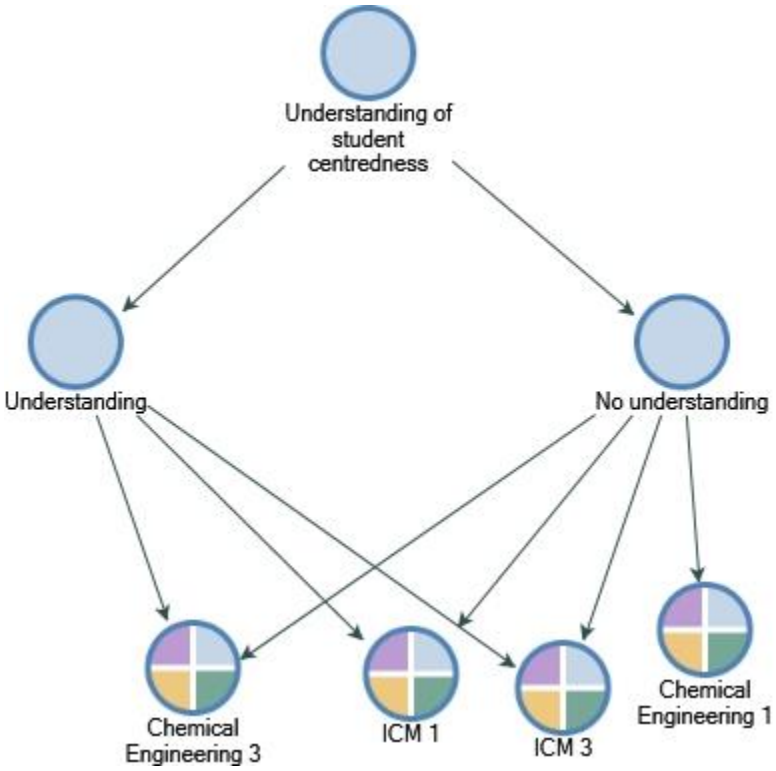
> *It where students are being involved during the learning process, participate, and given meaningful activities. It is where students are put at the center of their learning and given that independence to work on their own" **(#ICM, third year)**.*

The view gathered from the third-year ICM student is an excellent understanding of the term, while the others are just ‘common sense’ interpretations of a term that was new to them.

Drawing from the students' shared understanding of student-centeredness; a general theme that continuously emerged was putting students in the center of their learning process. This aligns with Geven and Santa (2010:3) that student-centered learning is about seeing students as ‘active participants in the classroom, and as partners who contribute to reaching the required outcomes of a course or program.

Overall, Figure 1 provides virtualization and comparison of the understanding of student-centeredness among the participants drawn from the two departments and levels of study. It emerged that while participants from both levels of the department of Information and Corporate Management, as well as third-year Chemical Engineering, had some understanding of student-centeredness, none from Chemical Engineering level one understood the term. A plausible explanation for the lack of understanding of the theme of student-centeredness in first-year Chemical Engineering could not be established by the researcher.

Figure 4. 1: Visualization of theme 1 (student's understanding of student-centeredness)



4.2.2.2 Theme 2: Factors that influenced the choice of selected courses

In recent years, higher education globally has become highly competitive and market-oriented (Mulyono *et al*. 2020: 929). From a higher education marketing perspective, and as noted by Fosu and Poku (2014: 209), the motivating factors for students in their choice of a university have become a vital issue. As a result, the role of marketing in student enrolment has been given greater priority in recent years. Accordingly, it was prudent to know the factors that influenced the participant's choice of courses at the DUT. The factors that emerged from the focus group discussion with the students were categorized into four, which are first offer acceptance, Influence of DUT communication (marketing strategy), passion for the course, and practicality of the course.

(a) First offer acceptance

One participant revealed that studying Chemical Engineering at the DUT was not his ideal course or the university as he had applied at other institutions. The DUT, however, responded first to his application and offered him space before other programs responded.

> *I have applied for Pharmacy, Dentistry, and Chemical Engineering at both the DUT and UKZN. However, DUT was the first to offer me an offer; hence, I decided to accept it than wait for uncertainty* ***(#CE, first year)****.*

Another participant from Information and Corporate Management department level three shared a similar sentiment.

> *Some students just happened to enroll for the course because they were considered for it* ***(#ICM, third year)****.*

Despite the perceived view that the courses were not the students' first offer, it was uncovered that students over the years fell in love with the course.

> *Now that I have been there for the past year, I fell in love with it and the way its curriculum is structured* ***(*****#ICM, third year)**.

(b) Influence of DUT communication

Hossler *et al.* (1999: 15) in their seminal work on information processing models had suggested that the information gathering process is the main component of the university choice decision. According to Fosu and Poku (2014: 211), the central premise of the information-processing model is that the decision to enroll in any higher education institution is dependent on the amount of information gathered by the student. Consistent with this, it was uncovered that the information gathered by the students through the marketing communication strategy such as words of mouth, advertisements on radios, and other DUT events like the open day was the motivating factor for the choice of the institution.

> *Word of mouth from the previous students who once studies the course and graduated* ***(#CE, third year)****.*
>
> *Adverts on the Radio about the Dut open day met the lecturers there who explained the course and the opportunities available* ***(#CE third year)****.*
>
> *I heard about the department or course on national radio where it was advertised, enquired more about it, and fell in love with it* ***(#ICM, third year)****.*

(c) Passion for the course

The seminal model put forward by Galotti and Kozberg (1987: 313) postulates that the factors influencing an individual's choice of a course depend on how much students care about the subject, something they do well in, something with good career opportunities, and what they want to do with the course after college. From the focus group discussion, it was uncovered that students, particularly from Chemical Engineering voiced that their passion for engineering, as well as their abilities in Maths and Physics, were their motivating factors for the choice of the course.

> *Interested in Engineering and behind the scenes of what goes on in engineering plants. Passion for the environmental aspect of chemical engineering and interest in a more technological approach to the profession* ***(#CE, first year)****.*

Three of the first-year **#CE** participants also acknowledged that they enrolled for their chosen course simply because they enjoy Maths and Chemistry. This is also corroborated by third-year students who illuminated the following:

> *Passion for Maths and Physics which are the requirements for most Engineering courses* ***(#CE, third year)***.

The above statements corroborate with Seymour and Hewitt (1997: 77) who noted that previous success in maths and science courses is among the influencing factors in students' choice of engineering program.

(d) The practicality of the course

Added to the above-explained factors that influence the participants' choice of their courses and DUT, it emerged that the practicality of the DUT courses was another motivating factor.

> *Module combination, the curriculum is structured in a way that will most likely allow students to venture into most professional careers. For example, there are courses like Project Management and Business leadership which are more business and practical oriented. This will help in training people to be more business-minded, and create job opportunities for graduates who seek employment* ***(#ICM, first year)****.*

> *The course is more practical based and offers a lot of experience while studying* ***(#CE, third year).***

*The course structure has equipped me to pursue my dream to be in a business environment **(#ICM, third year)**.*

*DUT offers a variety of more practical-based courses **(#ICM, third year)**.*

Table 4.3 provides the matrix comparison of the factors, departments, and students level. It was uncovered that students from Chemical Engineering **(First year)**, as well as students from Information and Corporate Management **(Third year)**, revealed that DUT offered to them admission first and not necessarily their first choice. In terms of the influence of DUT communication, Chemical Engineering **(Third year)** and Information and Corporate Management **(Third year)** reveal this to contribute to their choice of the DUT. All the Chemical Engineering students regardless of their level of the study pointed out that their passion for the course was their motivation factor. Lastly, and for the practicality of the course, Chemical Engineering **(Third year)**, Information and Corporate Management (**First and Third year)** reveals this to also influence their choice.

Overall, the above-mentioned factors are consistent with Rudhumbu, Tirumalai and Kumari (2017: 27) who listed the factors that influence students' choice of universities to include academic programs offered, the image, and the reputation of the institution, advertising, career fairs, and employment prospects of graduates.

Table 4. 3: Matrix coding showing factors influencing the choice of courses by participant's departments and level of study.

	A: Chemical Engineering (First year)	B: Chemical Engineering (Third year)	C: ICM 1 (First year)	D: ICM 3 (Third year)
1 : First offer acceptance	1	0	0	1
2 : Influence of DUT communication	0	2	0	1
3 : Passion for the course	2	1	0	0
4: Practicality of the course	0	1	1	2

4.2.2.3 Theme 3: Teaching and administrative staff support structure

Malik, Danish and Usman (2010: 1) stated the following "*The educational institutions where the system is effective and administration is willing to provide the quality*

services always enjoy more incoming of brilliant and talented students". More so, other scholars revealed that the quality of administrative and academic staff has a significant influence on the students' satisfaction levels (Weerasinghe and Fernando 2018:115). In line with the aforementioned views, this theme explores the perceptions students had of the support structure in their respective departments. The following question was used to drive the focus group discussion *Do you feel that the teaching and administrative staff are usually helpful and supportive?* From the focus group discussions, the teaching and administrative staff support structure were categorised into supportive and non-supportive.

Subtheme 1: Administrative staff support

According to Weerasinghe and Fernando (2018: 115), the qualities of administrative staff in universities include reliability, responsiveness, caring attitude, accuracy, fairness, respect, and cooperation with students during the period at a university. In this study, it was uncovered that while a number of the administrative staff were seen to be helpful and efficient, many were not. These are reflected in the narratives below.

(a) Supportive

In terms of the administrative staff support, it was uncovered that most staff were helpful and efficient.

> *The administrative staff in the department are always helpful and* ***efficient (#CE, first year)****.*

Also, participants from the Information and Corporate Management **(Third year)** noted the following:

> *They are most supportive in terms of administration; for example, computer laboratories are up to date, and all is running smoothly – students are satisfied* ***(#ICM, third year)****.*

From the above narrative, it is sufficient to assume that some of the participants from the first year of Chemical Engineering and third-year Information and Corporate Management see the administration as helpful and efficient, which thus influences students' satisfaction.

(b) Non-supportive

A previous study by Pathmini *et al.* (2014: 51) found that students at universities were not much happy about the empathy level exhibited and the reliability of administrative staff. More so, Aigbavboa and Thwala (2013: 17) noted that in a university system, students rarely connect with the administrators, and they perceive administrators to be part of a negative, unhelpful bureaucracy. A much more recent study conducted by Ntoyakhe and Ngibe (2020: 113) also reflected a degree of discontentment from students regarding the reliability, responsiveness, and empathy shown by administrative personnel could be included here as well. Corroborating with the aforementioned studies, it was uncovered that many of the students from the two departments and levels believed that the administrative staff were non-supportive. Students complain that the administrative hardly responds to telephone calls and emails.

> *The administrative staff at DUT as a whole aren't always this helpful to an extent that they don't respond to telephone calls. For example, 'this year I for some reason received NSFAS payment, which was a breach of contract with my sponsors. I couldn't contact the financial department because they didn't respond to emails nor did they answer the phone"* ***(#CE, first year)****.*

> *Poor response time to emails* ***(#CE, third year)****.*

From the above statement, it is apparent that poor responsiveness by the administration had a negative influence on the student's satisfaction levels.

> *Administrative staff are not always supportive; they sometimes don't show the willingness to help* ***(#ICM, first year)***.

It was uncovered that students had a concern with the front desk administrative staff.

> *At certain times there is no one at the reception window to talk to or ask. For example, if a student comes looking for a lecturer, they will tell the student to use the phone and contact the person they looking for and don't even bother to ensure that the student was assisted* ***(#ICM, third year)****.*

Echoing similar sentiment, two of the participants from the same group noted the following:

Front desk – issues with the timetable, in most times staff that sit there are not welcoming, unfriendly, not showing willingness to help, have an attitude when dealing with students that come for assistance at the department. For example, a student will come looking for a particular lecturer ***(#ICM, third year)***.

Secretary's behavior when dealing with students that come to the department does not reflect her as a mirror of the department, very distant and unwelcoming ***(#ICM, third year)****.*

The above statements suggest the absence of empathy and responsiveness by the administrative staff. This is concerning given the fact that administrative staff support such as empathy is a contributory factor to students' satisfaction levels (Pathmini *et al.* 2014: 51). Equally, Malik *et al.* (2010: 1) reveal that cooperation, the kindness of the administrative staff, and responsiveness of the educational system-aided student satisfaction levels.

Subtheme 2: Teaching staff support

According to Weerasinghe and Fernando (2018: 126), both academics and administrators often connect with students in the learning process. In this subtheme, the researcher explores the supportive and non-supportive assistance offered by the academic staff to the students. In higher education, Abdullah (2006: 38) noted that quality of service is the responsibility of academics, and includes a positive attitude, provision of sufficient consultation, good communication skills as well as the ability to provide regular feedback to the students.

(a) Supportive

Participants from the Information and Corporate Management **(First year)** unanimously agreed that the lecturers have been very supportive beyond measure, approachable, and always willing to help whether in class or at the department. According to one of the participants' views:

The workload is manageable in most of the courses. They try to accommodate all students ***(#ICM, first year)****.*

They are available for consultation outside the lecture time ***(#ICM, first year)****.*

Chemical engineering **(Third year)** also expresses similar sentiments that the academic staff are supportive, friendly, and available for consultation. Their empathic

nature was uncovered as students are accommodated even after missing assessments.

> *Are always very supportive, creating an environment where all student feel part of the class. Always show the willingness and enthusiasm to help. Make themselves available even outside the lecturer's time for consultation. For example, when a student has missed an assessment, most of the lecturers try and accommodate or explain the department procedure that the student needs to follow* ***(#CE, third year)***.

> *Staff are friendly, which makes it easy to approach them even with personal matters that may affect our learning* ***(#CE, third year)****.*

Added to the narrative, participants from the Information and Corporate Management stressed that:

> *Academic staff are supportive, and committed, most of the staff go beyond their means to ensure that all students are accommodated, allow for consultation even outside the class, and treat the student with care* ***(#ICM, third year)****.*

Voss, Gruber and Szmigin (2007: 949) noted that cooperation between academic staff with students is achieved through positive characteristics of the lecturers such as being knowledgeable, enthusiastic, approachable, friendly with students, efficient in communication, and teaching skills. The above narrative uncovered from the focus group discussion suggests cooperation and partnership between the students and the academic staff. This provides evidence of student-centered teaching and learning at the DUT. The view shared by one of the participants representing Chemical Engineering **(Third year)** captured it nicely:

> *In the classroom, we are given tasks to do individually or in groups and come back the next day to present and share our findings with the rest of the class* ***(#CE, third year)***.

The above finding corroborates with Al Said *et al.* (2019: 2) who said that student centredness is an approach that "allows students to shape their educational paths and places upon them the responsibility to actively participate in making their educational process a meaningful one further support the above evidence of student-centered teaching and learning.

(b) Non-supportive

Despite the positive support structure mentioned above, some of the participants representing Chemical Engineering **(First Year)** and Information and Corporate Management (First year) had a reservation about the supportiveness of the academic staff. It was uncovered that due to the non-physical contact brought about by the pandemic, some lecturers no longer respond to email at a reasonable time.

> *During online learning, they are some challenges probably due to nonphysical contact because some lectures are not responding to email queries at a reasonable time* ***(#CE, first year)***.

> *There have been issues with the courses that are serviced outside the department like poor communication, lecturers not responding to the emails, not giving feedback, or errors with marks* ***(#ICM, first year 1)****.*

From the last statement, it can be assumed that the categories of lecturers the students were referring to are that outside of their departments. But it must be stated that some students were not entirely happy with some of the staff responsiveness and assistance. Overall, and as shown in the matrix table in Table 4.4, many of the students had positive comments for the academic staff as they view them to be supportive, whilst the reverse was true of the administrative staff.

Table 4. 4: Matrix coding showing student's perception of the supportive and non-supportive staff

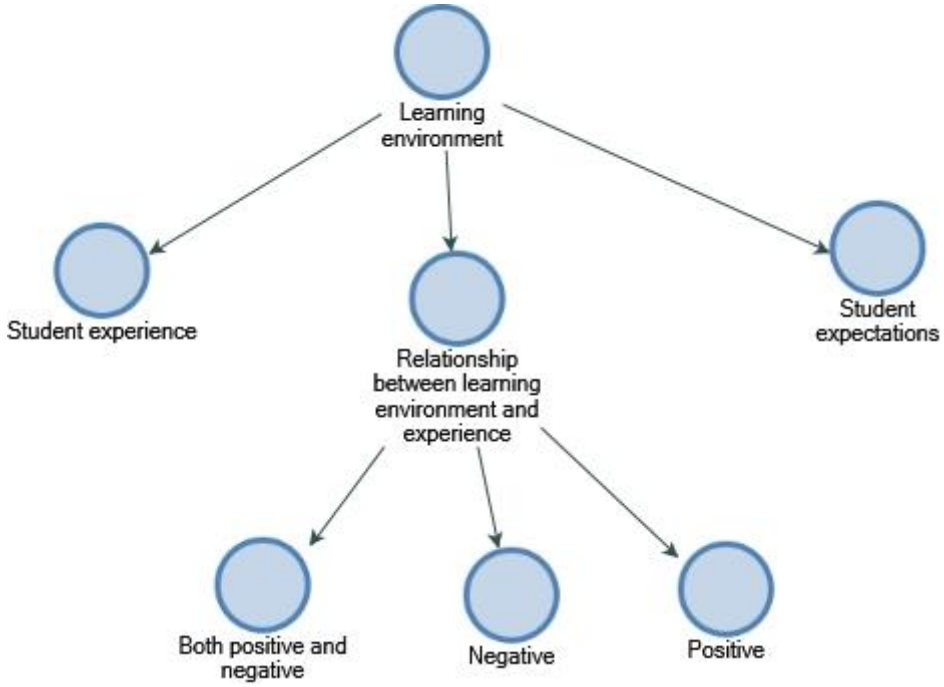
	A: Chemical Engineering (First year)	B: Chemical Engineering (Third year)	C: ICM (First year)	D: ICM (Third year)
1: **Administrative staff**				
a: Non-supportive	2	2	4	2
b: Supportive	1	0	0	1
2: **Teaching staff**				
a: Non-supportive	1	0	1	0
b: Supportive	0	3	2	1

4.2.2.4 Theme 4: Learning environment

The learning environment is everything that happens in the educational institution. Kennedy *et al.* (2013:1) in their paper presentation titled "Curriculum trends in Medical education in Europe in the 21st century" summarised that the learning environment encompasses the educational, physical, social, and psychological context in which

students are immersed. According to the aforementioned authors, the learning environment plays a significant role in students' professional and moral development. From a student-centeredness perspective and how it relates to the learning environment, the former Vice-Chancellor and Principal of the selected university noted that the notion of student-centeredness is that the university exists to provide its students with the kind of learning environment that helps them to grow intellectually, socially and emotionally" (Bawa 2014:5). This theme, therefore, explores from the perspective of the students how the learning environment has inspired their academic pursuits in the institution. As shown in Figure 4.2, the theme 'learning environment' is discussed under three subthemes namely, student experience, students' expectations, and the relationship between students learning environment and experience.

Figure 4. 2: Visualization of theme 4 (learning environment)



Subtheme 1: Student expectations of the learning environment

Smith and Wertlieb (2004: 153) noted that first-year college students' expectations about "what college is like" do not always align with their actual experiences. Consistent with this, it was uncovered that many of the first-year expectation of the DUT was not in consonant with the reality of the institution. Some of the expectations uncovered that did not align with the student's expectations include:

- **Size of the institution**

  *My expectation was wrong, never expected something like this, DUT is huge, and never expected it to be this huge **(#CE, first year)**.*

- **University is a tough place**

  *In high school, we were painted a picture that university is tough, but I prefer things at DUT than high school because at high school there is much going on, and want us to be involved in extra curricula whilst at the DUT we only focus on our studies **(#CE, first year)**.*

  *Coming from high school, there was this point of higher education institution seen as an isolated place *you are on your own* you will be given tasks to do and no guidance. However, this is not the case as they are always someone to assist during the learning process either the lecturer or the tutors **(#ICM, first year)**.*

- **Unapproachable lecturers**

  *In high school were told that we may never be able to have one on one with the lecturer, but this was not the case as lecturers have been supportive **(#CE, first year)**.*

Nevertheless, some of the first-year students voiced that their expectations of higher education were met. These are captured below.

> *Lecturers are like teachers in high and there is no difference between them **(#CE, first year)**.*
>
> *Before going to DUT, I had very high expectations due to speaking to people who have previously gone there. Most of the expectations have been met **(#ICM, first year)**.*

Among the third-year students, divergent views emerged for the Chemical Engineering, and Information and Corporate Management students. For example, while some participants from Chemical Engineering agreed that they came to the department with an expectation that they will complete the course in record time and with good results, however, this has not been the case for most students. One verbatim comment reflects the views expressed by many others.

> *A lot of things happened during their educational journey leading to repeating some modules hence the journey has not been easy. Having to balance my personal life and educational needs* ***(#CE, third year)****.*

On the contrary, students from the Information and Corporate Management believe their expectations of completing their courses with good results at a record time were satisfactory. All students agreed that they came to the department with an expectation that they will complete the course in record time with good results and that has been satisfactorily achieved.

Subtheme 2: Student experience of the learning environment

Dorasamy and Balkaran (2013:261) cautioned that higher education institutions like the Durban University of Technology must be concerned not only with developing the skills and abilities of its graduates but also with determining students' feelings about their educational experience. In light of this, the participants in the focus group were asked to describe their learning experience at the DUT thus far. The following question was used to drive the discussion "*How does the environment stimulate your learning experience at the university?"*

While many of the participants, particularly the first-year students noted that due to the disruption brought about by COVID-19, they do not have any learning experience to share.

> *We have only been at DUT for a couple of months, so cannot fully answer this question* ***(#CE, first year)****.*

Nevertheless, and judging from the little time they spent on campus all participants agreed that they prefer to be on campus than be at home. For third-year Chemical Engineering, for example, all participants agreed that their experience so far at the DUT has been good, entertaining, and educational. One of the participants shared the following experience

> *The stay at the department has been a "roller coaster" journey. Coming from high school and not knowing what to expect. First-year was difficult, trying to settle and find yourself, choosing friends, given the opportunity to be independent. Working around your time and required to meet the tight*

> *deadlines. However, with the help of the staff, the transitioning process was seamless and enjoyable* ***(#CE, third year)****.*

An important point one could draw out from the above statement is that staff has been supportive through the students transitioning process from high school to universities life. This reinforces the concept of student-centeredness in the institution.

Equally, third-year students from Information and Corporate management also agreed that their stay at the university has been good. As such, one of the students in the group voiced the following:

> *The stay at the department and DUT at large has improved tremendously over the years. Coming to a University as a first-year student felt like being lost hence we did not know what to expect (fear of the unknown). Engaging with people with different personalities, races, and languages* ***(#ICM, third year)****.*

Subtheme 3: Relationship between learning environment and experience

The relationship between the educational environment and students' achievement has a subject of scientific inquiry. Extant literature, for example, provides a proven connection between the educational environment and the valuable outcomes of students' achievement, satisfaction, and success (Lizzio, Wilson and Simons 2002: 27; Rooij *et al.* 2018: 752). From the focus group discussion, it was uncovered that the learning environment has had positive, negative, and or both on the students' experience.

(a) Positive

All students expressed that the learning environment is usually quite positive. For example, Chemical Engineering first-year students stated that the facilities like libraries, computer labs, and other departments were easy to locate as there are boards all over the campus giving the directions. The third-year chemical engineering students also express a similar point of view. As expressed by one of the third-year students easy access to learning resources stimulate the learning experience, which hitherto makes the students always look forward to school.

> *Easy access to the learning resources like libraries, and computer laboratories, stimulate the learning experience and make the student always look forward to going to class or coming to school* ***(#CE, third year)****.*

The above view, particularly on the desire to attend classes agrees with Bakhshialiabad, Bakhshi and Hassanshahi (2015: 195) that the learning environment has a strong impact on students' learning experiences and outcomes. Particularly, as it dictates what, how and why students learn. Hence, and corroborating with other studies (Genn 2001:445; Hamid, Faroukh and Mohammadhosein 2013: 56), it is sufficient to assume the positive learning environment may contribute to students' success at the DUT. Moreover, both third-year Chemical Engineering and Information and Corporate Management students acknowledged that the DUT learning environment is good for teaching and learning.

> *The learning environment is welcoming and inviting. Good for teaching and learning* ***(#CE, third year)****.*

> *The transition from a high school setting to a University environment was easy because The University environment has been welcoming, entertaining and friendly, and educational* ***(#ICM 3, third year)****.*

Apart from the easy access to learning resources, students also voiced that university orientation made it easier to integrate with the university environment.

> *The orientation assisted them to learn about most of the things that are required of them as new students* ***(#CE, first year).***

> *University Initiations like FYSE assisted us to settle down and get used to the busy environment* ***(#ICM, third year)****.*

(b) Negative

Despite the perceived positive view shared above, some of the students mainly from the first-year Information and Corporate Management pointed out the learning environment is not conducive in most courses.

> *The learning environment is not conducive in most courses, especially DUT being a university of Technology and meant to move with technology* ***(#ICM, first year)****.*

Part of the reason noted for the unconducive learning environment includes a large number of students making it difficult to control classes and a lack of support system for those with disabilities.

*There are big student numbers, not easy to control, and there is disruption and students lose attention **(#ICM, first year).***

*There is a student with a disability (using a wheelchair and having a hearing problem). Always accompanied by another student hence she cannot hear well or help herself to get to the lecture venues **(#ICM, first year).***

(c) Both positive and negative (Mixed)

While contributing to the discussion, one of the first-year students drawn from Chemical Engineering accentuates the following:

*The learning environment is welcoming; however, there have been a lot of recurring incidents around campus that have caused uncertainty about the learning environment on campus **(#CE, first year)**.*

Notwithstanding the different views shared, on average, most students mentioned that the learning experience met their expectations. The matrix table in Table 4.5 summarises the responses gathered from theme 4. None of the students from first-year Information and Corporate Management had a positive view of the learning environment and student experience whilst 3 of the students had a negative comment. Many of the students from both first and third-year Chemical Engineering express positive comments on the learning environment and experience.

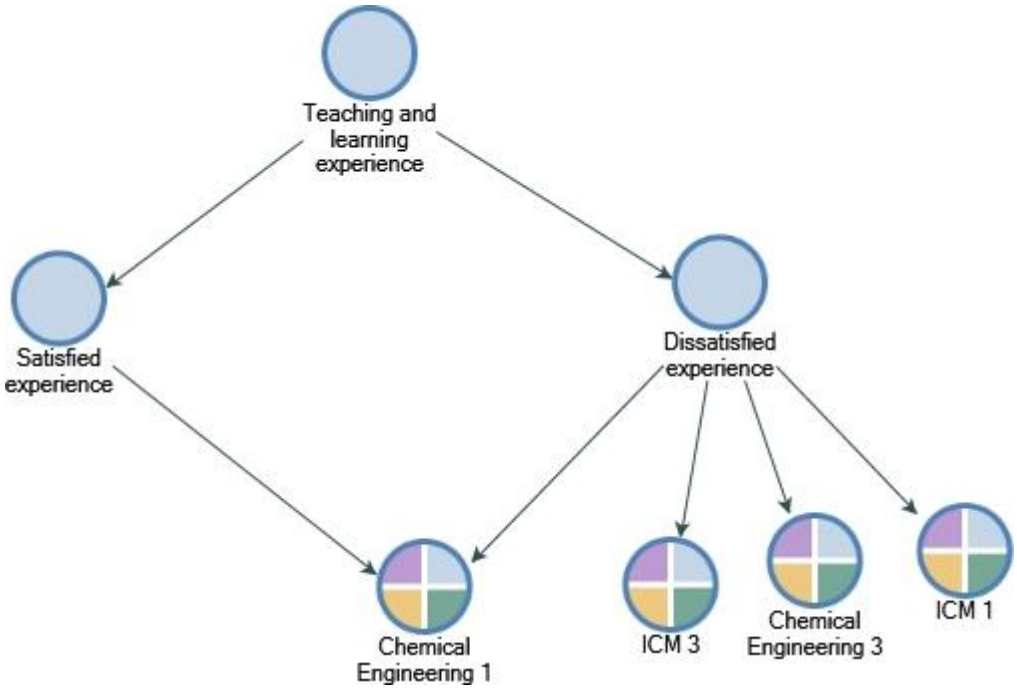
Table 4. 5: Matrix coding showing student's perception of the learning environment

	A: Chemical Engineering (First year)	B: Chemical Engineering (Third year)	C: ICM (First year)	D: ICM (Third year)
1: **Relationship between learning environment and experience**				
c: Both positive and negative	1	0	0	0
b: Negative	0	0	3	0
a: Positive	3	3	0	2
2: Student expectations	4	2	2	1
3: Student experience	3	2	1	1

4.2.2.5 Theme 5: Teaching and learning experience

As stated by Hart and Coates (2011: 57) “understanding service complexity is especially important in education, where students are tasked with evaluating intangible products over a prolonged period”. As such, this theme explores from the perspective of the students their teaching and learning experiences in the respective departments. This theme is discussed under two subthemes, namely satisfied and dissatisfied experience (Figure 4.3).

Figure 4. 3: Visualization of theme 5 (teaching and learning experience)



Subtheme 1: Satisfied experience

Extant literature suggests that the effective handling of complaints and service recovery efforts result in satisfaction, trust, commitment, positive word of mouth, and consumer retention (Vázquez-Casielles, Suárez Álvarez, and Díaz Martin 2010: 487). This, Hart and Coates (2011: 57) indicated could improve teaching and learning experience in the education sector. Consistent with this, Chemical Engineering third-year students attributed their satisfying experience to staff caring attitudes and courteous behaviour. One student mentioned that she had an accident while she was

going down the stairs; staff were there to assist her. Another student reveals the following:

> *I was satisfied with the manner my application was handled as much as I had issues with CAO. I then had to register with another department and I later received a call from the CE department to come and register. The process was made so seamless and smooth* ***(#CE, first year).***

Other studies had noted that for effective service delivery, professors should possess the most important attributes of good service recovery, i.e. knowledgeable, empathetic, friendly, helpful, reliable, responsive, and expressive (Voss 2009: 156; Voss *et al.* 2010: 615). Consistent with this, students shared experience of academic support of module "Fundamentals" in the Chemical Engineering program, where students had done badly on a test, the lecturer decided to intervene by dedicating 3 to 5 hours to assist the students to learn the module and they ended up doing better in the second test and assignment.

The above revelation aligns with the concept of student-centred support teaching and learning and thus demonstrates the empathic nature of the lecturers.

Subtheme 2: Dissatisfied experience

Kim (2007: 76) theorised that service failure occurs when consumers are dissatisfied with the service delivery system. Chahal and Devi (2013: 213) reveal that service failure in the higher institution may relate to teaching, examination, library, laboratories, infrastructure, administration, and other miscellaneous services such as hostel facilities and canteen. Consistent with this, it was uncovered that many of the students interviewed were dissatisfied with the lecturers teaching ability, the number of students in the classes, lecturers' response, and infrastructures such as bathrooms and lecture venues.

(a) Dissatisfied with the teaching abilities of lecturers

In terms of the lecturers teaching abilities, students lamented that some of the lecturers are clueless about the subject content. One of the first-year Chemical Engineering students reveals an incidence where the lecturer struggled to solve a problem, thus leading to student dissatisfaction.

> *In some modules, lecturers seem to be clueless about the subject content. This was evident in one computer lecture where the lecturer couldn't solve a*

computer problem during the lesson. The whole class was very dissatisfied because if the lecturer doesn't know how to perform the actions, how are we supposed to learn from him? [He queried]. Most of the class resorted to learning it by themselves ***(#CE, first year)****.*

Sharing a similar sentiment, another student illuminated the following:

Dissatisfied with the Physics lecturer - does not seem so hands-off with the course, cannot explain during the learning, only refer to slides ***(#CE, first year)****.*

Students from the Information and Corporate Management also express similar dissatisfaction with the lecturers teaching abilities.

Issues with Business Fundamentals - The lecturer's overall presentation of the course is very poor, the lecturer is not patient, cannot interact or student attention, have attitude, poor teaching skills ***(#ICM, first year)****.*

(b) Dissatisfied with lack of tutor and or use of tutor

Equally, a student raised the concern of their dissatisfaction with the lack of a tutor in a particular module. In one of the student views, students easily understood tutors when compared to lecturers in some modules.

One of the core modules does not have a tutor, the lecturer teaches and is a tutor at the same time. This is concerning because in some modules we understand tutors more than the lectures ***(#CE, first year).***

On the other hand, third-year students from Information and Corporate Management were dissatisfied with tutors handling some courses other than the lecturers. In my view, the lecturer must first explain the concept before handling this with the tutor.

For one of the courses (IMTG301) – Students are taught by the tutor, not the lecturer. The lecturer needs to explain the concept first ***(#ICM, third year).***

(c) Dissatisfied with the overcrowding of lecture venues

Another cause of students' dissatisfaction with teaching and learning is the number of students in classes. Students revealed that some of the lecture venues are overcrowded with students. It is worth clarifying that the aforementioned overcrowding of lecture venues happens in certain modules and not all modules have such large classes.

*The class group is very huge (±400 students) and is very difficult to manage; hence students believe that the institution is not doing justice to them or the lecturer **(#ICM, first year)**.*

*Large numbers per group for practical's **(#CE, third year).***

The consequence of overcrowding in the classes was that it makes the learning environment unpleasant for students.

*Overcrowded lecture venues, make a learning environment unpleasant as some students spend the whole lecture standing because the lecture venue cannot accommodate all students **(#ICM, first year)**.*

(d) dissatisfied with the state of lecture venues

Apart from overcrowding, the student also expresses dissatisfaction with the state of the lecture venues.

*The state of lecture venues. There are large student numbers and the venues are not able to accommodate the students to an extent that some students will have a lecture sitting on the stairs or standing. There is no ventilation, poor lighting, broken chairs, poor WIFI connectivity, smartboard, and projector not working **(#CE, third year)**.*

The above suggests a poor service delivery in terms of infrastructure. This is reinforced by the concern about the state of the bathrooms in some of the lecture venues which the students indicated to be unpleasant.

*Bathrooms – In some areas, like the S Block, the state of bathrooms is not pleasant **(#CE, third year)**.*

(e) Dissatisfied with workload and timetables

The workload is another area of dissatisfaction uncovered in the interview. It was revealed that students are having challenges attending the general education modules, as many believe it is additional courses for them, which is unnecessary.

*As much as the curriculum has been enriched with other modules outside the department like the General Education modules, these modules have a lot of work and most students don't feel motivated to attend them. The work overload is not manageable. Students believe that these are additional courses that they are not necessary to do as most students don't attend them **(#ICM, third year)**.*

Students were also dissatisfied with the manner of timetable changes. Many of the third-year Chemical Engineering students interviewed stressed that timetables constantly change, and these changes are poorly communicated to the students. This subsequently results in students missing classes.

> *Timetable changes now and again and in most cases, this is not communicated to students properly. In most cases, this affects students as they miss some of the lectures trying to locate the correct venue* ***(#CE, third year).***

(f) Dissatisfied with incessant strikes

Another cause of student dissatisfaction uncovered is the incessant strikes witnessed at the University. This was revealed to affect the learning process.

> *Staff and student strike at the beginning of each academic year – This affects the learning process and more time is wasted during this time and as a result, this affects the academic year. No additional time is made on the university calendar to cover this* ***(#CE, third year).***

Poor response time and support were also a cause of students' dissatisfaction with the teaching and learning process.

> *Not getting feedback after assessments, as students are unable to see areas of improvement in time* ***(#ICM, first year)****.*

Added to the above, the lecturers' lateness to lectures was also a dissatisfying experience for the students.

> *Some lecturers came late to class and leave early before the period finishes especially for double periods* ***(#CE, third year)****.*

Voss *et al.* (2010: 615) reveal the causes of service failure in the education sector to include failures in the core services that students expect to receive such as delayed services in the classroom, faculty who is not available during office hours or come late to scheduled meetings with a student. Consistent with this, it can be drawn from the above statements that the lecturer's poor response to students constitutes service delivery failures which Voss and his team typified as Group 1 service delivery failures.

Equally essential, Voss *et al.* (2010: 617) noted that failures of faculty to respond to student needs and requests constitute Group II service delivery failures. As such, it is sufficient to say that students' complaints of assistance for online learning modes constitute service delivery failures.

> *Access to online learning modes like Moodle – Most lectures use Moodle as a learning platform to share information but some students will complain about getting access. When this is followed up or queried with the lecturer, the student is taken from one person to the next* ***(#CE, third year).***

Table 4.6 provides a matric comparison of the dissatisfied and dissatisfied experiences based on the student's level of study and their department. It emerged that more of the third-year Chemical Engineering students had dissatisfying experiences with the teaching and learning experience. Only first-year Chemical Engineering students report satisfying experiences.

Table 4. 6: Matric coding showing dissatisfied and satisfying teaching and learning experiences

	A: Chemical Engineering (First year)	B: Chemical Engineering (Third year)	C: ICM (First year)	D: ICM (Third year)
1: Teaching and learning experience	0	0	0	0
2: Dissatisfied experience	3	7	3	2
3: Satisfied experience	3	0	0	0

4.2.2.6 Theme 6: Link between academic curriculum and industry

When the students were asked if they think the learning approach and academic curriculum prepares students enough to meet the demand of the industry, many of the third-year students were affirmative. For example, students reveal that the new curriculum and qualifications are enriched with courses that prepare them to meet the demands of the industry.

> *Yes, the department has done very well in terms of curriculum development. The introduction of the BEngTech that started in 2017 is enriched with courses that prepare students sufficiently to meet the industry demands* ***(#CE, third year).***

Equally, students noted that the practical component of the curriculum is relevant to

the work environment.

> *The curriculum has a lot of practical components in each module which assists students to have a clearer understanding of the subject content and its relevance to the work environment* ***(#CE, third year)****.*

The learning approach provided by the curriculum encourages independent learning.

> *The learning approach or style encourages students to be independent and own their learning through individual research and group presentations* ***(#CE, third year).***

Owing to the above, students accentuate that the nature of the courses stimulates their creativity.

> *The nature of the course does not just train students to think outside the box, it trains them to create the box and think outside* ***(#CE, third year)****.*

Most students agreed that they believe that they are well trained to face the demands of the industry.

> *The curriculum is rich, sufficient, and covered all aspects to groom and shape them to be useful from day one in an organisation* ***(#ICM, third year)****.*

> *A lot of courses have emerged that are diverse like the General Education modules which supplement the courses that are offered at the department. These courses taught students are other things that required in the working environment and to be able to work with other people, students to be independent thinkers* ***(#ICM, third year).***

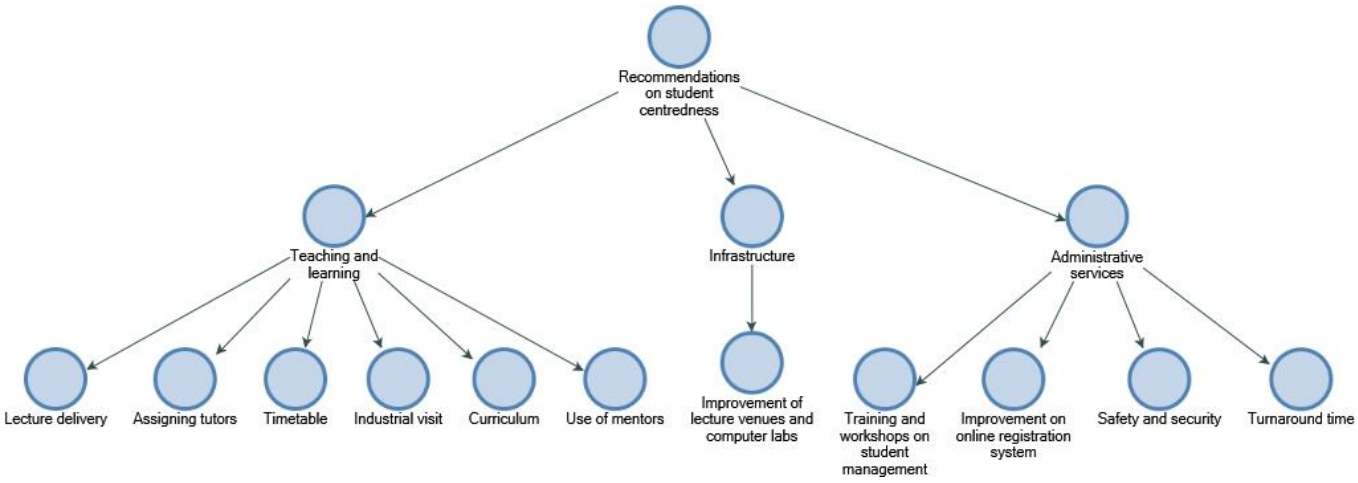
Many of the first-year students were indifferent to the question of the curriculum and industry. In their defense, they argued that they have only been at DUT for a couple of months, and have not been exposed to enough to accurately answer this question. Nevertheless, a first-year student from Chemical Engineering reveals a handful of people who have been to DUT and are now in the industry and they seem quite capable of handling their jobs.

From the above statements, one could draw out that the curriculum is highly adequate to meet industry demands. One may also conclude that the overall experience described is very much student-centered.

4.2.2.7 Theme 7: Student centredness recommendation

Part of the findings emerging from the interviews with the students was the concern of service quality delivery and its negative consequence on students' teaching and learning experiences. Owing to this concern, students were asked in their experience if there is any aspect they would like to see improved concerning either the administrative or the service delivery of teaching and learning they have experienced at the University. Figure 4.4 provides a visible illustration of the student's recommendation for teaching and learning, infrastructure, and administrative services.

Figure 4. 4: Visualization of theme 6 (students-centred teaching and learning recommendations)



Subtheme 1: Recommendation for teaching and learning

(a) Assigning tutors

Part of the cause of student dissatisfaction uncovered was the concern of tutors. Some students express that they understood the tutors in some modules more than the lecturers. As such, some of the students recommended the assigning of tutors to all courses.

> *All courses should be allocated to the tutors as this will help students to consult even outside the lecture period* ***(#CE, first year).***

While the use of tutors is important and recommended, a third-year student from the Information and Corporate Management cautions that there must be a clear distinction between their duties and roles.

> *There has to be a clear distinction between the duties of the tutors as some course tutors end up taking up lecturing the courses **(#ICM, third year)**.*

(b) Splitting students into groups

Another emerging challenge for student dissatisfaction was the concern of overcrowding in the classes. Hence, it was recommended that students be split into separate groups.

> *Split students into groups and have lecturer assistants. This will assist with the issue of overcrowding at lecture venues **(#ICM, first year)**.*

(c) Curriculum

While many of the third year students appear to be satisfied with the curriculum, particularly its link to the industry, nonetheless, the following was recommended:

> *The curriculum is to be constantly improved to ensure it aligns with the demand of the industries **(#CE, third year).***
>
> *Combine courses with similar or the same outcomes to avoid repetition and reduce workload for students **(#ICM, third year).***

(d) Industrial visit

Industrial experience is part of university teaching and learning in the form of Work-integrated learning (WIL). This, however, comes towards the final year of the student's higher education. As such, the students recommended embarking on the industry visit early to gain much-needed industrial experience.

> *Embark students on Industry visits early to get exposure to what is happening outside work and what they should expect when they graduate and go to the workplace **(#CE, first year).***

Students to be taken for industry visits so they get the feel of what to expect when they graduate from the course ***(#CE, third year).***

(e) Lecture delivery

Many of the first years raise a concern about the lecturer's abilities to deliver lectures. One of the concerns raised is that some of the lecturers refer them to slides without engaging them in the class. Hence, the following was recommended:

Lecturers should try and be more active in their subjects, instead of simply reading from their slides that come to class with that confidence showing that they have prepared for the lesson, engage the students during the learning process by giving meaningful questions for discussion ***(#CE, first year)****.*

Students do not understand the lecturer in terms of the overall presentation of the course hence they would suggest that the lecturer be changed and the course be given to a senior or experienced lecturer ***(*****#CE, first year).**

(f) Timetable

Part of the causes of student dissatisfaction uncovered was the constant changing in the timetable. Hence, an improvement in the timetable system was suggested to avoid students missing out on their lectures.

More improvement is needed on the timetabling system. There are clashes and changes and students are not informed in time of the changes. This causes a lot of frustration as some students end up not attending some lecturers as they are up and down trying to locate the venues ***(#CE, first year).***

Timetable to be done in a way that caters for any changes that do not affect students to an extent that they miss some of the lectures because of the clashes ***(#ICM, first year).***

Improvement on timetable coordinating ***(#CE, third year).***

Timetabling system must be improved, to avoid clashes and the student being taken from pillar to post and sometimes losing some to the lecturers because of clashes on the timetables ***(#ICM, third year).***

(g) Use of mentors

Students advocated the use of previous students who had made a success in the field to motivate others.

Invite experts in the field or even previous students who have made it in the field to come and share their experiences. This will not only motivate the students to complete the course but will may also motivate them to study further ***(#CE, third year).***

Subtheme 2: Recommendation for administrative services

(a) Improvement of the online registration system

The COVID-19 pandemic has caused a shift in higher education from contact administrative services to the online platform. This shift has created many challenges for students including registration. Student articulated their challenges faced in using the online system for registration and therefore recommended its improvement.

Improvement on the online registration system ***(#CE, third year).***

Improved online system during the registration period beginning of every year to avoid long unnecessary queues ***(#ICM, third year)****.*

(b) Safety and security

Safety and security are other aspects of student concerns. Students highlighted that they do not feel safe with the institution, in lecture venues, and within the premises because of the high rate of crime and incidents related to safety. As such advocated for the improvement of safety and security within the campuses.

Improve the safety and security within the campus and lecture venues ***(#ICM, third year)****.*

(c) Training and workshops on student management

Part of the concern emerging from this study is that students consider administrative and support staff to be non-supportive. As such, students advocated for training and workshops for administrative staff on students management.

Support staff from departments like finance staff that assist during the registration peak period need proper training on how to deal with students especially first years as they are new to the environment and may need some little patience when giving them instructions or telling them where to go ***(#CE, first year)****.*

Staff from the support department to well trained on how to deal with students or the general public ***(#CE, third year).***

Administrative Staff that assist during the registration peak period must be well trained ***(#ICM, third year).***

Administrative staff or front desk staff to be taken on regular workshops or training on how to deal with students or customers that visit the department ***(#ICM, third year).***

(d) Turnaround time

Service failure due to response time-poor response time is noted in the literature. To help address the lapses in response time, students advocated the introduction of turnaround time for communication with students.

Department may introduce a response and turnaround time for communication with students. For example, the maximum time for responding to students' queries on email and any document left at the department for signatures ***(#ICM, third year)****.*

(e) Infrastructure

Students highlighted the state of the lecture venues, and bathroom as the cause of service delivery dissatisfaction. As such, students recommended the improvement of lecture venues, including the computer laboratory, making provisions for disabled students, improving the WIFI connections, especially in lecture venues, and teaching aids amongst others.

Improvement of lecture venues and computer labs. Improvement on facilities like the state of lecture venues is not satisfactory most lecturer venues are not able to accommodate all the students, some are without chairs or they are broken ***(#CE, first year).***

A computer laboratory center with tutors or assistants where students can get access to get more practice on computer usage ***(#ICM, first year).***

Improved lecture venues with appropriate teaching aids ***(#ICM, first year).***

Improved infrastructure - lecture venues, computer labs ***(#CE, third year).***

Improved infrastructure. For example, provide more lecture venues that accommodate student numbers and must have appropriate teaching aids like smartboards, WIFI connection, chairs and tables, and the venue capacity ***(#ICM, third year)****.*

All venues need to be accessible and user-friendly even to accommodate students with different disabilities ***(#ICM, third year).***

The previous section captured the views of first and third-year students in a focus group discussion drawn from the Chemical Engineering and Information and Corporate management on the extent of student-centred teaching and learning at the selected university. The discussion now shifts to an in-depth interview with the academic staff (HoDs) from the selected university.

4.3 Interview with academic staff

This section details the outcome of the data gathering process, reports the results, and discusses the findings obtained from the semi-structured interviews with staff purposively selected from two departments namely Chemical Engineering and Information and Corporate Management in the selected university.

4.3.1: Emerging themes and subthemes from the semi-structured interviews with staff participants

The analysis of the data gathered from the semi-structured interviews resulted in the identification of the themes and subthemes highlighted in Table 4.7.

Table 4. 7: Themes and subthemes emerging from the interviews

Theme	Sub-theme
1. Implementing student-centered learning policies	*Challenges of implementing SCL policies* *Interventions* *Benefits of SCL adoption* *Subtheme 4: Satisfactory implementation of SCL*
2. Satisfactory implementation of SCL	

3. *Influence of academic curriculum on quality of teaching and learning*	
4. Academic support system for students	
5. The link between teaching and learning approach, academic curriculum, and industry	
6. *Impact of COVID-19 on teaching and learning*	
7. *Recommendations for SCL curriculum development implementation*	

4.3.3.1 Theme 1: Implementing student-centered learning policies

The SCL approach recognizes students' strengths and capabilities, allowing them to make decisions about their education and future. However, data suggests that several obstacles may be impeding the full application of this learning strategy, limiting the benefits to students that it is intended to provide. This theme summarised identified obstacles limiting the implementation of SCL policies at the selected UoT.

Subtheme 1: Challenges of implementing SCL policies

(a) No ownership of the SCL policies

It was uncovered that a lack of ownership of the SCL policies presents a challenge for its implementation.

> *There is an existing policy that was formulated but there is no ownership. It was a top-down approach (Hod 2).*

(b) Lack of clear definition of SCL

Both HoDs agreed that there is a lack of a clear definition of SCL.

> *The biggest problem with the term in DUT is the lack of a clear definition, such that there is no coherent understanding as to what is meant by SCL. Even the people who are driving the idea will provide different views. People from top management have a different view from those at the bottom who have a completely different idea (Hod 2).*

The term is not fully communicated or clearly defined among the university stakeholders hence it makes it impossible to implement it fully (Hod 1).

(c) Limited resources

Both HoDs revealed that resources constraints were a challenge faced by their respective departments in the implementation of SCL policies.

The challenge is mainly limited resources, as the shift from a traditional method of teaching and learning to a student-centred approach requires adequate resources. The state of lecture venues alone is a major issue not for the department but across the institution. Lack of teaching aids in the lecture venues, and large student numbers (HoD 2).

The challenge is mainly limited resources in terms of infrastructure (HoD 1).

(d) Lecturers are reluctant to change lecturing styles from lecturer-centered to SCL

Both HoDs revealed that lecturers' resistance to the SCL policies constitutes an impediment to the implementation.

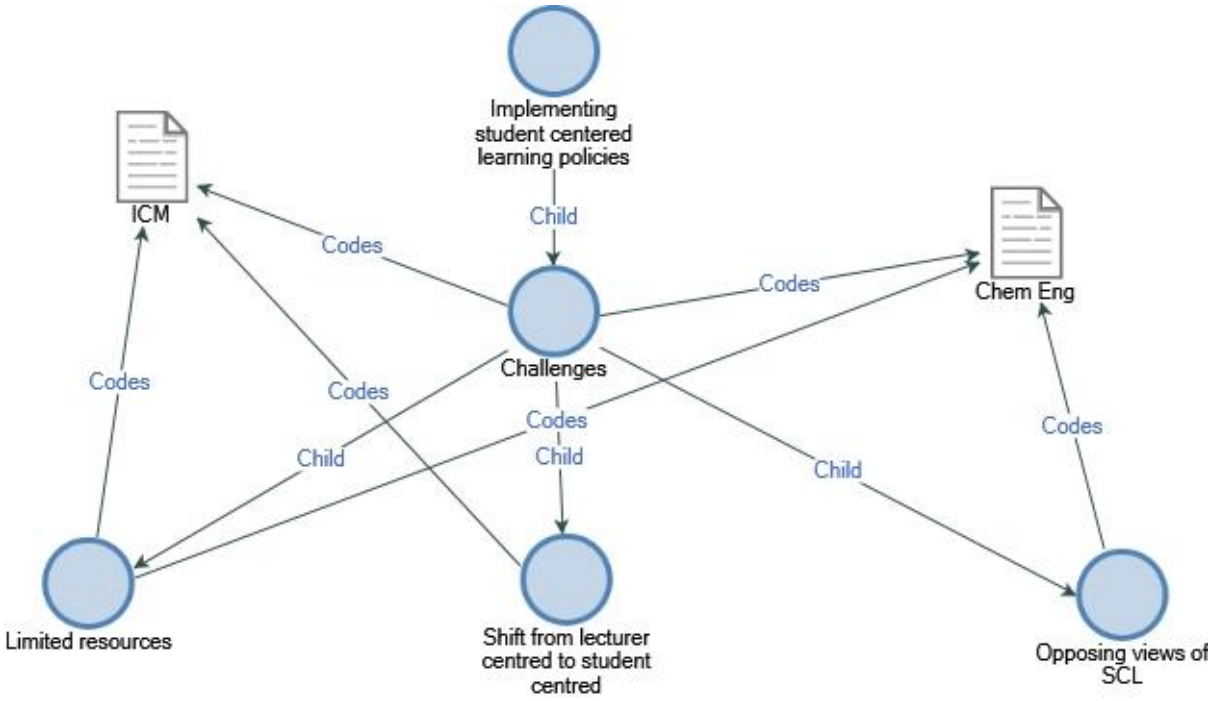
Most staff seem to be reluctant to leave their comfort zone, that is the shift from lecturer-centered, chalk and board method of teaching to student-centered where students are allowed to be at the center of their learning (HoD1).

There is resistance to change as most of the lecturers would only teach the way they were taught … fear the unknown (HoD 2).

(e) Assistance offered to at-risk students is ineffectual.

Tutors and teacher assistance are available for all courses. However, most students don't take it seriously (HoD 1)
A mentorship program is in place which does not seem to be fully utilised as most students do not attend. (HoD 2)

Figure 4. 5: Map visualization of implementing student-centred learning policies.



Subtheme 2: Interventions

There are no shared strengths, but several different positive aspects were noted by each individual HoD:

HoD 1 noted:

A lot of interventions have been put into place to ensure that the SCL is adopted in the department. Among these interventions include:

- Student evaluation questionnaire and Lecturer evaluations

  > *The report from the Student evaluation questionnaire and Lecturer evaluations (SEQ and LEQ) have proved that the department is doing well in terms of service delivery to students (HoD1).*

- WIL component

Besides having to acquire the theoretical component they are also allowed to spend four months in industrial practice (HoD1).

HoD 2 noted

Yes, the new HEQSF aligned qualifications and the GA [Graduate Attributes] route prepares the students enough [for industry].

Subtheme 3: Benefits of SCL adoption

The benefits of SCL uncovered include:

Students can voice their concerns or opinions by following the necessary protocols as a result the complaint rate has decreased substantially over the past years (HoD1).

Graduation rates have increased tremendously; the department was with the highest graduation rate in 2019 (HoD1).

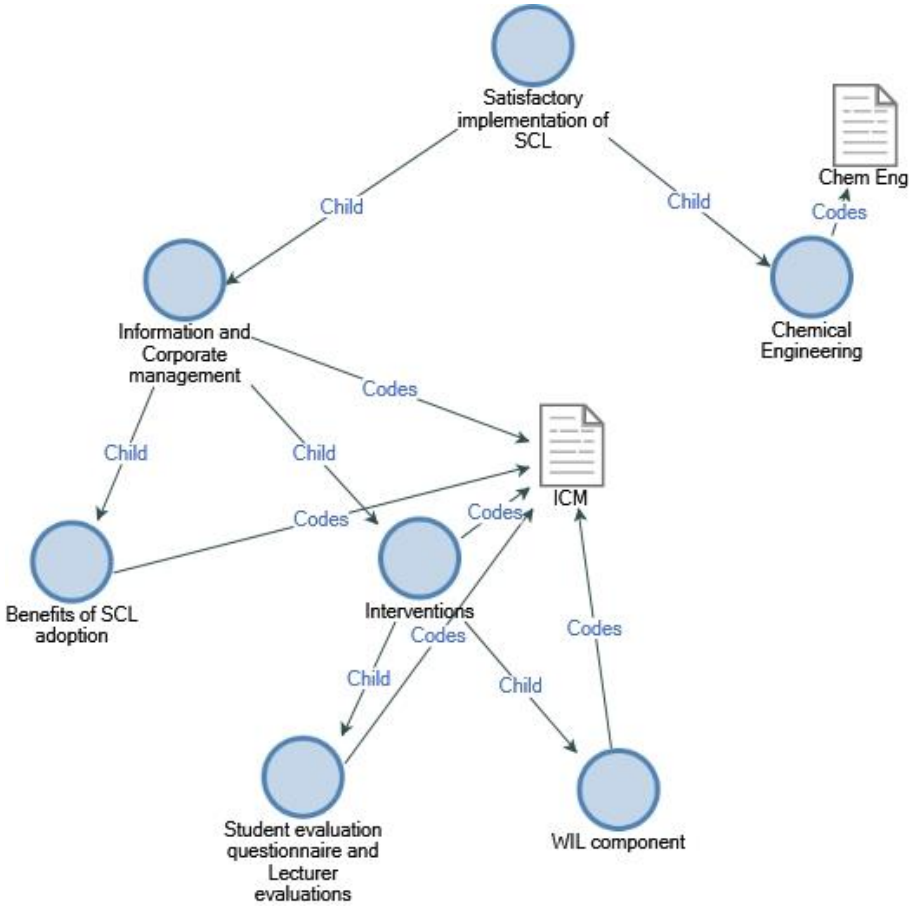
Subtheme 4: Satisfactory implementation of SCL

While HOD1 was confident that the department has satisfactorily implemented the SCL despite the identified challenges, HoD2, however, reveals that there is a uniform vision within the department for its implementation.

The department has to some extent satisfactorily implemented the SCL. This started when the department was doing the curriculum renewal for the new programs. It was ensured that the programs were designed with student-centered learning in mind, for example, the department introduced various modules, incorporated various forms of assessment, and implemented continuous assessment to ensure that students are judged based on one final exam (HoD1, ICM).

The implementation varies from lecturer to lecturer for different reasons. The department has not developed a common vision of what the term means as most lectures have a different understanding (HoD2, CE).

Figure 4. 6: Map visualization of satisfactory implementation of student-centred learning



4.3.3.2 Theme 2: Influence of academic curriculum on quality of teaching and learning

This theme explores the influence of academic curriculum on the quality of teaching and learning from the perspective of the HODs. Several different positive aspects were noted by each individual HoD. These includes:

- Realigning qualification to HEQSF requirement

HoD2 notes:

> *Over the past 5 years, DUT had to re-align its qualifications to the HEQSF requirements and moved from a 151 Nated curriculum where (National curriculum that was specified for institutions to follow) This was developed by convener Technikons. This has been the practice for the past 25 years until the new HEQSF. Every qualification at DUT had to be recalculated (HoD2).*

Added to the above, HoDs illuminates the following:

> *After the HEQSF has passed in Engineering, there were new qualification standards were introduced which defined the level, minimum, credit of qualification, and credit distribution per knowledge area (HoD2).*

- Graduate Attributes

Another important influence of academic curriculum on teaching and learning uncovered is the graduates' attributes. HoD2 noted the following:

> *ECSA came up with a set of Graduate Attributes (GA) which changed the delivery model at the UoT and the traditional universities. This is adopting a certain degree of student-centered learning approach, especially with the GA assessments (HoD2).*

- General Education modules

According to HoD1, the department has introduced new modules which have improved teaching and learning.

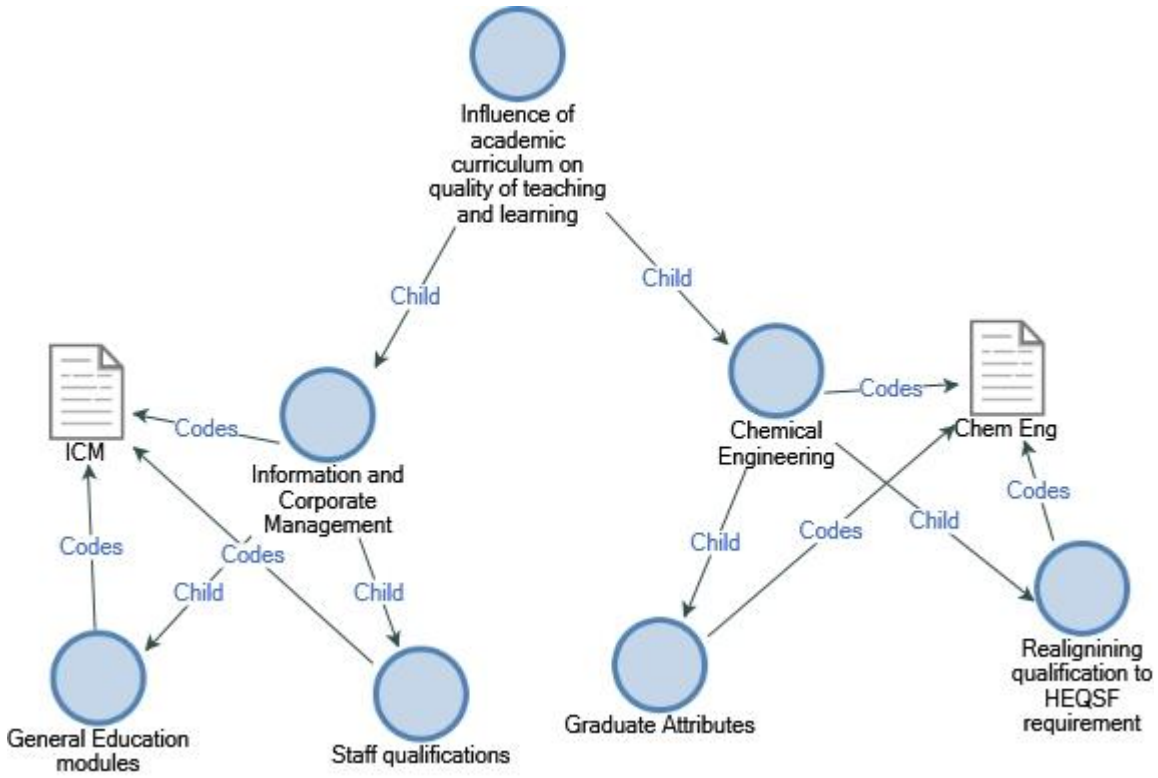
> *The introduction of General Education modules has also capacitated students to be independent learners. Incorporating modules like Project Management, and Financial Management has enhanced the quality of the program (HoD1).*

- Staff qualifications

Another important influence although not connected to the curriculum is staff academic qualification. HoD1 accentuates that:

> *Staff qualifications have improved in such a way that almost all staff have a minimum of a Master's degree and with some pursuing their Doctoral studies.*

Figure 4. 7: Map visualization of influence of academic curriculum on quality of teaching and learning



4.3.3.4 Theme 4: Academic support system for students

An academic support system is vital in SCL. It was uncovered from the respective HoDs that the departments have in place various academic support systems for students. These includes:

- Consultation with HOD

  Students that are considered at risk are identified as per their academic performance and called for one on one consultation with the HoD (HoD2).

- Mentorship program

  The department has a mentorship program in place which does not seem to be fully utilised as most students do not attend (HoD2).

The department has a mentorship program in place which is funded through the University Capacity Development Grant (UCDG). Lecturers are constantly encouraged to identify students who are at risk for early intervention (HoD1).

- Extended Curriculum Programme

Department has introduced the Extended Curriculum Programme (ECP) which is a four-year course, that caters for students who did not make it to the main program (HoD1).

- First-year student experience program

There is a First-year student experience (FYSE). This program assists the student to settle in the university (HoD1).

- Student Counselling support

Students who are academically struggling due to external factors like family issues or personal issues are referred to Student Counselling to get psychological therapy (HoD1).

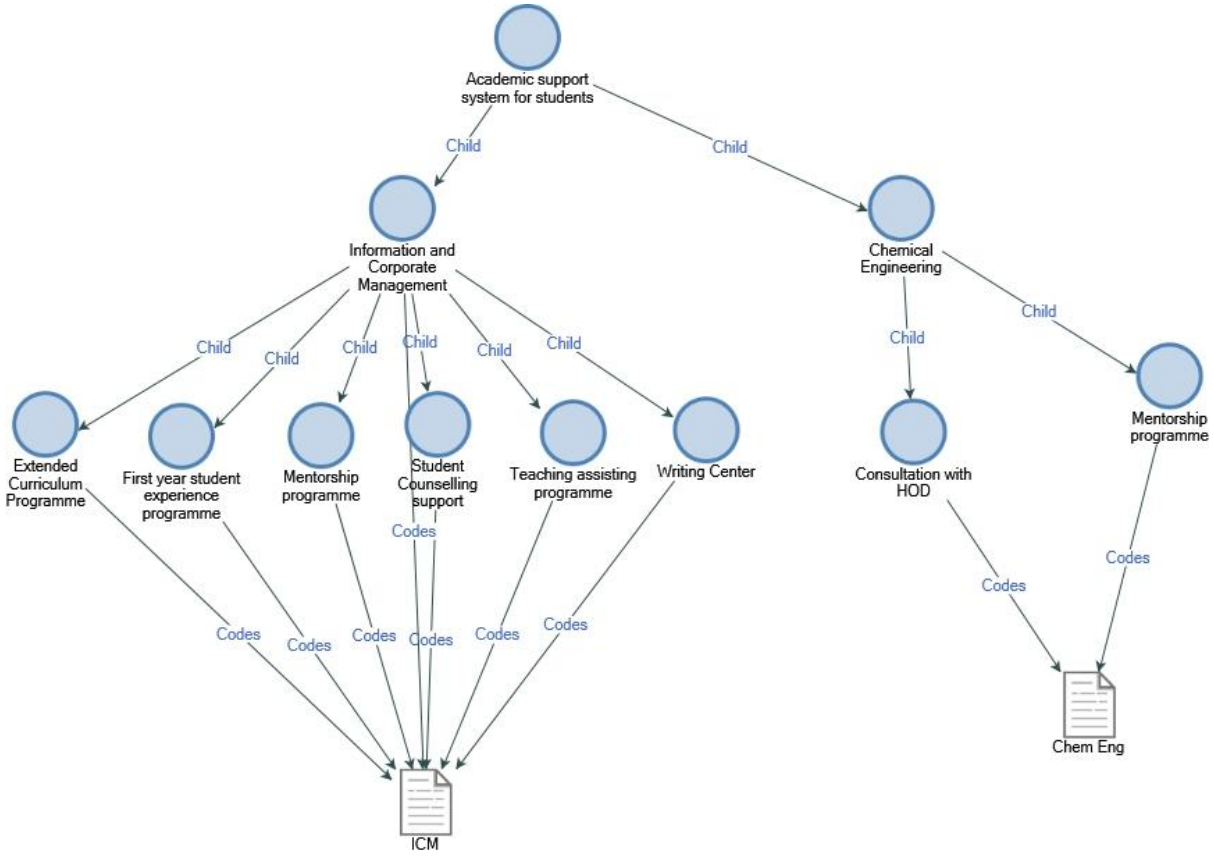
- Teaching assisting program

Through the teacher assistant program that is offered by the University, the department was able to employ 8 teacher assistants who are ensuring that students get all the necessary help they need for their learning (HoD1).

- Writing Center

Students are encouraged to visit the University writing center (HoD1).

Figure 4. 8: Map visualization of academic support system for students



4.3.3.5 Theme 5: Link between teaching and learning approach, academic curriculum, and industry

The link between teaching and learning, academic curriculum, and the industry is a vital component of SCL. The interviews revealed interesting links between the academic curriculum and industry. These includes:

- HEQSF and GA route

HoD2 notes that:

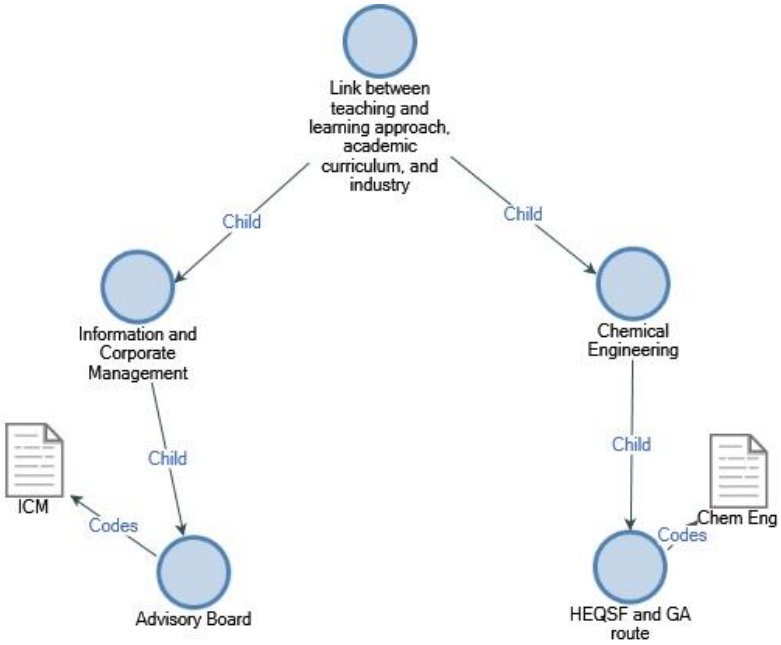
> *The new Higher Education Qualifications Framework (HEQSF) aligned qualifications and the graduate attributes (GA) route prepare the students enough (HoD2).*

- Advisory Board

HoD1 notes that:

Yes, the department has close communication with the employers and business partners who normally consider the students for industrial training. With the introduction of the new qualification (Business and Information Management) students and industry people (Advisory Board) were consulted in the design of the curriculum to ensure that the qualification caters to all aspects as required in the industry. The WIL component was previously 10 weeks but in consultation with the industry partners, it was increased to 4 months (HoD1).

Figure 4. 9: Map visualization of the link between teaching and learning approach, academic curriculum and industry



4.3.3.6 Theme 6: Impact of COVID-19 on teaching and learning

The Covid-19 pandemic became a reality in South Africa around the first week of March 2020, when the media reported the first case in the country. The impact of Covid-19 has been felt in all areas of economic and social life including higher education. It was uncovered from the HoDs that the students have faced several issues among which include internet connectivity, isolation, and lack of data. These are illuminated below.

(a) Internet connectivity

Issues with Connectivity, no or weak internet signal in places where they are No data, get depleted before the next allocation (HoD2).

Internet connectivity issues (HoD1)

(b) Isolation and disconnection

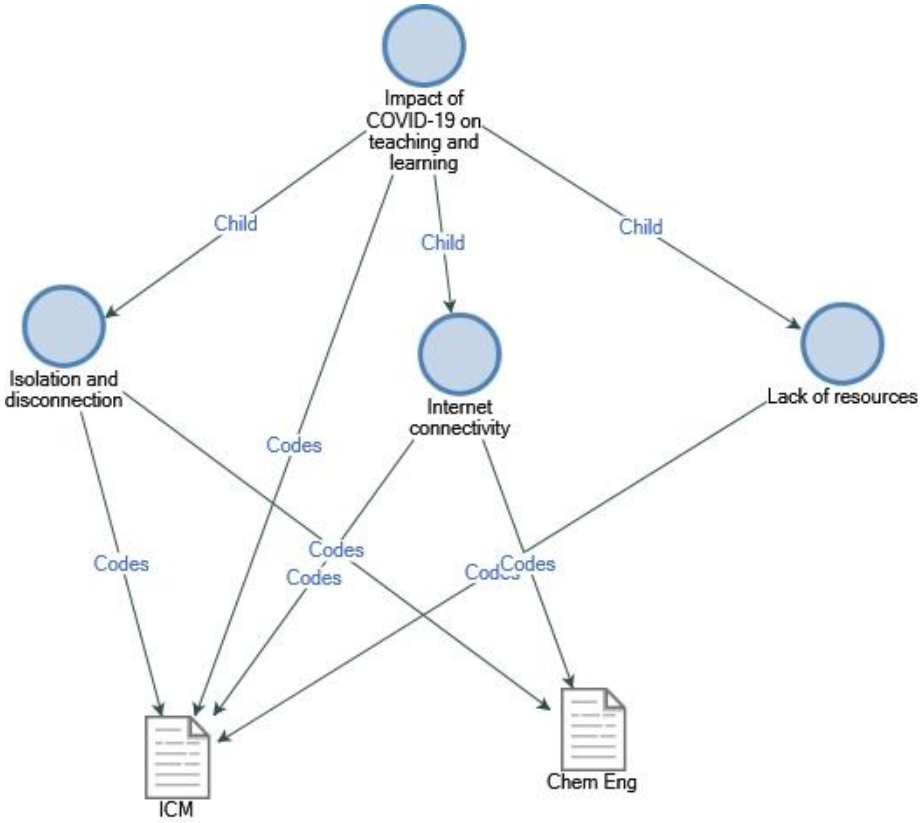
Lack of physical face-to-face contact "out of sight, out of mind" Majority of students come from a rural setting and may require a structured environment. Most Students are finding it very hard to cope. First years, just joined the University, and all of a sudden, they had to go back home and learn on their own and attend the lectures online. The learning environment at home is not conducive for some of them and a lot of them have expressed to desire to come back to campus (HoD2).

Due to the shift from face to a face classroom setting, to online, most students have reported a feeling of isolation and disconnection (HoD1, ICM).

(c) Lack of resources

Limited data and a lack of resources (HoD1, ICM)

Figure 4. 10: Map visualization of Covid-19 impacts on teaching and learning



4.3.3.7 Theme 7: Recommendations for SCL curriculum development implementation

In addressing the challenges of SCL, several different positive aspects were noted by each individual HoD:

- Addressing the institutional issue of research-centric

  An institutional issue - Research is more highly recognized than teaching. High rewards for researching than involved in academic curriculum hence staff tend to focus more on their research than on developing their teaching portfolios (HoD2).

- Common vision and implementation plan

  As a department, develop a common vision and implementation plan toward the understanding of SCL. Develop certain standards. Adopt certain principles about SCL then ensure that it was implementable on things that can be done and measured (HoD2).

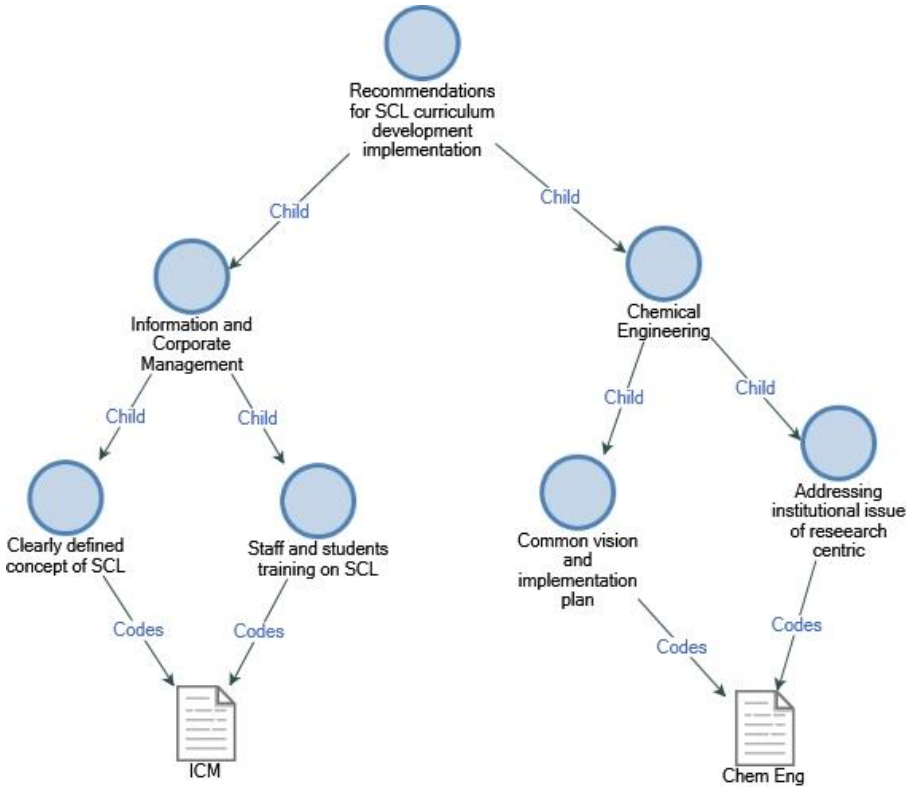
- Clearly defined concept of SCL

  The concept should be clearly defined and communicated from top management down to all stakeholders at the grassroots level (HoD1).

- Staff and students training on SCL

  Training or workshops for students and staff to ensure that there is a common understanding of its application and what meant to achieve (HoD1).

Figure 4. 11: Map visualization of academic staff recommendation for SCL



In summary, the qualitative data identified similar concerns and understanding of a student-centered approach, although the emphasis differed slightly between HoDs and students. It was uncovered that the departments face several challenges in the implementation of SCL among which include a lack of clear definition. More so, and from the focus group session, a mixed view emerged on the level of satisfaction of the students. Generally, most of the students were dissatisfied with the state of lecture venues, infrastructures, and size of classes. The students and HoDs all agreed that

the academic curriculum is sufficiently linked to the industry. Overall, while there was no shared recommendation between the HoDs and students on SCL, several different positive suggestions, were, however, proposed by the students and HODs. The next chapter provides the quantitative results obtained using the questionnaire.

CHAPTER FIVE – QUANTITATIVE PHASE RESULTS

5.1 INTRODUCTION

The previous chapter provided findings uncovered from the qualitative phase. This chapter presents the results obtained from the quantitative phase. The questionnaire was the primary tool that was used to collect data and was distributed to 710 sampled first and third-year students registered at the selected university. The data collected from the responses were analysed with SPSS version 27.0. The results will present the descriptive statistics in the form of graphs, cross-tabulations, and other figures for the quantitative data that was collected. Inferential techniques include the use of correlations and chi-square test values, which are interpreted using the p-values. The traditional approach to reporting a result requires a statement of statistical significance. A p-value is generated from a test statistic. A significant result is indicated with "$p < 0.05$".

5.1.1 The sample response rate

In total, 710 questionnaires were despatched and 486 were returned which gave a 68.5% response rate. Table 5.1 shows that there was a higher response rate from the Chemical Engineering department when compared with the Information and Corporate Management. The low response rate, particularly among respondents from Information and Corporate Management may be attributed to the COVID-19 pandemic which limited students' access to campus except for practicals and laboratory use.

Table 5. 1: Response Rate at selected departments

Department(s)	**Planned sample**		**Realised sample**		**Response rate**	
	First year	**Third year**	**First**	**Third**	**First**	**Third**
Chemical Engineering	103	65	95	64	92.2%	98.5%
Information and Corporate Management	356	189	216	111	60.7%	58.7%
Total	456	254	311	175	68.2%	68.9%

5.1.2 The Research Instrument

The research instrument consisted of 486 items, with a level of measurement at a nominal or an ordinal level. The questionnaire was divided into 6 sections which measured various themes as illustrated below:

1 Biographical data

2 Effect of Current Academic Curriculum on Teaching and Learning

3 Student Experiences of The Impact of Student-Centred Teaching and Learning

4 Student Experiences of Service Quality

5 The Learning Environment and Its Administration

6 Open-ended questions

5.2 Factor analysis

Factor analysis was used to assess the items loaded in the same defined constructs. According to Watkins (2018: 220), factor analysis can help identify common factors that explain the order and structure among measured variables. Exploratory factor analysis making use of principal component analysis (PCA) extraction method and Varimax rotation on each of the 14 items measuring students' understanding of the service delivery of student-centered teaching and learning at the selected university, 16 items related to student experiences of the impact of student-centered teaching and learning, 10 items related to the student experience of service quality, and 5 items related to the learning environment and its administration. Shrestha (2021: 7) reveals that for the condition of EFA, the Kaiser-Meyer value should exceed the value of 0.5, and Bartlett's Test of Sphericity must be statistically significant.

Table 5.2 indicates that the Kaiser-Meyer value for the four constructs exceeded the recommended values while Bartlett's Test of Sphericity was statistically significant, thus supporting the suitability of the correlation matrix. The factor loading and model fitness indexes are summarised in Addendum 3. The factor loading for the construct 'Effect of Current Academic Curriculum on Teaching and Learning' revealed a two-factor dimension explaining 55.5% of the total variance (Addendum 3). This suggests that the 14 statements are loaded into two different dimensions. Factor 1 contained 8 items under the dimension "learning materials and methods". Factor 2 contained 6 items categorised under the dimension "courses and learning".

The factor loading for the construct “Student Experiences of The Impact of Student-Centred Teaching and Learning” revealed a three-factor dimension explaining 57.7% of the total variance (Addendum 3). This suggests that the 14 statements are loaded into three different dimensions. Factor 1 contained 5 items under the dimension “Independent and collaborative”. Factor 2 contained 6 items categorised under the dimension “Motivation and self-confidence”. Factor 3 contained 3 items categorised under the dimension “Academic improvement”.

The factor loading for the construct “Student Experiences of Service Quality” items revealed a clear dimension explaining 52% of the total variance (Addendum 3). This suggests that the 10 statements are loaded into a single dimension categorised as service quality.

The factor loading for the construct “The Learning Environment and Its Administration” items revealed a clear dimension explaining 52% of the total variance (Addendum 3). This suggests that the 5 statements are loaded into a single dimension categorised as the learning environment and its administration.

Table 5. 2: KMO and Bartlett's Test

Question	Section	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity		
			Approx. Chi-Square	df	Sig.
2	Effect of Current Academic Curriculum on Teaching and Learning	0.939	3033.419	91	0.000
3	Student Experiences of The Impact of Student-Centred Teaching and Learning	0.925	3346.301	120	0.000
4	Student Experiences of Service Quality	0.922	2156.209	45	0.000
5	The Learning Environment and Its Administration	0.795	728.567	10	0.000

5.3 Section A: Biographical Data

This section summarises the biographical characteristics of the respondents. The biographical data were collected to help the researcher gain a better understanding of the respondents. The biographic data measured in this study include gender, age, departments, and level of study. The results are now presented in the pages to follow.

5.3.1 Gender by age group distribution

Table 5. 3: Respondents gender per their age group

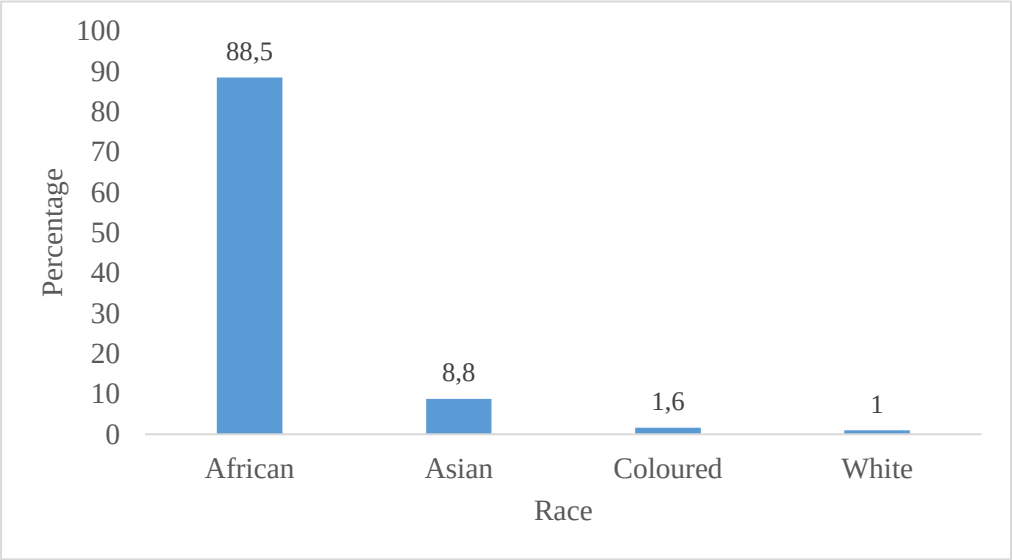
Age in years		Gender		Total	P-value
		Male	Female		
17 – 20	Count	138	155	293	0.000
	% within Age in years	47.1%	**52.9%**	100.0%	
	% within Gender	54.3%	**66.8%**	60.3%	
	% of Total	28.4%	**31.9%**	60.3%	
21 – 23	Count	94	62	156	
	% within Age in years	**60.3%**	39.7%	100.0%	
	% within Gender	**37.0%**	26.7%	32.1%	
	% of Total	**19.3%**	12.8%	32.1%	
24+	Count	22	15	37	
	% within Age in years	**59.5%**	40.5%	100.0%	
	% within Gender	**8.7%**	6.5%	7.6%	
	% of Total	**4.5%**	3.1%	7.6%	
Total	Count	254	232	486	
	% within Age in years	52.3%	47.7%	100.0%	
	% within Gender	100.0%	100.0%	100.0%	
	% of Total	**52.3%**	**47.7%**	100.0%	

Table 5.3 describes the overall gender distribution by age. The result suggests that within the age category of 17-20 years, 52.9% were female. Within the category of females (only), 66.8% were between the ages of 17 and 20. This category of females between the ages of 17 and 20 years formed 12.8% of the total sample. Equally, within the age category of 21 to 23 years, 60.3% were male. Within the category of males (only), 37.0% were between the ages of 21 to 23 years. This category of males between the ages of 21 to 23 years formed 19.3% of the total sample. In terms of the age group 24 and above, 59.5% were male. Within the category of males (only), 8.7% were 24 and above years. This category of males 24 and above constitutes 4.5% of the total sample. The Pearson Chi-Square test indicates that the age distributions are not similar as there are more respondents younger than 23 years ($p < 0.001$). Overall, the ratio of males to females is approximately 1:1 (52.3%: 47.7%) ($p = 0.318$).

5.3.2 Race

The racial composition of the respondents is shown in Figure 5.1.

Figure 5. 1: Respondents racial group



There were significantly more African respondents (88.5%, n=430), compared to the other race groups ($p < 0.001$). The high percentage of African representatives in the study may be attributed to the fact that the selected university is predominantly dominated by Africans and is situated in KwaZulu-Natal.

5.3.3 Level of study

The respondent's study level is shown in Table 5.4.

Table 5. 4: Respondents level of study

	Frequency	Percent
First-year	312	64.2
Third-year	174	35.8
Total	486	100.0

There were near twice as many first-year respondents as there were third-year respondents ($p < 0.001$). It would be more informative to note the actual numbers registered in the third year as opposed to 1st year. The plausible explanation for the significantly fewer third-year students may be attributed to the fact that many students are dropping out before graduating or have failed their main module which prohibited them from progressing to their third year. This aligns with Moodley and Singh

(2015:91) that there is a high attrition rate among students in South African higher education institutions which was attributed to incorrect career choices, inadequate academic support, and insufficient funding.

5.3.4 Department

Table 5.5 indicates the departments of the respondents.

Table 5. 5: Respondents departments

	Frequency	Percent
Information and Corporate Management	326	67.1
Chemical Engineering	160	32.9
Total	486	100.0

There were twice as many respondents from the Department of Information and Corporate Management as there were from Chemical Engineering ($p < 0.001$). This may be attributed to the larger size of students in Information and Corporate Management when compared to Chemical Engineering.

5.4 Reliability Statistics

In the research study, reliability is seen as a key component of the instrument's precision. As a rule of thumb, reliability is computed by taking several measurements on the same subjects. Hence, reliability with a coefficient alpha score above 0.7 is considered acceptable. The calculated Cronbach's α coefficients were used to determine the internal consistency of the constructs in the survey instrument.

Table 5. 6: Reliability of the survey instrument

Question	Section	Number of Items	Cronbach's Alpha
2	Effect of Current Academic Curriculum on Teaching and Learning	14	0.909
3	Student Experiences of The Impact of Student-Centred Teaching and Learning	16	0.909
4	Student Experiences of Service Quality	10	0.897
5	The Learning Environment and Its Administration	5	0.798

Overall	45	0.946

As shown in Table 5.6, the Cronbach's α for the 14 items measuring the effect of the current academic curriculum on teaching and learning was found to be good at 0.909 above the acceptable minimum of 0.70. Similarly, Cronbach's α for the 16 items (α=0.909) measuring student experience of the impact of student-centered teaching and learning as well as the 10 items (α=0.897) measuring student experiences of service quality were also good. In addition, Cronbach's α for the 5 items (α=0.798) measuring learning environment and its administration was found to be above the acceptable value of 0.70. Overall, the Cronbach's α for all 45 items in the survey was found to be excellent. This suggests that there was a level of consistency in the scoring pattern of the respondents.

5.5: Section B: Students' understanding of the service delivery of student-centered teaching and learning at the selected University

5.5.1 Effect of the current academic curriculum on teaching and learning at the selected university

This section deals with the effect of the current academic curriculum on teaching and learning at the selected university. Positive statements (agree and strongly agree) are interpreted as agreement while negative statements (disagree and strongly disagree) are interpreted as disagreement. The mean value below 2.5 is considered agreement, the value between 2.5 and 3.49 is considered neutral while the value that is 3.5 and above is considered disagreement. The results are in descending levels of agreement as follows:

5.5.1.1 Learning material provided is useful

The level of agreement and or agreement for the statement measuring the usefulness of the learning material provided is given in Table 5.7.

Table 5. 7: Respondents rating of the learning materials

Focus Area Question	Rank	The effect of the current academic curriculum on teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
In most cases, the learning material provided is useful	1	28.2%	47.2%	28.3%	7.4%	3.7%	2.12	0.000

Table 5.7 indicates that the majority 75.4% of the respondents agreed (strongly agree=28.2%; agree=47.2%) that in most cases, the learning material provided is useful. It is important to note that 12.8% were neutral while 11.1% in disagreement (disagree=7.4%; strongly disagree=3.7%). The mean value (M=2.12) suggests that there is significant agreement. According to Subandiyah *et al.* (2019: 49), the learning material is among the factors that determine successful learning. Given that there was a positive agreement among the respondents that the learning material provided is useful, it is reasonable to assume that the learning material provided will contribute to the student's academic development and success. This assertion can be corroborated by Subandiyah *et al.* (2019: 49) who said that learning material increases students' motivation in learning, which in turn, could contribute to academic success.

5.5.1.2 Lecturers provide useful sources of information for reference

The level of agreement and or disagreement on the statement measuring the usefulness of the sources of information for reference provided by the lecturers are shown in Table 4.8.

Table 5. 8: Respondents rating of the lecturers providing useful sources for reference

Focus Area Question	Rank	The effect of the current academic curriculum on teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Most of the lecturers provide useful sources of information for reference	2	29%	44.9%	13.8%	8.2%	4.1%	2.14	0.000

Table 5.8 demonstrates that majority 73.9% of the respondents agreed (strongly agree=29%; agree=44.9 %) with the statement which suggests that most of the lecturers provide useful resources of information for reference while 13.8% were neutral, and 12.3% were in disagreement (disagree=8.2%; strongly disagree=4.1%). The mean value (M=2.14) suggests that there is a significant agreement (p<0.001). The finding may be attributed to the fact that learning had shifted from where lecturers, books, and course materials were only the source of information available to open access information and more online materials. This can be corroborated by Persky and McLaughlin (2017: 1) who said that students can independently access more content than ever before, thereby making learning and placement of information critical to promoting learning outcomes.

The above-mentioned authors argued that providing students with a key source of information enables students to engage and learn at their own pace (Persky and McLaughlin (2017: 1). This, and according to Alshahrani, Ahmed and Ward (2017:87), accelerated and change the way students are learning.

5.5.1.3 Alignment between theory and practice

The level of agreement and or disagreement for the statement measuring the alignment between theory and practice is given in Table 5.9.

Table 5. 9: Respondents rating of the alignment between theory and practice

Focus Area Question	Rank	The effect of the current academic curriculum on teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
In most cases and there is an alignment between theory and practice	3	18.1%	56.7%	15.9%	6.8%	2.5%	2.19	0.000

Table 5.9 shows that the majority 74.8% of the respondents agreed (strongly agree=18.1%; agree=56.7%) to the statement that in most cases and there is an alignment between theory and practice. However, 15.9% were neutral while few 9.3% in disagreement (disagree=6.8%; strongly disagree=2.5%). The mean value (M=2.19)

suggests that there is a significant agreement that in most cases there is an alignment between theory and practice (p<0.001). The finding of this study may be attributed to curriculum design which made provision for work-integrated learning. Several scholars view work-integrated learning as an effort to provide students with both practice experience and theoretical knowledge (Larsen *et al.* 2017: 110; Roberts 2018). Hence, and agreeing with Wijngaards-de Meij and Merx (2018: 219), curriculum alignment between theory and practice is critical in realising the objectives of student-centred teaching and learning. This supports Westbury *et al.* (2005: 475) who said that in educational programs, theoretically and practically oriented courses are inextricably linked together.

5.5.1.4 Use of several methods of teaching

The respondents level of agreement and or disagreement with the statement measuring most lecturers use several teaching methods to help them learn is given in Table 5.10

Table 5. 10: Respondents rating of the use of several methods of teaching

Focus Area Question	Rank	The effect of the current academic curriculum on teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Most of the lecturers use several methods of teaching to help me learn (e.g. PowerPoint display, visual display, flipped learning)	4	19.1%	56%	13.2%	7.6%	4.1%	2.22	0.000

Table 5.10 demonstrates that the majority 75.1% of respondents believed (strongly agree=19.1%; agree=56%) that most of the lecturers use several methods of teaching such as PowerPoint display, visual display, flipped learning to help them learn, 13.2% were neutral while 11.7% were in disagreement (disagree=7.6%; strongly disagree=4.1%). The mean value (M=2.22) suggests that there is a significant agreement that most lecturers use several methods of teaching such as PowerPoint display, visual display, and flipped learning to help them learn (p<0.001). The Department of Higher Education and Training (DHET 2013: 30) highlights that

universities are required to improve learning opportunities through diverse modalities that increase student access and success in higher education. Consistent with this, the finding of this study indicates that the selected university uses several methods of teaching. Hence, and agreeing with Wang and Zhang (2019:583), it is sufficient to assume that different teaching methods would give rise to different types of learning experiences.

5.5.1.5 Courses delivered as outlined in the syllabus guide

The respondents level of agreement and or disagreement that courses are delivered as outlined in the syllabus guide is shown in Table 5.11.

Table 5. 11: Respondents rating that the courses are delivered as outlined in the syllabus guide

Focus Area Question	Rank	The effect of the current academic curriculum on teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Most courses are delivered as outlined in the syllabus guide	5	15.2%	56.8%	16.7%	7.6%	3.7%	2.28	0.000

Table 5.11 indicates that the majority 72% of respondents agreed (strongly agree=15.2%; agree=56.8%) with the statement that most courses are delivered as outlined in the syllabus guide while 16.7% were neutral, and few 11.3% in disagreement (disagree=7.6%; strongly disagree=3.7%). The mean value (M=2.28) indicates that there was a significant agreement that the courses are delivered as outlined in the syllabus guide. The finding is particularly important given that the syllabus works as a guide to students (Young-Jones *et al.* 2021: 544). It thus means that delivering courses as outlined in the syllabus guide will adequately inform students on the learning process and outcome (expectations). This resonates with Ndlovu (2017:18) who cautioned that if students are not properly guided much time can be lost without meaningful learning happening.

5.5.1.6 Lecturers explain the relevance of the course to the work environment

The respondents level of agreement and or disagreement that most lecturers explain the relevance of the course to the work environment is shown in Table 5.12.

Table 5. 12: Respondents rating of the statement lecturers explain the relevance of the course to the work environment

Focus Area Question	Rank	The effect of the current academic curriculum on teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Most of the lecturers explained the relevance of the course to the work environment	6	20%	49.2%	16.5%	9.9%	4.5%	2.30	0.000

Table 5.12 indicates that many 69.2% of the respondents agreed (strongly agree=20%; agree=49.2%) with the statement that most of the lecturers explained the relevance of the course to the work environment. It is important to note that 16.5% were neutral while a few of the respondents 14.4% disagreed (disagree=9.9%; strongly disagree=4.5%). The mean value (M=2.30) suggests that there was significant agreement that lecturers explain the relevance of the course to the work environment ($p<0.001$).

From the above finding, one could be assumed that just under 70% (meaning that 30% either disagreed or were neutral about it) – is fairly poor in a UoT setting where the main objective is to prepare students for the world of work. Hence, at least 95% of the students must have a clear understanding of the course and how it applies to the work environment. This assertion aligns with Jackson, Fleming and Rowe (2019: 459) who said that when learning is created in the classroom, it is important that students find meaning in the learning and actively connect it with the work environment. Hence, it is reasonable to assume that lecturers explaining the relevance of the course work to the work environment will adequately motivate and prepare students on how to deal with the work environment. This can be further corroborated by other scholars that higher education had been called on to train students to become capable of dealing with the work environment (Delaney *et al*. 2017: 214; Longmore, Grant and Golnaraghi 2018: 197; Mishra and Mehta 2017: 6).

5.5.1.7 Explanation of the syllabus of each course at the beginning of the course

The respondent's level of agreement and disagreement that the syllabus of each of the courses was well explained at the beginning of the courses is shown in Table 5.13.

Table 5. 13: Respondents rating of the statement measuring explanation of syllabus of each course at the beginning

Focus Area Question	Rank	The effect of the current academic curriculum on teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
The syllabus of each of the courses was well explained at the beginning of the course	6	16.7%	55.3%	14.2%	8.6%	5.1%	2.30	0.000

Table 5.13 shows that the majority 72% of the respondents were in agreement (strongly agree=16.7%; agree=55.3%) that the syllabus of each of the courses was well explained at the beginning of the course. However, 14.2% were neutral while few 13.7% disagreed (disagree=8.6%; strongly disagree=5.1%). The mean value (M=2.30) suggests that there was a significant agreement that the syllabus of each of the courses was well explained at the beginning of the course ($p<0.001$). The finding is worrisome given that not all the students feel that they know where the course is going and why they are going to benefit from doing it. According to Young-Jones *et al.* (2021: 544), the syllabus serves as a course roadmap as it outlines everything higher education students need to know to receive a passing grade. Hence, all students must be acquainted with the syllabus of each course at the beginning of the course as this will help maintain standards of accountability and a commitment for the students.

5.5.1.8 Courses stimulated enthusiasm for further reading

The respondent's level of agreement and or disagreement that most of their courses have stimulated enthusiasm for further learning is given in Table 5.14.

Table 5. 14: Respondents rating of the statement courses stimulated enthusiasm for further reading

Focus Area Question	Rank	The effect of the current academic curriculum on teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Most of my courses have stimulated my enthusiasm for further learning	7	17.7%	48.8%	20.8%	8.8%	3.9%	2.33	0.000

Table 5.14 indicates that 66.5% of the respondents agreed that most of their courses have stimulated their enthusiasm for further learning (strongly agree=17.7%; agree=48.8%). On the other hand, 20.8% of others were neutral while a few 12.7% disagreed (disagree=8.8%; strongly disagree=3.9%). The mean value (M=2.33) suggests that there was a significant agreement that most of the courses have stimulated their enthusiasm for further reading ($p<0.001$). One of the hallmarks of a student-centered academic curriculum is that it encourages active learning of students (Tursunov 2016:65)**.** Hence, it can be said that the agreement among the respondents that courses stimulate enthusiasm for reading may be attributed to students being allowed to explore different learning methods and be able to develop the confidence to investigate new ideas. This view supports Nghia *et al.* (2020: 190) who said that in student-centered teaching and learning, students should construct knowledge rather than being passive recipients of knowledge.

5.5.1.9 Clear communication about the information on assessments

The respondents level of agreement and or disagreement that the information about assessments is generally communicated is shown in Table 5.15.

Table 5. 15: Respondents rating of the statement courses stimulated enthusiasm for further reading

Focus Area Question	Rank	The effect of the current academic curriculum on teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Information about assessments is generally communicated clearly	8	17.7%	48.8%	20.8%	8.8%	3.9%	2.33	0.000

Table 5.15 shows that 68.7% of the respondents agreed (strongly agree=16%; agree =52.7%) that information about assessments is generally communicated clearly. It was also uncovered that 27.8% of the respondents were neutral while 15% disagreed (disagree=8%; strongly disagree=7%). The mean value (M=2.37) suggests that there was a significant agreement that information about assessments is generally communicated clearly. The finding is highly critical as it has been suggested in the literature that poor communication of assessment might hamper students learning improvement (Smith *et al.* 2015: 16).

5.5.1.10 Availability of lecturers during consultation times outside of class

The respondents level of agreement and or disagreement that most lecturers are available during consultation times outside of class is shown in Table 5.16.

Table 5. 16: Respondents rating of the statement availability of lecturers during consultation times outside of class

Focus Area Question	Rank	The effect of the current academic curriculum on teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Most lecturers are available during consultation times outside of class	9	14%	53%	16.3%	8.5%	7.8%	2.43	0.000

Table 5.16 indicates that 67% of the respondents believed (strongly agree=14%; agree=53%) that most lecturers are available during consultation times outside of class, 16.7% were neutral while 16.3% disagreed (disagree=8.5%; strongly disagree=7.8%). The mean value (M=2.43) suggests that there was a significant agreement that most lecturers are available during consultation times outside of class. According to Weerasinghe and Fernando (2018: 126), both academics and administrators often connect with students in the learning process. Owing to this, it is sufficient to assume that the availability of lecturers during consultation times outside of class could improve the student's confidence and learning process. Moreover, the lecturer-student relationship has been attributed to contributing to an improvement in students' academic performance (Dube and Mlotshwa 2018:1).

5.5.1.11 Provision of useful, constructive feedback by lecturers to help to learn

The respondents level of agreement and or disagreement that most lecturers provide useful, constructive feedback to help them learn is shown in Table 5.17.

Table 5. 17: Respondents rating on the statement lecturers providing useful constructive feedback

Focus Area Question	Rank	The effect of the current academic curriculum on teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Most lectures provide useful, constructive feedback to help me learn	10	13.2%	44.2%	27.8%	10.1 %	4.7%	2.49	0.000

Table 5.17 indicates that more than half 57.2% agreed (strongly agree=13.2%; agree=44.2%) that lecturers' most lectures provide useful, constructive feedback to help me learn. It is important to state here that 27.8% were neutral while 14.8% disagreed (disagree=10.1%; strongly disagree=4.7%). The mean value (M=2.49) suggests that there was a significant agreement that most lecturers provide useful constructive feedback to help students learn ($p<0.001$). According to Vattøy (2020: 1), feedback, combined with effective instruction can accelerate students learning. Nevertheless, the finding of this study is concerning given the fact that only 57.2%

agreed to the provision of useful, constructive feedback by lecturers. This provides evidence that student-centred learning is not adequately implemented in the institution as constructive feedback to students is one of the key aspects of student-centred learning. The probable reason for the inability to provide timeous feedback may be attributed to the large student numbers.

5.5.1.12 Courses encourage confidence in tackling unfamiliar problems

The respondents level of agreement and or disagreement that most of the courses encourage them to be confident about tackling unfamiliar problems.

Table 5. 18: Respondents rating on the statement courses encourage confidence in tackling unfamiliar problems.

Focus Area Question	Rank	The effect of the current academic curriculum on teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Most of the courses encourage me to be confident about tackling unfamiliar problems	11	11.3%	43.8%	30.2%	10.3 %	4.3%	2.52	0.000

Table 5.18 shows that more than half 54.3% of the respondents agreed (strongly agree=11.3%; agree=43.8%) that most of the courses encourage them to be confident about tackling unfamiliar problems, 30.2% were, however, neutral while 14.6% disagreed (disagree=10.3%; strongly disagree=4.3%). The mean value (M=2.52) measured suggests that there is significant agreement that most of the courses encourage the student to be confident about tackling unfamiliar problems ($p<0.001$).

While Weimer (2012: 440), revealed that student-centered teaching and learning empower students with the confidence to tackle problems they may encounter, the above finding, however, suggests that nearly half of the students believed that the courses did not encourage them to be confident about tackling unfamiliar problems. This is contrary to Weimer (2012: 440) assertion that students feel inspired to tackle problems since they have control of the learning process. It can therefore be said that

students are not making use of these opportunities to increase their retention of the course content. Another probable reason may be that the lecturers are not being successful in presenting core concepts enough for students to tackle very different problems that rely on the same concepts.

5.5.1.13 Manageable workload in courses

The respondents level of agreement and or disagreement that the workload is manageable in most courses is shown in Table 5.19.

Table 5. 19: Respondents rating on the statement manageable workload in courses

Focus Area Question	Rank	The effect of the current academic curriculum on teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
The workload is manageable in most courses	12	11.7%	42.4%	19.1%	19.1 %	7.6%	2.69	0.000

Table 5.19 indicates that more than half 54.1% agreed (strongly agree=11.7%; agree=42.4%) that the workload is manageable in most courses while 19.1% were neutral, and 26.7% disagreed (disagree=19.1%; strongly disagree=7.6%). The mean value (M=2.69) suggests that is significant agreement among the respondents that the workload is manageable in most courses. According to Singhal (2017:5126) student-centered learning, lecturers give students choice and voice in finding ways to provide a learning experience that focus on what students value. The finding of this study suggests that students are uncertain of whether the workload is manageable. This may of course be attributed to students spending much too much time on their social life, and/or too bad time management. This finding is corroborated by Makgobole and Onwubu (2021: 70) who reveal that students with reduced workloads complain of increased social life activities and bad time management in their studies.

5.5.1.14 Provision of immediate feedback by lecturers

The respondents level of agreement and or disagreement that most of the lecturers provide immediate feedback on individual or group work is shown in Table 5.20.

Table 5. 20: Respondents rating on the statement provision of immediate feedback by lecturers

Focus Area Question	Rank	The effect of the current academic curriculum on teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Most of the lecturers provide immediate feedback on individual or group work	13	8.1%	43%	29.6%	14.3 %	15.3%	2.86	0.000

Table 5.20 indicates that 51.1% of the respondents agreed (strongly agree=8.1%; agree=43%) that most of the lecturers provide immediate feedback on individual or group work while 19.4% were neutral, and 29.6% disagreed (disagree=14.3%; strongly disagree=15.3%). The mean value (M=2.86) measured was closest to 'neutral' which suggests that a significant number of the respondents neither agree nor disagree that most lecturers provide immediate feedback on individual or group work ($p<0.001$). This is concerning as lecturers' feedback is critical for ensuring that the students can engage meaningfully with the subject. This is corroborated by Havnes *et al.* (2012: 21) who see lecturers' active involvement in the feedback process as a prerequisite to student engagement. Hence, it is sufficient to agree that the lack of lecturers' provision of immediate feedback to students would decrease their engagement in the learning process. This supports the report of Vattøy and Smith (2019: 261) who said that equitable feedback practices encourage students to provide feedback to teachers about various aspects concerning their learning and development.

In summary, the mean value measured for all the statements suggests that the respondents agreed than disagreed with the above statements measuring the effect of the current academic curriculum on teaching and learning. The statement with the

highest level of agreement was “In most cases, learning material provides is useful” and was therefore ranked 1 while the statement with the least level of agreement was “Most of the lecturers provide immediate feedback on individual or group work” and ranked 13th.

5.5.1.15 Association between socio-demographic variables and the effect of current academic curriculum on teaching and learning

Part of the research inquiry was to compare the differences and or similarities in the effect of the current academic curriculum on teaching and learning at the selected university between the two departments, as well as, the level of study. In an attempt to achieve this, an Independent t-test was computed and the results are summarised in Table 5.21.

Table 5. 21: Association between socio-demographic variables and the effect the current academic curriculum had on teaching and learning

Demographic		N (488)	Mean	Std. Deviation	P-value
Level of study	First-year	312	2.4	.64	0.979*
	Third-year	174	2.4	.79	
Department	Information and Corporate Management (ICM)	326	2.4	.68	0.646*
	Chemical Engineering (CE)	160	2.4	.72	
P* >5% P** <5%					

For the respondent’s level of study, the independent t-test value indicates that there is no statistically significant difference in their views on the delivery of student-centered teaching and learning (P>0.05). This suggests that the views of the respondents regardless of their level of study were more or less the same on the effect the current academic curriculum had on teaching and learning.

In terms of the respondents' department, the Independent t-test indicates that there was no statistically significant difference (P>0.05). This suggests that the views of the respondents regardless of their focus of study – that is whether management or engineering was more or less the same on the effect the current academic curriculum had on teaching and learning. This is important and interesting– as the departments

are very different, one could expect the personalities and approaches of the lecturers to be different.

5.5.2 The experience and impacts of student-centred teaching and learning

This section deals with the experience and impacts of the students of student-centred teaching and learning at the selected university. Positive statements (agree and strongly agree) are interpreted as agreement while negative statements (disagree and strongly disagree) are interpreted as disagreement. The mean value below 3 is considered agreement, and the value above 3 is considered disagreement. The results are in descending levels of agreement as follows:

5.5.2.1 Motivated to do their best work

The respondents level of agreement and or disagreement that they feel motivated to do their best work is shown in Table 5.22.

Table 5. 22: Showing that students feel motivated to do their best

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
I feel motivated to do my best work	1	31.9%	47.1%	10.1%	7.6 %	2.5 %	2.02	0.000

The data in Table 5.22 indicate that the majority 79% of the respondents agreed (strongly agree=31.9%; agree=47.1%) that they feel motivated to do their best. However, 10.9% were neutral while 10.1% in disagreement (disagree=7.6%; strongly disagree=2.5%). The mean value (M=2.02) suggests that there was a significant agreement that student-centred teaching and learning make them feel motivated to do their best work ($p<0.001$). The finding may be attributed to the fact that in student-centered teaching and learning, students take part in deciding what to learn, how to learn it, and the pace at which they learn it (Weimer 2012: 441). The consequence is

that students are empowered which makes them feel more motivated since they are in control over their learning process.

5.5.2.2 Considers learning valuable for future

The respondents' level of agreement and disagreement that they consider what they learn valuable for their future is shown in Table 5.23.

Table 5. 23: Showing respondents consider learning valuable for future

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
I consider what I learn valuable for my future	2	26.3%	51.6%	12.1%	5.1%	4.7 %	2.10	0.000

The data in Table 5.23 indicate that the majority (77.9%) of the respondents agreed that they consider what they learned valuable for their future (strongly agree=26.3%; agree=51.6%). It is important to note that 12.1% were neutral while 9.8% disagreed (disagree=5.1%; strongly disagree=4.7%). The mean value (M=2.10) suggests that there was a significant agreement among the respondents that they consider what they learn valuable for their future ($p<0.001$). The finding suggests that students consider learning valuable to their future. Al Said *et al.* (2019: 516) reveal that student-centredness allows students to shape their educational paths and places upon them the responsibility to actively participate in making their educational process meaningful. Hence, it is reasonable to say that the learning process that allows students to shape their learning process becomes highly important.

5.5.2.3 Encourage collaboration with other students

The respondents' level of agreement and or disagreement that they are encouraged to work in collaboration with other students is given in Table 5.24.

Table 5. 24: Showing SCL encourages collaboration with other students

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
I am encouraged to work in collaboration with other students	3	19.5%	61.1%	12.1%	5.1%	4.7%	2.10	0.000

The data in Table 5.24 indicate that the majority 80.6% of the respondents were in agreement that they are encouraged to work in collaboration with other students (strongly agree=19.5%; agree=61.1%) while 12.1% were neutral and 9.8% others in disagreement (disagree=5.1%; strongly disagree=4.7%) The mean value (M=2.11) suggests that there was a significant agreement that students centered teaching and learning encourages collaboration with other students ($p<0.001$). The finding agrees with other scholars (Weimer 2012:441; Marinov and Borenic 2016:146) that student-centred teaching recognises that students can learn from and with each other. This may be linked to the fact that students learn better when they learn with their peers. According to Bada and Olusegun (2015:68), students are in charge of their learning and thus generate questions about the course content, ask questions about how to learn and study, and interact with their peers to solve problems and practice critical thinking.

5.5.2.4 Development of confidence to investigate new ideas

The respondents' level of agreement and or disagreement that they are required to develop the confidence to investigate new ideas are shown in Table 5.25.

Table 5. 25: Showing SCL develops students the confidence to investigate new ideas

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)	Mean	*P*-value

		SA	A	Neutral	D	SD		
I am required to develop the confidence to investigate new ideas	4	20.8%	57.6%	11.9%	6.4%	3.3%	2.14	0.000

The data in Table 5.25 indicate that the majority 78.4% of the respondents agreed that they are required to develop the confidence to investigate new ideas (strongly agree=20.8%; agree=57.6%) while 11.9% were neutral, and 9.7% others in disagreement (disagree=6.4%; strongly disagree=3.3%). The mean value (M=2.14) suggests that there was significant agreement that they are required to develop the confidence to investigate new ideas ($p<0.001$). The finding may be attributed to the fact that students are encouraged to self-learn in their way and method. This agrees with Hodge and Collins (2010:62) who said that in SCL, students are encouraged to take increasing responsibility for their learning, using strategies for self-regulation and reflection. Accordingly, and agreeing with Tursunov (2016:65), students that are allowed to explore different learning methods can develop the confidence to investigate new ideas.

5.5.2.5 Required to pre-read before lectures

The respondents' level of agreement and or disagreement that they are required to pre-read before lectures are given in Table 5.26.

Table 5. 26: Showing SCL requires students to pre-read before lectures

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
I am required to pre-read before lectures	4	20%	57.4%	14.4%	5.1%	3.1%	2.14	0.000

Table 5.26 indicates that the majority 77.4% of the respondents agreed that they are required to pre-read before lectures (strongly agree=20%; agree=57.4%) while 14.4% were neutral, and a few 8.2% in disagreement (disagree=5.1%; strongly

disagree=3.1%). The mean value (M=2.14) suggests that there was a significant agreement that students are required to pre-read before lectures (p<0.001). The finding may be associated with active learning where students are expected to be active participants in the learning process. From an educational point of view, this is extremely encouraging – especially if they are really 'required' to pre-read and not just 'encouraged' to do so. The consequence of this, according to Tursunov (2016:65), results in effective learning because learning becomes more engaging rather than just transmitting the information. This is corroborated by Stefaniak and Tracey (2015:96) who said that students learn more by experiences and active involvement rather than by observing. Hence, one could sufficient assume that pre-reading courses before lectures allow students to engage in meaningful discourse with the lecturers that could positively impact their learning experience.

5.5.2.6 Achieving learning outcomes in most courses

The respondents' level of agreement and or disagreement that they feel they are achieving the learning outcomes of the courses are given in Table 5.27.

Table 5. 27: Showing the students achieve learning outcomes in most courses

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
I feel I am achieving the learning outcomes in most of the courses	5	26.5%	45.3%	17.5%	7.4%	3.3%	2.16	0.000

Table 5.27 indicates that the majority 71.8% of the respondents agreed that they feel that they are achieving the learning outcomes in most of the courses (strongly agree=26.5%; agree=45.3%) while 17.5% were neutral, and 10.7% others disagreed (disagree=7.4%; strongly disagree=3.3%). The mean value (M=2.16) suggests that there was a significant agreement that respondents feel they are achieving the learning outcomes in most of the courses (p<0.001). The finding may be attributed to the fact that students are the center of the learning process and what they value. This can be corroborated by Singhal (2017:5126) who said that in SCL, students' interest

takes center stage and the lecturer gives students choice and voice, finding ways to provide learning experiences. Hence, it becomes increasingly easier for them to achieve the learning outcomes since what they valued is highly considered to be critical in the learning experience.

5.5.2.7 Required to reflect, discuss with others, and defend learning outcomes

The respondents' level of agreement and or disagreement that they are required to reflect on, discuss with others, and defend what they have learned is given in Table 5.28.

Table 5. 28: Showing the SCL encourages students to reflect, discuss with others, and defend learning outcomes

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
I am required to reflect on, discuss with others, and defend what I learned	6	18.1%	57.3%	13.6%	7.4%	3.5%	2.20	0.000

The data in Table 5.28 indicates that the majority 75.4% of the respondents agreed that they feel that they are required to reflect on, discuss with others, and defend what they had learned (strongly agree=18.1%; agree=57.3%) while 13.6% were neutral, and 10.9% in disagreement (disagree=7.4%; strongly disagree=3.5%). The mean value (M=2.20) suggests that there was significant agreement among the respondents ($p<0.001$). The finding agrees with Weimer (2012:440) who said that SCL encourages students to reflect on what they are learning and how they are learning it. Hence, it can be said that SCL challenges students' assumptions about learning and defend the learning outcomes since they are active participants in the learning process.

5.5.2.8 Freedom to express views during the teaching and learning process

The respondents' level of agreement and or disagreement that they feel free to express their views during the teaching and learning process is shown in Table 5.29.

Table 5. 29: Showing the SCL gives students the freedom to express views during the teaching and learning process

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
I feel free to express my views during the teaching and learning process	7	24.5%	42.4%	18.7%	9.3%	5.1%	2.20	0.000

Table 5.29 indicates that 66.9% of the respondents agreed (strongly agree=24.5%; agree=42.4%) that they feel free to express their views during the teaching and learning process. It is important to note that 18.7% were neutral while 14.4% in disagreement (disagree=9.3%; strongly disagree=5.1%). The mean value (M=2.28) suggests that there is a significant agreement among the respondents ($p<0.001$). The finding may be attributed to the fact that students are in control of the learning process. Tursunov (2016:65) noted that in SCL, control and responsibility are shifted for learning to the students. As such, students build confidence and freedom to freely express their views since they are part of the learning process.

5.5.2.9 Opportunities to explore how to personally use learning outcome

The respondents' level of agreement and or disagreement that they have opportunities to explore how they could personally use what they learn is shown in Table 5.30.

Table 5. 30: Showing the SCL opportunities to explore personally use the learning outcome

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
I have opportunities to explore how I could personally use what I learn	8	20.6%	46.3%	21%	7.6%	4.5%	2.29	0.000

Table 5.30 indicates that 66.9% of the respondents were in agreement that they have opportunities to explore how to use their learning outcome (strongly agree=20.6%; agree=46.3%). It is important to note that 21% were neutral while 12.5% in disagreement (disagree=7.6%; strongly disagree=4.5%). The mean value (M=2.29) suggests that there was a significant agreement among the respondents (p<0.001). The finding, perhaps, may be connected to the provision of work-integrated learning in the course content and curriculum of the selected university. Since SCL is accompanied by a problem-based approach where the problems are picked to make more robust interests and needs of the student (Dano-Hinosolago and Vedua-Dinagsao (2014:1813), it is sufficient to assume that students are confident in their learning process.

5.5.2.10 Current university experience encourages value in others' perspective

The respondents' level of agreement and disagreement that their current university experience encourages them to value perspectives other than their own.

Table 5. 31: Showing respondents level of agreement that current university experience encourages value in others' perspective

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
My current university experience encourages me to value perspectives other than my own	8	18.7%	46.5%	25.9%	5.1%	3.7%	2.29	0.000

Table 5.31 indicates that 65.2% of the respondents agreed (strongly agree=18.7%; agree=46.5%) that their current university experience encourages them to value perspectives other than their own. It is important to note that 25.9% were neutral while 8.8% disagreed (disagree=5.1%; strongly disagree=3.7%). The mean value (M=2.29) suggests that there was a significant agreement among the respondents (p<0.001). This may be attributed to the fact that SCL encourages collaborations among students (Marinov and Borenic 2016:146). Such experience might have resulted in students placing value on others' views and opinions during the learning process.

5.5.2.11 Opportunities to engage in meaningful activities without the lecturer

The respondents' level of agreement and or disagreement that they are given opportunities to engage in meaningful activities without the lecturer being present is shown in Table 5.32.

Table 5. 32: Showing respondents' level of agreement on opportunities to engage in meaningful activities without the lecturer.

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
I am given opportunities to engage in meaningful activities without the lecturer being present	9	16.9%	50%	21%	8.2%	3.9%	2.32	0.000

Table 5.32 indicates that 66.9% of the respondents agreed (strongly agree=16.9%; agree=50%) that they are given opportunities to engage in meaningful without the lecturer being present. It is important to note that 21% were neutral while 12.1% in disagreement (disagree=8.2%; strongly disagree=3.9%). The mean value (M=2.32) suggests that there was a significant agreement among the respondents ($p<0.001$). This finding also reinforced the earlier assertion that students are encouraged to take increasing responsibility for their learning (Hodge and Collins 2010:62). Using different learning strategies for self-regulation and reflection, students could be engaged in meaningful activities without the lecturer as shown by the level of agreement in this study.

5.5.2.12 Involved and part of the classroom activities

The respondents' level of agreement and or disagreement that they feel involved and part of the classroom activities are shown in Table 5.33.

Table 5. 33: Showing respondents' level of agreement that students are involved and part of classroom activities

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
I feel involved and part of the classroom activities	10	15.8%	46.7%	24.3%	10.1 %	3.1%	2.38	0.000

The data in Table 5.33 indicate that 62.5% of the respondents agreed (strongly agree=15.8%; agree=46.7%) that they feel involved and part of the classroom activities. It is important to note that 24.3% were neutral while 13.2% in disagreement (disagree=10.1%; strongly disagree=3.1%). The mean value (M=2.38) suggests that there was a significant agreement among the respondents ($p<0.001$). While there is significant agreement that students are involved and part of the classroom activities, it is worth noting that not all students felt they are involved in this. This, perhaps, may be connected to the onset of Covid-19 which resulted in to shift from classroom learning to virtual learning. This can be corroborated by Zuidema and Zuidema (2021: 843) who said that being physically absent from the classroom and distance from the teacher may cause a sense of disconnection in students. Moreover, Stefaniak and Tracey (2015:96) believe that students learn more by experiences and active involvement rather than by observing.

5.5.2.13 Challenged to think for themselves

The respondents' level of agreement and disagreement that they feel challenged to think for themselves is shown in Table 5.34.

Table 5. 34: Showing respondents' level of agreement that students are challenged to think for themselves

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		

I feel challenged to think for myself	11	16.7%	51.4%	13.2%	12.6 %	6.2%	2.40	0.000

Table 5.34 indicates that 68.1% of the respondents agreed (strongly agree=16.7%; agree=51.4%) that they feel challenged to think for themselves. It is important to note that 13.2% were neutral while 18.8% in disagreement (disagree=12.6%; strongly disagree=6.2%). The mean value (M=2.40) suggests that there was a significant agreement among the respondents (p<0.001). While SCL encourages students to reflect on what they are learning and how they are learning it (Weimer 2012:440), the finding of this study, however, suggests that not all of the students feel challenged to think for themselves. It is reasonable to assume that not all of the students are ready to think for themselves and develop self-learning and reflection. This may defeat the goal of making students aware of themselves as learners and making learning skills something students want to develop.

5.5.2.14 Satisfied with the style of the teaching delivery

The respondents' level of agreement and disagreement that overall, they are satisfied with the style of teaching delivery in their department.

Table 5. 35: Showing respondents' level of agreement about being satisfied with the style of teaching delivery

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Overall, I am satisfied with the style of teaching delivery in my department	12	14%	45.3%	24.7%	9.5%	6.6%	2.49	0.000

Table 5.35 indicates that 59.3% of the respondents agreed (strongly agree=14%; agree =45.3%) that they are satisfied with the style of the teaching delivery in their respective departments. It is important to note that 24.7% were neutral while 16.1% in disagreement (disagree=9.5%; strongly disagree=6.6%). The mean value (M=2.49) suggests that there was a significant agreement among the respondents (p<0.001).

The finding indicates that nearly half of the students (40.8%) appeared not to be satisfied with the style of teaching delivery. This may be attributed to the shift from the traditional face-to-face lecture delivery to virtual learning caused by the Covid-19 pandemic. A similar finding was observed by Memon *et al.* (2021: 485) that students expressed mixed emotions about the virtual style of teaching delivery.

5.5.2.15 Nearly always received useful feedback on assessment

The respondents' level of agreement and or disagreement that they nearly always receive useful feedback on their assessments to help them improve is shown in Table 5.36.

Table 5. 36: Showing respondents' level of agreement that students are nearly always received useful feedback on assessment

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
I nearly always receive useful feedback on my assessments to help me improve	13	19.3%	42.4%	15.6%	9.7%	13%	2.55	0.000

Table 5.36 indicates that 61.7% of the respondents agreed (strongly agree=19.3%; agree=42.4%) that they nearly always receive useful feedback on their assessment to help them improve. It is important to note that 15.6% were neutral while 22.7% in disagreement (disagree=9.7%; strongly disagree=13%). The mean value (M=2.55) suggests that there is a significant agreement among the respondents ($p<0.001$).

The finding above is somewhat concerning given that not all students always received useful feedback on assessments. This is problematic when one considers that feedback is one of the key strategies within formative assessment (Brooks *et al.* 2021: 2). The lack of effectiveness in feedback by the lecturers may be attributed to the concern on whether students will utilise it (Lipnevich *et al.* 2016: 169).

5.5.2.16 Tutorial sessions help improve academic achievements

The respondents' level of agreement and or disagreement that the tutorial sessions help them to improve their academic achievements.

Table 5. 37: Showing respondents' level of agreement that tutorials help improve academic achievements

Focus Area Question	Rank	The experience and impacts of student-centred teaching and learning (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
The tutorial sessions help me to improve on my academic achievements	14	18.9%	39.9%	16.7%	8.2%	16.3%	2.63	0.000

Table 5.37 indicates that 58.8% of the respondents agreed (strongly agree=18.9%; agree=39.9%) that the tutorial sessions help them to improve their academic achievement. It is important to note that 16.7% were neutral while 24.5% in disagreement (disagree=8.2%; strongly disagree=16.3%). The mean value (M=2.63) suggests that is a significant agreement among the respondents ($p<0.001$). Extant literature suggests that tutorial sessions lead to an increase in students' academic performance (Skoglund, Wall and Kiene 2018: 115; Adebola 2021: 48; Omodan and Ige 2021: 30). However, the finding of this study suggests that not all of the students agreed that tutorial sessions had helped improve their academic achievement. This may largely be connected to the interest in the tutorial session amongst the students. According to Adebola (2021: 43), students, particularly first-year students naturally do not want to attend tutorial sessions due to the belief that it is of no use. As such, may not attribute their academic achievement to it. Another reason uncovered from the focus group discussion with the first-year was attributed to the boringness of having the same lecturer take both the lecturing and tutorial sessions. This could also explain why first-year students may be more reluctant to attend tutorial sessions.

In summary, the mean value measured for all the statements suggests that more of the respondents agreed than disagreed with these statements measuring experience and impacts of student centered-teaching and learning. The statement with the highest level of agreement was "I feel motivated to do my best work" and was therefore

ranked 1 while the statement with the least level of agreement was “The tutorial sessions help me to improve on my academic achievements” and was ranked 14th.

5.5.2.17 Association between socio-demographic variables and student experience and impacts of student-centred teaching and learning

Part of the research inquiry was to compare the differences and or similarities of the student's experiences and impacts of student-centred teaching and learning at the selected university between the two departments, as well as, the level of study. In an attempt to achieve this, an Independent t-test was computed and the results are summarised in Table 5.38.

Table 5. 38: Association between socio-demographic variables and the respondent’s experiences and impacts of student-centred teaching and learning

Demographic		N (488)	Mean	Std. Deviation	P-value
Level of study	First-year	312	2.3	.59	0.384*
	Third-year	174	2.3	.80	
Department	Information and Corporate Management (ICM)	326	2.3	.69	0.225*
	Chemical Engineering (CE)	160	2.2	.63	
P* >5%					
P** <5%					

The Independent T-test suggests there was no statistically significant difference in the respondents in both the respondents' level of study, and department (P>0.05).

5.5.3 Students experiences of service quality

This section looks at the students' experiences of the service quality at the selected university. Positive statements (agree and strongly agree) are interpreted as agreement while negative statements (disagree and strongly disagree) are interpreted as disagreement. The mean value below 3 is considered agreement while the value that is above 3 is considered disagreement. The results are in descending levels of agreement as follows:

5.5.3.1 Staff dressing neatly

The respondents’ level of agreement and or disagreement that most staff dress neatly is given in Table 5.39.

Table 5. 39: Showing respondents level of agreement that staff most staff dress neatly

Focus Area Question	Rank	Students experiences of service quality (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Most staff dress neatly	1	15.9%	57.2%	14.2%	8.4%	4.3%	2.28	0.000

Table 5.39 indicates that the majority 73.1% of the respondents agreed (strongly agree=15.9%; agree=57.2%) that most of the staff dressed neatly, 14.2% were neutral, and 12.7% disagreed (disagree=8.4%; strongly disagree=4.3%). The mean value (M=2.28) suggests that there was a significant agreement among the respondents ($p<0.001$). This may be connected to the fact that students associate staff dressing with competence in delivery services. Farooq *et al*. (2019:269) reported an association between tangibles such as staff dressing neatly and students' satisfaction. The finding of this study also can be corroborated by Lodesso *et al.* (2018:61) who found that students associate the appearance of the university staff with the reliability of services provided.

5.5.3.2 Department admission procedures

The respondent's level of agreement and or disagreement that their department has good admission procedures to recruit appropriately qualified students is shown in Table 5.40.

Table 5. 40: Showing respondent's level of agreement with the department admission procedures

Focus Area Question	Rank	Students experiences of service quality (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
My department has good admission procedures to recruit appropriately qualified students	2	15.4%	56.4%	17.5%	5.6%	5.1%	2.29	0.000

Table 5.41 indicates that the majority 71.8% of the respondents agreed (strongly agree=15.4%; agree=56.4%) that the department has good admission procedures to recruit appropriately qualified students while 17.5% were neutral, and 10.7% in disagreement (disagree=5.6%; strongly disagree=5.1%). The mean value (M=2.29) suggests that there is a significant agreement among the respondents (p<0.001). From the finding, one could draw out that students relate to the ability of the institution of higher learning to recruit appropriately qualified students to service quality delivery. Contrary to Green (2014:138), the finding implies that the selected University has a good admission procedure to recruit qualified students. Nonetheless, and given that some students did not agree with this, the advice by Green (2014:138) that management ensure that policies and procedures are designed and implemented become highly relevant to rectify any issue of service quality.

5.5.3.3 Staff telling exactly when service will be performed

The respondent's level of agreement and or disagreement that most staff tell them exactly when a service will be performed is given in Table 5.41.

Table 5. 41: Showing respondents' level of agreement staff tells exactly when service will be performed

Focus Area Question	Rank	Students experiences of service quality (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Most staff tell me exactly when a service will be performed	3	11.1%	55.8%	18.5%	9.1%	5.6%	2.42	0.000

Table 5.41 indicates that 66.9% of the respondents agreed (strongly agree=11.1%; agree=55.8%) that most staff tell them exactly when a service will be performed. On the other hand, 18.5% were neutral while 14.7% in disagreement (disagree=9.1%; strongly disagree=5.6%). The mean value (M=2.42) suggests that there is a significant agreement among the respondents (p<0.001).

From the finding, it was uncovered that not all of the students are pleased with the reliability of the staff in telling exactly when service will be performed. This suggests service quality failure in some parts of the staff.

5.5.3.4 Staff showing interest in solving problems

The respondent's level of agreement and or disagreement that most staff show an interest in solving their problems is given in Table 5.42.

Table 5. 42: Showing respondents' level of agreement on staff interest in solving problems

Focus Area Question	Rank	Students experiences of service quality (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Most staff show an interest in solving my problems	4	14.1%	49.2%	20.4%	10.7 %	5.6%	2.42	0.000

Table 5.42 indicates that 63.3% of the respondents agreed (strongly agree=14.1%; agree=49.2%) that most staff show an interest in solving their problems. On the other hand, 20.4% were neutral while 16.3% in disagreement (disagree=10.7%; strongly disagree=5.6%). The mean value (M=2.44) suggests that the respondents ranked this statement as 4th in terms of their experiences of the service quality at the selected university.

From the finding, it could rightly be assumed that the ability of staff to show interest in solving problems is lacking (reliability). It can be seen that a good number (neutral and disagreement) appeared not to be satisfied with staff showing interest in solving their problems. The finding can be corroborated by Green (2014: 137) who said that students are not satisfied with the type of services they receive from staff showing interest in solving students' queries and concerns. This is critical and could directly affect students' satisfaction. Hence, the university management could do more to help address this concern. This may be achieved by training the staff on the need to help address students' problems as they are the most important stakeholders to the institution.

5.5.3.5 Staff give students individual attention

The respondents' level of agreement and or disagreement that most staff give students individual attention is given in Table 5.43.

Table 5. 43: Showing respondents' level of agreement that most staff give students individual attention

Focus Area Question	Rank	Student's experiences of service quality (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Most staff give students individual attention	4	13.8%	51.2%	16.7%	10.5 %	6.2%	2.42	0.000

Table 5.43 indicates that 65% of the respondents agreed (strongly agree=13.8%; agree=51.2%) that most staff give students individual attention. On the other hand, 18.3% were neutral while 16.7% in disagreement (disagree=10.5%; strongly disagree=6.2%). The mean value (M=2.44) suggests that there is a significant agreement among the respondents that most staff give students individual attention ($p<0.001$). From the study finding, it can be gathered that not all of the students believed that staff give students individual attention (assurance). This is an area the university has to work on to improve students' satisfaction.

5.5.3.6 Administrative staff provide accurate and timely information

The respondents' level of agreement and or disagreement that most administrative staff provide accurate and timely information is shown in Table 5.44.

Table 5. 44: Showing respondents' level of agreement that administrative staff provide accurate and timely information

Focus Area Question	Rank	Student's experiences of service quality (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		

Most administrative staff provide accurate and timely information	5	16.3%	46.5%	18.5%	11.1 %	7.6%	2.47	0.000

Table 5.44 indicates that 62.8% of the respondents agreed (strongly agree=16.3%; agree=46.5%) that administrative staff provides accurate and timely information. On the other hand, 18.5% were neutral while 18.7% in disagreement (disagree=11.1%; strongly disagree=7.6%). The mean value (M=2.47) suggests that there is a significant agreement among the respondents that the administrative staff provides accurate and timely information ($p<0.001$). This finding proves that selected institutions have, to a certain extent, achieved an acceptable level of service quality. According to the majority of the student students, the ability of the administrative staff to provide accurate and timely information reflects the reliability of their services. Nevertheless, there is some concern as not all students agreed with this. Hence, the institution needs to do more work to build upon these services.

5.5.3.7 Equipment in the department

The respondents' level of agreement and or disagreement that their department has up-to-date equipment is shown in Table 5.45.

Table 5. 45: Showing respondents' level of agreement that administrative staff provide accurate and timely information

Focus Area Question	Rank	Student's experiences of service quality (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
My department has up-to-date equipment	6	16.9%	42.8%	17.9%	11.3 %	6.6%	2.48	0.000

Table 5.45 indicates that 59.7% of the respondents agreed (strongly agree=16.9%; agree=42.8%) that the department has up-to-date equipment. On the other hand, 22.4% were neutral while 17.9% in disagreement (disagree=11.3%; strongly disagree=6.6%). The mean value (M=2.48) suggests that there is a significant agreement among the respondents that the department has up-to-date equipment.

The finding reflects that nearly half of the students (neutral students and those who disagree) regard the equipment in the department used to deliver services as lacking intangibles. This is an area the institution needs to work upon and improve. This can be corroborated by Green (2014: 137) who said that if the selected university wants to gain a competitive advantage, they need to provide complete and modern laboratories. However, this may be limited by economic constraints in the selected university.

5.5.3.8 Administrative staff provide error-free records

The respondents' level of agreement and or disagreement that most administrative staff provide error-free records are shown in Table 5.46.

Table 5. 46: Showing respondents' level of agreement that administrative staff provide accurate and timely information

Focus Area Question	Rank	Students experiences of service quality (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Most administrative staff provide error-free records	7	13.2%	46.7%	23%	10.1 %	7%	2.51	0.000

Table 5.46 indicates that 59.9% of the respondents agreed (strongly agree=13.2%; agree=46.7%) that the administrative staff provides error-free records. On the other hand, 23% were neutral while 17.1% disagreed (disagree=10.1%; strongly disagree=7%). The mean value (M=2.51) measured was closest to neutral which suggests that a significant number of the respondents neither agree nor disagree that most administrative staff provide error-free records.

The above findings indicate that some of the students 40.1% (neutral and disagreement) perceive elements of the reliability of the administrative staff to provide error-free records of service delivery to be underperforming. This is a critical concern for the institution and therefore needs to be improved upon.

5.5.3.9 Administrative staff provide quick and prompt services

The respondents' level of agreement and or disagreement that most administrative staff in their department provide quick and prompt services are shown in Table 5.47.

Table 5. 47: Showing respondents level of agreement that administrative staff provide quick and prompt services

Focus Area Question	Rank	Students experiences of service quality (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
Most administrative staff in my department provide quick and prompt services	8	13.6%	44.4%	20.2%	12.8 %	7.4%	2.56	0.000

Table 5.47 indicates that 58% of the respondents agreed (strongly agree=13.6%; agree=44.4%) that most administrative staff in their department provides quick and prompt services. On the other hand, 20.2% were neutral while 20.2% in disagreement (disagree=12.8%; strongly disagree=7.4%). The mean value measured suggests that most administrative staff provide quick and prompt services, with the result given as (M=2.56; p<0.001). The finding implies that students of the selected University are not completely satisfied with the administrative staff's commitment to service. The finding further supports Green (2014: 137) who said that customers of the DUT are not completed satisfied with the commitment to the service aspect of service quality. In agreeing with Green (2014: 137), the selected University must put measures in place to help address this problem to improve students' satisfaction as they are the main customers.

5.5.3.10 The staff treat student courteously

The respondents' level of agreement and or disagreement that most staff in their department treat students courteously is given in Table 5.48.

Table 5. 48: Showing respondents' level of agreement that staff treat students courteously

Focus Area Question	Rank	Student's experiences of service quality (n = 486)	Mean	*P*-value

		SA	A	Neutral	D	SD		
Most staff in my department treat students courteously	9	13.2%	43%	24.3%	11.9 %	7.6%	2.58	0.000

Table 5.48 indicates that 56.2% of the respondents agreed (strongly agree=13.2%; agree=43%) that most staff in my department treat students courteously. On the other hand, 24.3% were neutral while 20.2% in disagreement (disagree=11.9%; strongly disagree=7.6%). The mean value measured was closest to neutral which suggests that a significant number of the respondents neither agreed nor disagreed that the department treats students courteously, with the result given as (M=2.58; p<0.001). According to Green (2014: 137) students are the most important stakeholders in a higher education institution. However, the finding indicates that students did not think they are treated considerably by staff. This is a worrisome development and could negatively impact the university's drive as a student-centered environment. Hence, urgent measures need to be put in place by the management of the selected university to address this concern.

In summary, the mean value measured for all the statements suggests that the respondents agreed than disagreed with these statements service quality of the selected university. The statement with the highest level of agreement was "Most staff dress neatly" and was therefore ranked 1 while the statement with the least level of agreement was "Most staff in my department treat students courteously" and was ranked 9th.

5.5.3.11 Association between socio-demographic variables and service quality experiences

Independent t-tests were performed to determine whether respondents differ in their views of the statements measuring students' experiences of service quality based on their demographic profile (Level of study, and department of enrolment). The results are summarised in Table 5.49.

Table 5. 49: Association between socio-demographic variables and student experiences of service quality

Demographic		N (488)	Mean	Std. Deviation	P-value
Level of study	First-year	312	2.4	.70	0.018**
	Third-year	174	2.6	.84	
Department	Information and Corporate Management (ICM)	326	2.5	.73	0.231*
	Chemical Engineering (CE)	160	2.4	.81	
P* >5% P** <5%					

Regarding the respondents' level of study, the lowest mean value was measured for the first year (M=2.4±0.74) while the highest was for the third year (M=2.6±0.84). This suggests that the first year agrees more with the service quality statements when compared to the third year. In terms of the respondents' age group, the lowest mean was measured for respondents between 17 and 20 years (M=2.3±0.68) while the highest was for those within 24 and above years (M=2.8±0.86). This suggests respondents within the age group 17-20 agreed more with the service quality statements when compared to those 24 years and above.

5.5.4 The learning environment and its administration

This section looks at the learning environment and its administration at the selected university. Positive statements (agree and strongly agree) are interpreted as agreement while negative statements (disagree and strongly disagree) are interpreted as disagreement. The mean value below 2.5 is considered agreement while the value above 3 is considered disagreement. The results are in descending levels of agreement as follows:

5.5.4.1 The learning environment encourages interaction with other students

The respondents' level of agreement and or disagreement that the learning environment encourages them to interact with other students is shown in Table 5.50.

Table 5. 50: Showing respondents' level of agreement that the learning environment encourages interaction with other students

Focus Area Question	Rank	The learning environment and its administration (n = 486)	Mean	*P*-value

		SA	A	Neutral	D	SD		
The learning environment encourages me to interact with other students	1	15.8%	41.8%	26.7%	11.5 %	4.1%	2.46	0.000

Table 5.50 indicates that 57.6% of the respondents agreed (strongly agree=15.8%; agree=41.8%) that the learning environment encourages them to interact with other students. It is worth mentioning that 26.7% were neutral while 15.6% in disagreement (disagree=11.5%; strongly disagree=4.1%). The mean value (M=2.46) suggests that there is a significant agreement the learning environment encourages them to interact with other students ($p<0.001$). While the importance of a conducive learning environment has been stressed in the literature as it encourages students' collaborations and friendship (Zaid *et al.* 2020: 198), the finding indicates that not all students (neutral and disagreement) embrace interactions with other students. Given the benefit of students' collaboration to independent learning, the management of the university must do more to drive social interaction among students.

5.5.4.2 The learning environment provides a supportive space where students feel appreciated, acknowledged, and respected

The respondents' level of agreement and or disagreement that the learning environment provides a supportive space in which they feel appreciated, acknowledged, and respected is given in Table 5.51.

Table 5. 51: Showing respondents level of agreement that the learning environment provides a supportive space where students feel appreciated, acknowledged, and respected

Focus Area Question	Rank	The learning environment and its administration (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
The learning environment provides a supportive space in which I feel appreciated, acknowledged, and respected	2	16.7%	43.2%	20.6%	14.6 %	4.9%	2.48	0.000

Table 5.51 indicates that 59.9% of the respondents agreed (strongly agree=16.7%; agree=43.2%) that the learning environment provides a supportive space in which they feel appreciated, acknowledged, and respected. On the contrary, 20.6% were neutral while 19.5% in disagreement (disagree=14.6%; strongly disagree=4.9%). The mean value (M=2.48) suggests that there is a significant agreement among the respondents ($p<0.001$). The finding indicates that 41.1% of the respondents did not think the learning environment provides a supportive space where students feel appreciated, acknowledged, and respected. This is concerning and could pose a challenge for the university in terms of improving its competitive advantage in its drive to attract and recruit qualified students. The management should thus consider the advice made by Starkey (2019:379) that students are unique and distinct individuals and thus requires a specific instructional approach that is appropriate for such students.

5.5.4.3 The learning environment supports students learning

The respondents' level of agreement and or disagreement that the learning environment supports their learning is shown in Table 5.52.

Table 5. 52: Showing respondents' level of agreement that the learning environment supports students learning

Focus Area Question	Rank	The learning environment and its administration (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
The learning environment supports my learning	3	18.1%	41.2%	22.4%	10.5 %	11.9%	2.57	0.000

Table 5.52 indicates that 59.3% of the respondents agreed (strongly agree=18.1%; agree=41.2%) that the learning environment supports their learning. On the contrary, 18.3% were neutral while 22.4% in disagreement (disagree=10.5%; strongly disagree=11.9%). The mean value measured suggests that there is significant agreement among the respondents that the learning environment supports students learning, with the result given as ($M=2.57$; $p<0.001$). Nevertheless, the finding also indicates a high number of students (40.7%) are not in support of the view that the learning environment supports their learning (neutral + disagreement). This is a

serious issue that requires urgent intervention by the management. More so is that learning environments have been reported to influence student academic achievement (Zaid *et al*. 2019: 197). It thus means that if management aimed to improve student academic achievement, they must invest in a supportive learning environment for students.

5.5.4.4 The administrative system is effective

The respondents' level of agreement and or disagreement that the administration system in their department is effective is shown in Table 5.53.

Table 5. 53: Showing respondents' level of agreement that the administrative system is effective

Focus Area Question	Rank	The learning environment and its administration (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
The administration system in my department is effective (e.g., it clearly explains what to do or where to go)	4	15.2%	40.3%	20.6%	14.8 %	9.1%	2.62	0.000

Table 5.53 indicates that 55.5% of the respondents agreed (strongly agree=15.2%; agree=40.3%) that the learning administrative system in their department was effective as it explains what to do or where to go. On the contrary, 20.6% were neutral while 23.9% in disagreement (disagree=14.8%; strongly disagree=9.1%). The mean value measured suggests that is a significant agreement that the administrative system is effective, with the result given as (M=2.62; p<0.001). According to Weerasinghe and Fernando (2018: 126), the quality of administrative and academic staff has a significant influence on the students' satisfaction levels. The finding of this study, however, indicate that some of the students did not think the administrative system of the selected university is effective. It is therefore sufficient to assume that the administrative staff may not be treating all students equally and or students have unreal expectations of the kind of services expected from the administrative staff.

5.5.4.5 Appropriate infrastructure

The respondents' level of agreement and or disagreement that they have appropriate lecture venues, computer laboratories, online resources, and library resources are shown in Table 5.54.

Table 5. 54: Showing respondent's level of agreement about appropriate infrastructure

Focus Area Question	Rank	The learning environment and its administration (n = 486)					Mean	*P*-value
		SA	A	Neutral	D	SD		
We have appropriate lecture venues, computer laboratories, online resources, library resources, etc.	5	6.4%	22%	22%	35.2 %	14.4%	3.29	0.000

Table 5.54 indicates that 28.4% of the respondents agreed (strongly agree=6.4%; agree =22%) that they have appropriate lecture venues, computer laboratories, online resources, and library resources. In contrast, 22% were neutral while 49.6% in disagreement (disagree=35.2%; strongly disagree=14.4%). The mean value measured was closest to neutral which suggests that a significant number of the respondents neither agreed nor disagreed that there are appropriate lecture venues, computer laboratories, online resources, and library resources, with the result given as ($M=3.29$; $p<0.001$). The finding indicates that the selected university is lacking in infrastructure considerably. This poses a serious concern to the university recruitment push and drive. Appropriate infrastructure is considered a fundamental bedrock in student recruitment and student-centred teaching and learning. This can be corroborated by Kamau *et al.* (2020: 187) who said that infrastructure creates a supportive environment for students' academic journeys in school. Hence, the management of the selected university must endeavour to upgrade its infrastructure to help realise the efficient and effective adoption of student-centredness.

In summary, the mean value measured for all the statements suggests that while respondents agreed with the statement "The learning environment encourages me to

interact with other students" and was ranked 1st, they were however neutral about the appropriateness of the infrastructure and thus ranked 5th.

5.5.4.6 Association between socio-demographic variables and the learning environment and its administration

An independent t-test was performed to determine whether respondents differ in their views of the statements measuring students learning environment and its administration based on their demographic profile (level of study, and department of enrolment). The results are summarised in Table 5.55.

Table 5. 55: Association between socio-demographic variables and the learning environment and its association

Demographic		N (488)	Mean	Std. Deviation	P-value
Level of study	First-year	312	2.7	.76	0.856*
	Third-year	174	2.7	.98	
Department	Information and Corporate Management (ICM)	326	2.7	.84	0.120*
	Chemical Engineering (CE)	160	2.6	.86	
P* >5% P** <5%					

Independent T-test values measured for the respondents' level of study and department indicate that there was no significant difference and their views of the learning environment and its administration (P>0.05).

5.6 Assessing the experiences and impacts of student-centred teaching and learning using Pearson Correlation

This section assesses the level of association existing between experiences and impacts of student's centered teaching and learning constructs and other measured dimensions at the selected University.

5.6.1 Association between the effect of academic curriculum and student's experiences and impacts of student-centred teaching and learning

Pearson correlation was performed to test the association between the emerged current academic curriculum constructs (learning materials and methods, courses and learning) and students' experiences and impacts of student-centered teaching and

learning (Independent and collaborative learning, motivation and self-confidence, academic improvement).

Table 5. 56: Correlation data showing the association between academic curriculum and the experiences and impact of student-centred teaching and learning.

Academic curriculum		Experience and impacts of student-centred teaching and learning		
		Independent and collaborative learning	Motivation and self-confidence	Academic improvement
Learning Materials and methods	Pearson Correlation	.650**	.714**	479**
	Sig. (2-tailed)	.000	.000	.000
	N	486	486	486
Courses and learning	Pearson Correlation	.545**	.575**	.649**
	Sig. (2-tailed)	.000	.000	.000
	N	486	486	486

**. Correlation is significant at the 0.05 level

The result in Table 5.56 indicates that learning materials strongly correlates with motivation and self-confidence (r=0.714; p<0.001), independent and collaborative learning (r=0.650; p<0.001), and academic improvement (r=0.479; p<0.001). Similarly, there was a positive association between courses and learning and academic improvement (r=0.649; p<0.001), motivation and self-confidence (r=0.575; p<0.001), and independent and collaborative learning (r=0.545; p<0.001). Overall, the correlation results suggest that the academic curriculum at the selected university is positively associated with the experiences and impacts of student-centred teaching and learning.

5.6.2 Association between service quality and student's experiences and impacts of student-centred teaching and learning

Pearson correlation was performed to test the association between service quality and students' experiences and the impacts of student-centred teaching and learning and (Independent and collaborative learning, motivation and self-confidence, academic improvement).

Table 5. 57: Correlation data showing the association between service quality and the experiences and impact of student-centred teaching and learning.

Service quality		Experience and impacts of student-centred teaching and learning		
		Independent and collaborative learning	Motivationand self-confidence	Academic improvement
Service quality	Pearson Correlation	.436**	.555**	.428**
	Sig. (2-tailed)	.000	.000	.000
	N	486	486	486

**. Correlation is significant at the 0.05 level

The result in Table 5.57 indicates that the service quality correlates positively with motivation and self-confidence (r=0.555; p<0.001), independent and collaborative learning (r=0.436; p<0.001), and academic improvement (r=0.428; p<0.001). Overall, the correlation results suggest that the service quality at the selected university is positively associated with the experiences and impacts of student-centred teaching and learning.

5.6.3 Association between the learning environment and its administration and student's experiences and impacts of student-centred teaching and learning

Pearson correlation was performed to test the association between the learning environment and its administration and students' experiences and impacts of student-centered teaching and learning and (Independent and collaborative learning, motivation and self-confidence, academic improvement).

Table 5. 58: Correlation data showing the association between the learning environment and its administration and the experiences and impact of student-centred teaching and learning.

Learning environment and its administration		Experience and impacts of student-centred teaching and learning		
		Independent and collaborative learning	Motivation and self-confidence	Academic improvement
Learning environment and its administration	Pearson Correlation	.503**	.518**	.493**
	Sig. (2-tailed)	.000	.000	.000
	N	486	486	486

**. Correlation is significant at the 0.05 level

The result in Table 5.58 indicates that learning environment and its administration correlates positively with motivation and self-confidence (r=0.518; p<0.001),

independent and collaborative learning (r=0.503; p<0.001), and academic improvement (r=0.493; p<0.001). Overall, the correlation results suggest that the learning environment and its administration at the selected university are positively associated with the experiences and impacts of student-centred teaching and learning.

5.6.4 Association between the constructs of students' experiences and impacts of student-centred teaching and learning

Pearson correlation was performed to test the association between the three emerged constructs of students' experiences and impacts of student-centred teaching and learning namely; Independent and collaborative learning, motivation and self-confidence, and academic improvement.

Table 5. 59: Correlation data showing the association between the emerged constructs of the experiences and impact of student-centred teaching and learning.

		Independent and collaborative learning	Motivation and self-confidence	Academic improvement
Independent and collaborative learning	Pearson Correlation	1	.684**	.556**
	Sig. (2-tailed)		.000	.000
	N	486	486	486
Motivation and selfl-confidence	Pearson Correlation	.684**	1	.616**
	Sig. (2-tailed)	.000		.000
	N	486	486	486
Academic improvement	Pearson Correlation	.556**	.616**	1
	Sig. (2-tailed)	.000	.000	
	N	486	486	486
**. Correlation is significant at the 0.01 level (2-tailed).				

The result in Table 5.59 indicates that independent and collaborative learning correlates positively with motivation and self-confidence (r=0.684; p<0.001), and academic improvement (r=0.556; p<0.001). Equally, motivation and self-confidence positively correlate with each other (r=0.616; p<0.001).

5.6.5 Assessing the association among service quality, learning environment and academic curriculum using Pearson Correlation

Table 5. 60: Correlation data showing the association among service quality, learning environment, and academic curriculum

		Service quality	Learning environment	Materials methods	Courses learning
Service quality	Pearson Correlation	1	.573**	.498**	.431**
	Sig. (2-tailed)		.000	.000	.000
	N	486	486	486	486
Learning environment	Pearson Correlation	.573**	1	.463**	.514**
	Sig. (2-tailed)	.000		.000	.000
	N	486	486	486	486
Materials methods	Pearson Correlation	.498**	.463**	1	.651**
	Sig. (2-tailed)	.000	.000		.000
	N	486	486	486	486
Courses learning	Pearson Correlation	.431**	.514**	.651**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	486	486	486	486
**. Correlation is significant at the 0.01 level (2-tailed).					

The result in Table 5.60 indicates that there is an association between the service quality in the selected university and the learning environment and its administration (r=0.573; p<0.001), materials and methods (r=0.498; p<0.001), and courses and learning (r=0.431; p<0.001).

Equally, the learning environment and its administration correlate with materials and methods (r=0.463; p<0.001), and courses and learning (r=0.514; p<0.001). In addition, the material and methods and course and learning positively correlate with each other (r=0.651; p<0.001)

5.7 Assessing the predictors of experiences and impacts of student-centred teaching and learning using regression analysis

While correlation measures the linear relationship between two variables, it does not imply a cause and effect relationship. Regression analysis was, therefore, performed to test the predictors of experiences and impacts of students-centered teaching and learning at the selected University. The data were checked for collinearity before

being used in the multi-regression study. Collinearity may be detected by looking at the tolerance coefficient and variance inflation factor (VIF) values, according to Pallant (2016: 278).

Table 5. 61: Collinearity statistics

Tolerance	VIF
0.602	1.661
0.581	1.720
0.516	1.938
0.518	1930

If the tolerance coefficient is less than 0.10 and the VIF value is greater than 10.0, it indicates collinearity or multicollinearity. The collinearity values in Table 5.56 showed that all tolerance coefficients were more than the suggested limit of 0.10. All of the variables were below 10.0 in the VIF values, indicating that the multicollinearity assumption was not violated.

5.7.1 The predictors of independent and collaborative learning

The relationship between the independent variables and the dependent variable is given in Table 5.62.

Table 5. 62: Showing the predictors of independent and collaborative learning

Predictor	F-value	P-value	R	Beta Coefficients	Error	R Square	Predicted	Significance
Service quality	112.729	0.000	0.696	0.038	.039	0.484	Independent and collaborative learning	0.374
Learning environment				0.206	.036			0.000
Material and method				0.453	.042			0.000
Course and learning				0.128	.040			0.005

The regression coefficient in Table 5.61 indicates a causal relationship in the predicted model ($r=0.696$; $p<0.01$). The beta coefficients measured for the learning environment and its administration (0.206), material and method (0.453), and courses and learning (0.128) were positive and significant while that of service quality (0.038) was not a significant predictor of Independent and collaborative learning. The R^2 value measured suggests that there was a strong explanatory power (48.4%) for the predictors in the

model. Overall, material and method were the strongest contributor to independent and collaborative learning.

The regression equation for this relationship is:
Independent and collaborative learning= 0.094 + (0.453*Material and method) + (0.206* learning environment) + (0.128 *courses and learning)

5.7.2 The predictors of motivation and self-confidence

The relationship between the independent variables and the dependent variable (motivation and self-confidence) is given in Table 5.63.

Table 5. 63: Showing the predictors of motivation and self-confidence

Predictor	F-value	P-value	R	Beta Coefficients	Error	R Square	Predicted	Significance
Service quality	169.818	0.000	0.764	0.192	.038	0.584	Motivation and self-confidence	0.000
Learning environment				0.126	.034			0.001
Material and method				0.489	.040			0.000
Course and learning				0.109	.038			0.008

The regression coefficient in Table 5.63 indicates a causal relationship in the predicted model ($r=0.696$; $p<0.01$). The beta coefficients measured for the learning environment and its administration ($\beta=0.126$), material and method ($\beta=0.489$), courses and learning ($\beta=0.109$), and service quality ($\beta=0.192$) were positive and significant predictors of motivation and self-confidence. The R^2 value measured suggests that there was a strong explanatory power (48.4%) for the predictors in the model. Overall, material and method were the strongest contributor to motivation and self-confidence.

The regression equation for this relationship is:
Motivation and self-confidence= 0.090 + (0.489*Material and method) + (0.192* service quality) + (0.125 *learning environment) + (0.109 *courses and learning)

5.7.3 The predictors of academic improvement

The relationship between the independent variables and the dependent variable (academic improvement) is given in Table 5.64.

Table 5. 64: Showing the predictors of academic improvement

Predictor	F-value	P-value	R	Beta Coefficients	Error	R Square	Predicted	Significance
Service quality	104.151	0.000	0.681	0.107	.054	0.464	Academic improvement	0.013
Learning environment				0.161	.049			0.000
Material and method				0.021	.057			0.648
Course and learning				0.507	.055			0.000

The regression coefficient in Table 5.64 indicates a causal relationship in the predicted model ($r=0.681$; $p<0.01$). The beta coefficients measured for the learning environment and its administration ($\beta=0.161$), courses and learning ($\beta=0.507$), and service quality ($\beta=0.161$) were positive and significant while material and method ($\beta=0.021$) were not a significant predictor of academic improvement. The R^2 value measured suggests that there was a strong explanatory power (46.4%) for the predictors in the model. Overall, course and learning were the strongest contributor to academic improvement.

The regression equation for this relationship is:

Academic improvement = 0.128 + (0.507*course and learning) + (0.161*learning environment) + (0.107*service quality) + (0.021 *material and method)

5.8 Structural equation model

The structural equation model (SEM) was computed using Amos (IBM software) to identify the predictors of student experience and impacts of student-centred teaching and learning. In SEM, a set of criteria is used to establish model fit. CMIN/DF must be less than 5 for the produced Chi-square value 2 divided by df (Atiku 2014: 163). Another deciding factor is the Comparative Fit Index (CFI), which is a type of incremental fit indices that assesses model fitness, which should be larger than 0.9 (Kline 2011: 87). The root means a square error of approximation is another significant metric of model fit (RMSEA). A value of less than 0.08 for the RMSEA is desirable, indicating a close approximation (Hooper, 2008:54).

Figure 5. 2: SEM model

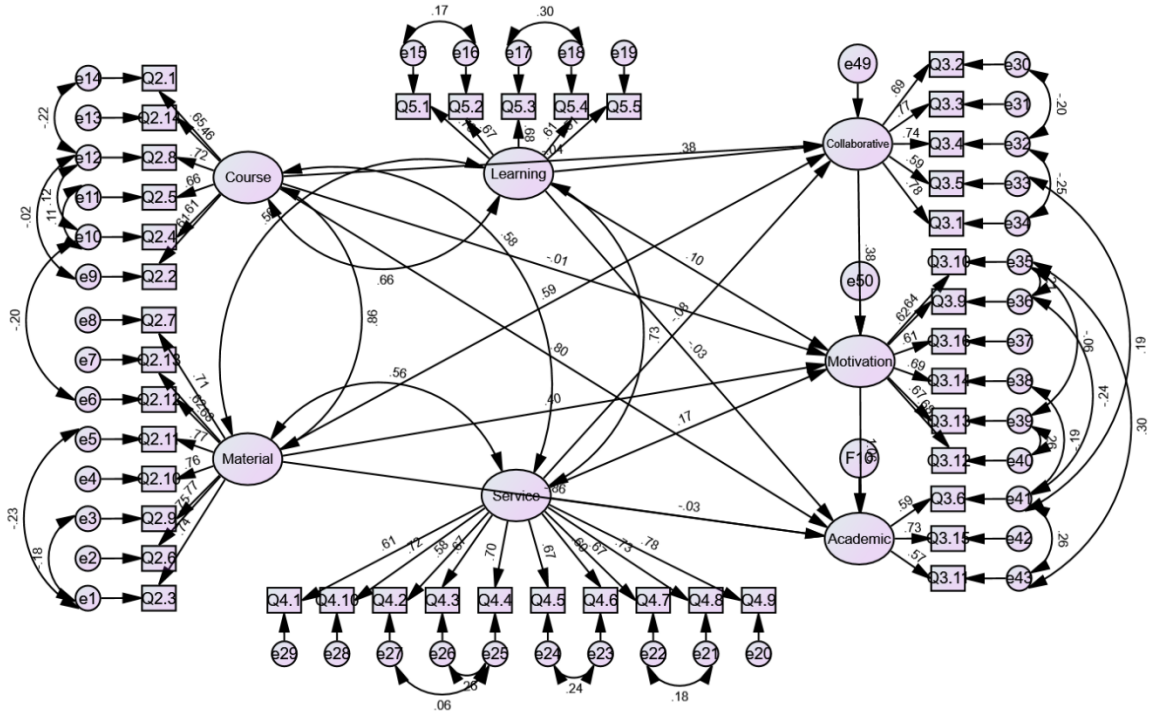


Figure 5.2 shows the SEM model. The observed model fit indices are: Chi-Square = 2133.970, df = 970, p < .001, CMIN/DF = 2.612, CFI = .827; RMSEA = .058; which suggest the SEM possesses adequate model fit.

5.8.1 Model estimate analysis

The regression estimates as obtained from the SEM model is given in Table 5.65.

Table 5. 65: Model estimate for the predictors of student experiences and impacts of student-centred teaching and learning

			Estimate	S.E.	C.R.	P	Decision
Independent and collaborative learning	<---	Learning environment	.304	.072	4.246	***	Supported
Independent and collaborative learning	<---	Material and method	.514	.092	5.571	***	Supported
Independent and collaborative learning	<---	Course and learning	-.040	.114	-.353	.724	Not supported
Independent and collaborative learning	<---	Service quality	-.060	.050	-1.194	.233	Not supported
Motivation and self-confidence	<---	Collaborative	.400	.068	5.901	***	Supported

Motivation and self-confidence	<---	Learning environment	.085	.066	1.286	.198	Not supported
Motivation and self-confidence	<---	Material and method	.364	.093	3.908	***	Supported
Motivation and self-confidence	<---	Course and learning	-.008	.105	-.075	.941	Not supported
Motivation and self-confidence	<---	Service quality	.132	.046	2.886	.004	Supported
Academic improvement	<---	Motivation	1.256	.207	6.082	***	Supported
Academic improvement	<---	Service quality	-.023	.076	-.305	.761	Not supported
Academic improvement	<---	Learning environment	-.029	.118	-.242	.809	Not supported
Academic improvement	<---	Course and learning	.980	.227	4.323	***	Supported
Academic improvement	<---	Material and method	-.919	.216	-4.252	***	Supported

The data in Table 5.65 shows the estimate measured from the model. The data suggests that there was a causal relationship between independent and collaborative learning and material and method. A causal relationship was observed between motivation and self-confidence, material and method, and service quality. A causal relationship was observed between academic improvement and material and method and course and learning.

5.9. Conclusion

In summary, the results suggest that 68.5% of the target respondents completed the questionnaire. The majority were males, African, within the age group 17-20, mainly first-year students and from the Department of Information and Corporate Management. Based on the analysis, the above results had exhaustively highlighted the perception of first-year and third-year students drawn from Chemical Engineering and Information and Corporate Management on student-centred teaching and learning.

In terms of the responses on the current state of the academic curriculum, it was found that the statement “learning material provided is useful” had the highest mean agreement among the respondents while the statement “Provision of immediate feedback by the lecturers the lowest mean level of agreement. It was also found that the responses of the respondents only differ by their race. In terms of the responses

on the experiences and impacts of student-centered teaching and learning, the statement “Motivation to do their best work had the highest mean agreement while the statement “Tutorial sessions help improve academic achievement” had the lowest mean agreement. It was found that the responses only differ by the respondents' race.

Regarding the responses on the experiences of service quality at the selected university, the statement “Staff dressing neatly had the highest mean agreement” while the statement “The staff treats students courteously” had the lowest mean agreement. It was found that the responses differ by the respondent’s level of study and age group. In terms of responses to the statement the learning environment and its administration, the statement “The learning environment encourages interaction with other students” had the highest mean agreement while the statement “Appropriate infrastructure” had the lowest mean level of agreement.

Furthermore, factor analyses using EFA and CFA were computed to validate the constructs measured in the study. The EFA analysis indicates that two dimensions emerged from the construct “Current state of the academic curriculum which was named learning material and method and courses and learning. The CFA confirmed the validity of the two dimensions. Equally, the construct “The student experiences and impacts of student-centred teaching and learning had three dimensions which were named; Independent and collaborative learning, motivation and self-confidence, and academic improvement. The CFA analysis also confirmed the validity of the measured dimensions. However, items in the constructs the experience of service quality and the learning environment and its administration loaded strongly in the constructs and were thus retained in their respective constructs.

Pearson correlation was performed to test the association existing between and among the constructs. The findings indicate that there were strong correlations between and among the measured constructs. The regression analysis was further used to test the predictors of experiences and impacts of student-centred teaching and learning. The result indicates that material and method were the strongest predictor of both independent and collaborative learning as well as motivation and self-confidence while courses and learning were the strongest predictors of academic improvement.

CHAPTER SIX – DISCUSSION OF RESULTS

6.1 INTRODUCTION

The South African higher education system has undergone tremendous changes post-democracy characterised by an increase in the enrolment of the previously disadvantaged group. Nevertheless, the shift from an industrial to a knowledge economy requires that Higher Education and Institutions adopt more student-centered approaches to meet the needs of the 21st century (Mocinic 2012:97; Singhlal 2017: 5123; Kaput 2018: 9). This is most important given that the knowledge economy is widely recognised as the driver of competitiveness and productivity in all business and non-business sectors (Marti and Cabrita 2012: 14). However, Moodley (2015:151) and Tandlich *et al.* (2018:10) express serious concerns about the difficulty of achieving this, citing technological advancements, the high demands of a knowledge economy, shrinking resources, curricula issues, and concurrent pressures to increase enrolments as some of the significant challenges facing the South African higher education sector.

Nevertheless, multilateral agencies like the United Nations Education, Scientific and Cultural Organisation (UNESCO), United Nations Children's Education Fund (UNICEF), and Organisation for Economic Co-operation and Development (OECD) have extensively promulgated policies toward the push for student-centered teaching, as it is believed to improve the quality of education provision (Sabella and Crossouard 2018: 719). In addition to what Sabella and Crossouard (2018: 719) described as the "allure of democratic ethos of student-centered teaching", its favouring of the active learner is also seen as being in congruence with the development of the workforce required in the post-Fordist knowledge economy.

Given the above critical importance of student-centered teaching and learning and its perceived relevance to the 2lst century knowledge economy, the continued interest in strategies to ensure that the output of higher education meets the country's needs is of vital importance (Makgobole and Onwubu 2021: 61). This study explores students' and key staff experiences of the current strategies aimed at achieving student-centred learning at the selected university. Part of the inquiry was to explore the barriers to

achieving student-centred teaching and learning at the selected university. In an attempt to uncover this, the study selected two departments (Chemical Engineering and Information and Corporate Management) drawn from two levels of study (1st and 3rd year).

The following questions were asked to address the research objectives highlighted in Chapter One, Section 1.4.

a. What SCL teaching and learning strategies are currently being implemented in the two departments?

b. What are 1st and 3rd-year students' experiences of the implementation of these strategies?

c. What are curriculum specialist academics' experiences of the successes and pitfalls associated with the implementation of these strategies?

d. If challenges are found to exist, how can implementation strategies be improved?

6.2 Assessing the current strategies in student-centred teaching at DUT

As directed by the Department of Higher Education and Training (DHET 2013: 30) universities are required to improve learning opportunities through diverse modalities that increase student access and success in higher education. As outlined in the literature, the current teaching and learning strategies adopted by the selected university include formal lectures, group discussions, case studies, role-play, interactive whiteboard, flipped or inverted classroom, electronic learning, modular objective-oriented dynamic learning environment (Moodle), and Microsoft teams. This is supported by a significant number of respondents in the quantitative data collection phase who agreed that lecturers use several methods of teaching such as PowerPoint display, visual display, and flipped learning to help them learn (Table 5.10).

Nevertheless, it was also uncovered from the qualitative interviews with key staff that most staff appear reluctant to leave the traditional lecturer-centered, chalk and board method of teaching for the student-centered. This perhaps may be connected to the poor understanding of the student-centered policy of the university. For instance, while some of the staff interviewed acknowledged that student-centred teaching and learning is embedded in the university Envision 2030, nonetheless, they also indicated that this is not fully communicated or clearly defined among the university stakeholders.

Equally, and supporting the above, many of the students who participated in the focus group discussion were ignorant of the university policies on student-centred teaching and learning. The finding can be corroborated by Xulu-Gama *et al.* (2018:1306) who found that the majority of students at the selected university had no understanding of the term 'student-centred teaching and learning. It is also to be noted in the literature that some students still believe that lecturer-centered education is a more effective strategy (Oinam 2017:30). This could also explain why some lecturers at the selected university are reluctant to shift from the traditional chalk and board method and would rather remain lecturer centric in their approach to teaching and learning. Sultan (2018:630), however, warned that the traditional method of teaching is a very poor instructional approach for maintaining student attention. Misseyamnni (2018:34) also cautioned that student concentration during lectures begins to decline after ten to fifteen minutes. Zenda (2017:179) holds a similar belief that this method does not allow learners to participate in class.

On the other hand, scholars such as Kim *et al.* (2019:29) suggest that a degree in traditional teaching and learning may be appropriate in disciplines like Science, Technology, Engineering, and Mathematics (STEM) as they are mostly didactic, practical, and need to be lecturer focused. In the case of the selected university, it was indicated that limited resources were likely the reason why, particularly the Chemical Engineering Department, had struggled to shift from the traditional method of teaching and learning to a student-centered teaching approach. Arguably, and agreeing with Mocinic (2012:97), the outcomes of learning or competence development cannot be realised by only the usage of traditional didactic strategies, approaches, and methods. Hence, the advice by Toquero (2020:1) says HEIs should

reinforce the use of innovative teaching and learning techniques and approaches that are more responsive to the learning needs of the students beyond the conventional classroom approaches.

6.3 Challenges of implementing student-centred teaching and learning at the selected university

While the importance of student-centered teaching and learning for effective education is well recognised, Glowa and Goodwell (2016: 4), observed that universities, in general, are struggling with its implementation. This view is supported by Altena (2017:2) who reported that student-centered approaches are predominantly occurring piecemeal and in isolated pockets within the universities. Consistent with this, it was found from the qualitative interviews with the key staff that the implementation of student-centered teaching and learning varies from lecturer to lecturer with staff having different reasons for implementing it or not. This could be attributed to the lack of a consolidated policy on a student-centred approach to teaching and learning in that department. Reinforcing this view, the informant from the Chemical Engineering department interviewed explained that the department is yet to develop a common vision which has led to different interpretations by different lecturers. On the contrary, the informant from Information and Corporate Management indicated that the department has a program design that incorporates elements of student-centered teaching and learning such as the introduction of various modules. This incorporates various forms of assessments, and implementation of continuous assessment to ensure that students are not judged based on one final exam.

The above gives further evidence that the implementation of student-centered teaching and learning at the selected university is occurring piecemeal and in isolated pockets within the university rather than across the board. Apart from this, it was uncovered from the qualitative interviews with key staff that there is resistance to change by lecturers from the traditional approach of teaching to student-centered teaching and learning, particularly in the Chemical Engineering department. This view agrees with Tekle and Fesshaye (2017:20) who noted that the major challenge in implementing SCL has been the transition and the paradigm shift required to move from the traditional teacher-centered approach to student-teaching and learning

approaches. Findings from the interviews indicated a lack of knowledge and fear of the unknown amongst the staff. Shrivastava (2020:53-54) noted that while most academics are experts in their fields they are not necessarily lecturers by formal training. According to this author, when it comes to implementing a comprehensive change in pedagogical practice such as SCL, many of them become vulnerable. This view may help explain the resistance to change due to fear of leaving their comfort zone and trying a new approach to teaching and learning.

Another significant impediment to the implementation of student-centered teaching and learning in the selected university is a constraint on resources. It was indicated that the lack of teaching aids in the lecture venues, and large student numbers had slowed the transition from the traditional to a student-centered teaching and learning approach. Consequently, and in agreement with Tekle and Fesshaye (2017: 30), the successful implementation of SCL at the selected university suffers from inadequate learning resources, and provision of adequate facilities and services that support SCL, including teaching aids, digital libraries, reliable internet connectivity, and infrastructure improvements.

6.3.1 Assessing first and third-year student experiences of the implementation of student-centered teaching at DUT

Part of the research inquiry in this study sought to understand the first and third-year students' experiences of the implementation of student-centered teaching and learning strategies within the two respective departments. In agreeing with Jones (2018:1041) while student experience' has become an area of academic investigation in higher education over the past decade, it is, however, remarkably underdeveloped as a construct in the academic literature. In a student-centered class, Shrivastava (2020:53-54) advised that lecturers must be able to flexibly employ various, but appropriate, teaching methods to cater to students' diverse learning needs rather than just deliver the lesson content.

In an attempt to uncover the experiences of the students at the selected university, it is worth noting that each student brings unique strengths and weaknesses to their learning environment (Stefaniak and Tracey 2015:95). As such, each student brings

their aspirations, interests, and ways of knowing and experiences to the learning process (Starkey 2019:379). Consistent with this, the experiences of the participants were viewed under the following:

6.3.2 First and third-year student experiences of teaching and learning

The qualitative focus group discussion with the students revealed a mixed picture of their learning experiences at the selected university. While some of the third-year students, particularly from Chemical Engineering, were satisfied with their teaching experiences, others were dissatisfied. It was uncovered that many students were dissatisfied with the quality of teaching and learning, which suggests service failure. For instance, many of the students interviewed expressed dissatisfaction with the teaching skills of the lecturers, the overcrowding of the classrooms, excessive workloads, and the state of the infrastructure such as bathrooms and lecture venues. The finding is corroborated by Chahal and Devi (2013: 213) who said that service failure in the higher institution may relate to teaching, examination, library, laboratories, infrastructure, administration, and other miscellaneous services such as hostel facilities and canteens. Similarly, the findings of this study, particularly from the South African perspective, agree with Van der Westhuizen (2014: 407) who found poor service quality in higher education to include problems with registration, and poor support from administrative staff, and poor computer facilities.

Of particular interest to this study, it was uncovered from the focus group interview that first-year students had concern about the teaching abilities of the lecturers. Some of them indicated that lecturers had a poor understanding of the subjects, and lacked skill in interactions with the students. This agrees with the finding from the quantitative phase where 40.8% were dissatisfied with the style of teaching delivery **(Table 5.35)**. This may be due to the challenges first-year students face transiting from higher schools where they are mostly 'spoon-fed' to higher education. A similar finding was observed in Australia where it was revealed that first-year students find it challenging to transit from high school to higher education (Baik *et al*. 2019: 526). Another plausible explanation for this may be linked to the shift from contact learning to virtual classrooms caused by the Covid-19 pandemic. According to Memon *et al.* (2021: 485), students expressed mixed emotions about the virtual style of teaching delivery.

Nevertheless, some of the third-year students from Chemical Engineering expressed satisfaction with the academic staff's caring attitudes and courteous behaviour. This group also acknowledged the time and efforts the academic staff put into assisting struggling students. Moreover, there was a high level of positive agreement that staff gives students individual attention, reinforcing the level of satisfaction amongst these students (Table 5.43). This is corroborated by Le Roux and Van Rendburg (2015:01) who said that students get a positive experience from the kind of teaching which increases their satisfaction levels.

In addition, Sajjad (2010:29) reveals a link between student satisfaction and effective teaching and learning. Consistent with this, the findings from the quantitative phase reveal that for the majority of students the teaching and learning experience motivated them to do their best work **(Table 5.22)**, develop the confidence to investigate new ideas **(Table 5.24),** and collaborate with other students **(Table 5.25)**. Arguably, and agreeing with Hart Coates (2011: 57) may be associated with improvement in student-centered teaching and learning experiences. This is further validated by the factor analysis in this study which reveals students' experiences of teaching and learning to include independent and collaborative learning, motivation and self-confidence, and academic improvement. The findings can be corroborated by Al Said *et al* (2019: 516) who said that student-centeredness is an approach that "allows students to shape their educational paths and places upon them the responsibility to actively participate in making their educational process a meaningful".

Equally, and for independent and collaborative learning, the finding agrees with other scholars (Weimer 2012:441; Marinov and Borenic 2016:146) that student-centered teaching recognises that students can learn from and with each other. This is also in line with the selected University regulatory framework on student centredness which aims to promote self-directed learning, student autonomy, and critical self-reflection (DUT assessment policy 2019). According to Weimer (2012: 441), empowering students to take part in deciding what to learn, how to learn it, and the pace at which they learn, motivates students. In agreement with this, it emerged from the study that student-centred teaching and learning motivates the student and boosts their self-confidence. When students feel inspired by their learning, Weimer (2012: 441), argues that their retention of the course content increases. This may help explain the reason

for the presumed academic improvement uncovered in this study and can be supported by the Pearson correlation results in **Table 5.56** which show there is an association between student-centered course content and improved academic performance.

6.3.3 First and third-year student experiences in the learning environment

According to Weerasinghe and Fernando (2018: 126), both academics and administrators connect frequently with students in the learning process. As such, the learning environment is essential in the implementation of student-centered teaching and learning strategies. From the quantitative results, it was found that there was positive agreement that learning encourages interactions with other students (Table 5.50) and provides a space where students feel appreciated, acknowledged, and respected (Table 5.51). This agrees with Weerasinghe and Fernando (2018: 126) who said that the quality of academic staff has a significant influence on the students' satisfaction levels. It can thus be said that students are satisfied with the learning environment at the selected university.

The focus group findings further support the quantitative finding that overall there is a quality learning environment at the selected university. For example, there was consensus among the first and third-year students from the Information and Corporate management that the lecturers have been very supportive. It was found that lecturers in the department were approachable and always willing to help students. A similar position was gathered from the third-year Chemical Engineering students that the academic staff has been supportive, friendly, and available for consultation. These findings are in line with the university's Strategic Plan for 2015-2019 that the notion of student-centeredness is that the university exists to provide its students with the kind of learning environment that helps them to grow intellectually, socially, and emotionally" (Bawa, 2014:5).

In support of the above, it was uncovered from the focus group (first and third-year Chemical Engineering) that students had easy access to learning resources such as libraries, and computer laboratories which stimulate a positive learning experience and made it enjoyable. The finding agrees with Bakhshialiabad, Bakhshi and Hassanshahi (2015: 195) who said that the learning environment has a strong impact on students'

learning experiences and outcomes. More so, the finding of this study supports Starkey (2019:379) who said that a quality learning environment supports positive interactions among students and provides a supportive space in which the student feels appreciated, acknowledged, respected, and validated.

According to Zaid *et al.* (2019: 198), a conducive learning environment also acts as a catalyst for friendship, intellectual activities, collaborations, and support activities that encourage students' development and learning. Nevertheless, it should be noted from the focus group interviews that some of the learning environments were unconducive for learning (First-year information and Corporate management). These complaints included large student numbers making it difficult to control classes and a lack of an adequate support system for those with disabilities. This may be attributed to the DHET mandate to increase enrolment in higher education whilst the university has limited resources to accommodate the increase. This also resonates with the concern of the Vice-Chancellor and Principal of the selected university who expressed dissatisfaction with the increasing number of students due to the limited resources available (SOUA, 2019).

Moreover, an unconducive learning environment is of concern as it may have a negative consequence on the students' academic performance. For example, it emerged from the quantitative results that the learning environment positively predicts students' academic performance **(Table 5.63)** and this was supported by the findings of an association between the learning environment and students' academic performance **(Table 5.57)**. These findings can be corroborated by Zaid *et al.* (2019: 197) who found that the learning environment positively and significantly influences student academic achievement.

6.4 Student experiences of service quality

In the last decade, service quality measurement in higher education has attracted the attention of many academic scholars (Jain, Sinha, and Sahney 2011: 296; Sultan and Wong: 70, 2012; Koni *et al*. 2013: 33). This, perhaps, may be attributed to the fact that higher education institutions are becoming increasingly service-oriented which makes continuous measurement of service quality important (Lupo 2014: 67). Owing to this,

the student experience of service quality was explored as part of the study inquiry. According to Malik, Danish and Usman (2010:2), students seek empathy, responsiveness, and assurance during their academic development process, which then enhances their extra potential to compete in the market. Consistent with this, it was found from the quantitative phase, that students were satisfied with the neat dressing of the staff **(Table 5.39)**, and the department admission procedures **(Table 5.40)** which suggest tangibles. This can be corroborated by Farooq *et al*. (2019:269) who said that there is an association between tangibles such as staff dressing neatly and students' satisfaction. In addition, Lodesso *et al.* (2018:61) found that students associate the appearance of the university staff with the reliability of services provided further reinforcing the findings of this study.

On the other hand, however, students of the selected university were not completely satisfied with the administrative staff's commitment to service. There was a concern with administrative staff providing error-free records **(Table 5.46)**, as well as, providing quick and prompt services **(Table 5.47).** This could question the selected university's reliability of service delivery. This can be corroborated by Green (2014: 137) who said that customers of the DUT are not completely satisfied with the commitment to the delivery aspect of service quality. This raises critical service delivery concerns that require urgent attention from the management of the selected university.

6.5 Impact of academic curriculum and student experiences of student-centred teaching and learning

According to Olney *et al*. (2018:71), the curriculum is most effective when the approach is student-centered. As such, the impact of the academic curriculum on teaching and learning was assessed in this study. From the quantitative results, it emerged that academic curriculum generally impacts positively on teaching and learning. Particularly, the respondents were satisfied with the learning material provided **(Table 5.7)**, the usefulness of the source of information lecturers provide for reference **(Table 5.8)**, alignment between theory and practice **(Table 5.9)**, and the use of several methods of teaching **(Table 5.10)**. The finding suggests that the academic curriculum is useful as it addresses the needs of the students. This view is further

supported by the focus group where it was agreed that the academic curriculum is enriched with courses that prepare the student to meet the demands of the industry.

Previous studies had noted that curricula need to focus more on learning processes rather than just outcomes and that curricular structures need to include space for innovation, creativity, and ensuring relevance to learners (Bron *et al*. 2016: 15; Bovill 2017: 151). Consistent with this, it emerged from the focus group interviews that the curriculum course content does stimulate students' creativity. Students voiced the opinion that the *nature of the courses does not just train them to think outside the box, but sometimes also trains them to create the box*.

Moreover, it was found that the academic curriculum (Materials and methods and courses and learning) positively influences independent and collaborative learning as well as students' motivation and self-confidence. This is further supported by finding uncovered from the focus group interview that the learning style generally encourages independent learning. This agrees with Toquero (2020:1) who advised on a greater need for HEIs to reinforce the practices in the curriculum and the use of innovative teaching and learning techniques and approaches that are more responsive to the learning needs of the students. The literature affirms that the academic curriculum positively impacts students' experiences of teaching and learning.

This can be further corroborated by other scholars who found that academic curriculum positively influenced perceived students' satisfaction (Iswara and Pratomo 2018: 174; Arrivabene, Vieira, and Mattoso 2019: 189; Mulyono *et al.* 2020: 935). The finding of this study, particularly in the context of promoting independent collaboration as well as motivation and self-confidence agrees with Stefaniak and Tracey (2015:96) who said that student-centered teaching can be shown to provide students with increased responsibility, that it promotes critical thinking, supports student development, and peer teaching and learning.

Extant literature, particularly about student-centered curricula revealed how the process of student-centered curricula (co-creation) enhances engagement, motivation, identity development, and self-learning abilities which can lead to improved assessment performance (Cook-Sather *et al.* 2014: 143; Lubicz-Nawrocka 2018: 47).

In agreeing with this, the finding of this study revealed that most students experienced the academic curriculum course content as positively promoting academic improvement.

6.6 Theoretical contribution of the study

Part of the theoretical contribution of this study is the proposed student-centred teaching and learning framework (Figure 6.1). The framework consists of two parts moderated by the service quality delivery of the institution. Part one illustrates the inputs parameters, which include the academic curriculum and the learning environment. Part two, on the other hand, measures the outcome of student-centred teaching and learning implementation in the institution. Starkey's (2019) model of student-centred teaching and learning conceptualised student centered-teaching and learning into three overlapping dimensions which are humanist, agentic, and cognitive. The input parameter of academic curriculum and learning aligns with Starkey's (2019) model's agentic and humanist dimensions. These are further detailed below.

A) Input parameter

The input parameter proposed in this study includes the academic curriculum (learning materials and course content) and learning environment.

1. Academic curriculum

Extant literature suggests that student-centredness allows students to shape their educational paths (Al Said *et al*. 2019: 516). In this study, it emerged that the academic curriculum allows the student to take charge of their learning process. Students express confidence in the learning materials and content of the courses. This agrees with Starkey's views of the agentic dimension which argues that students should be allowed to be active, rather than passive, participants in their learning (Starkey 2019:379). It is therefore proposed that students of the selected university curriculum be student-centric in approach. This could be achieved by providing students with the opportunities to design and co-create their learning process with the lecturers. This agrees with Bovill *et al.* (2016: 196) notion of co-creation which involves students and their lecturers working collaboratively with one another to create components of curricula and/or pedagogical approaches. In agreeing with Weimer

(2012: 441), empowering students to take part in deciding what to learn, how to learn it, and the pace at which they learn motivates students.

Furthermore, it was indicated that the learning materials are a vital component for achieving student-centered teaching and learning. Trianto (2013) states that learning materials function to provide direction for the implementation of learning so that it becomes directed and efficient. Learning materials discussed in this study include several teaching tools and methods. Moreover, it emerged that the learning materials and course content align theory to practice which is relevant to the practical application of courses to the world of work. It was found that the curriculum content stimulates students' creativity.

2. Learning environment

Another input parameter proposed in the framework is the learning environment. The literature suggests that a conducive learning environment acts as a catalyst for friendship, intellectual activities, collaborations, and support activities that encourage students' development and learning (Zaid et al. 2019: 198). In this study, it emerged that the learning environment of the institution encourages students' interactions with other students, provides supportive space for the students, as well as supports their learning process. Hence, the conducive learning environment was proposed as an input parameter to actualising student-centred teaching and learning. This is particularly important given that learning environments have been reported to influence student academic achievement (Zaid *et al*. 2019: 197).

B) Moderator

The importance of service delivery for students' satisfaction has been well documented in the literature. Furthermore, and from the framework, it can be observed that the inputs parameters (academic curriculum and learning environment) are being moderated by service quality. This is also supported by the findings of this study which show a positive correlation between service quality and academic curriculum on one hand and service quality and learning environment on the other hand. Hence, the study views service delivery as an important game-changer in student-centred teaching and learning. While the university scores highly on intangibles, a critical service quality dimension that still requires urgent attention is the administrative staff's commitment to service as well as their attitude towards students.

Part two: Output

The output parameter proposed in this study includes independent and collaborative learning, motivation and self-confidence, and academic improvement.

1. Independent and collaborative learning

One of the gains of student-centred teaching and learning uncovered in this study was independent and collaborative learning. According to Bada and Olusegun (2015:68), students are in charge of their learning and thus generate questions about the course content, ask questions about how to learn and study, and interact with their peers to solve problems and practice critical thinking. In this study, it was found that independent and collaborative learning influence student academic improvement, and it is proposed as the outcome of student-centred teaching and learning. This is because students can learn at their own pace and convenience as well as learn from each other.

2. Motivation and self-confidence

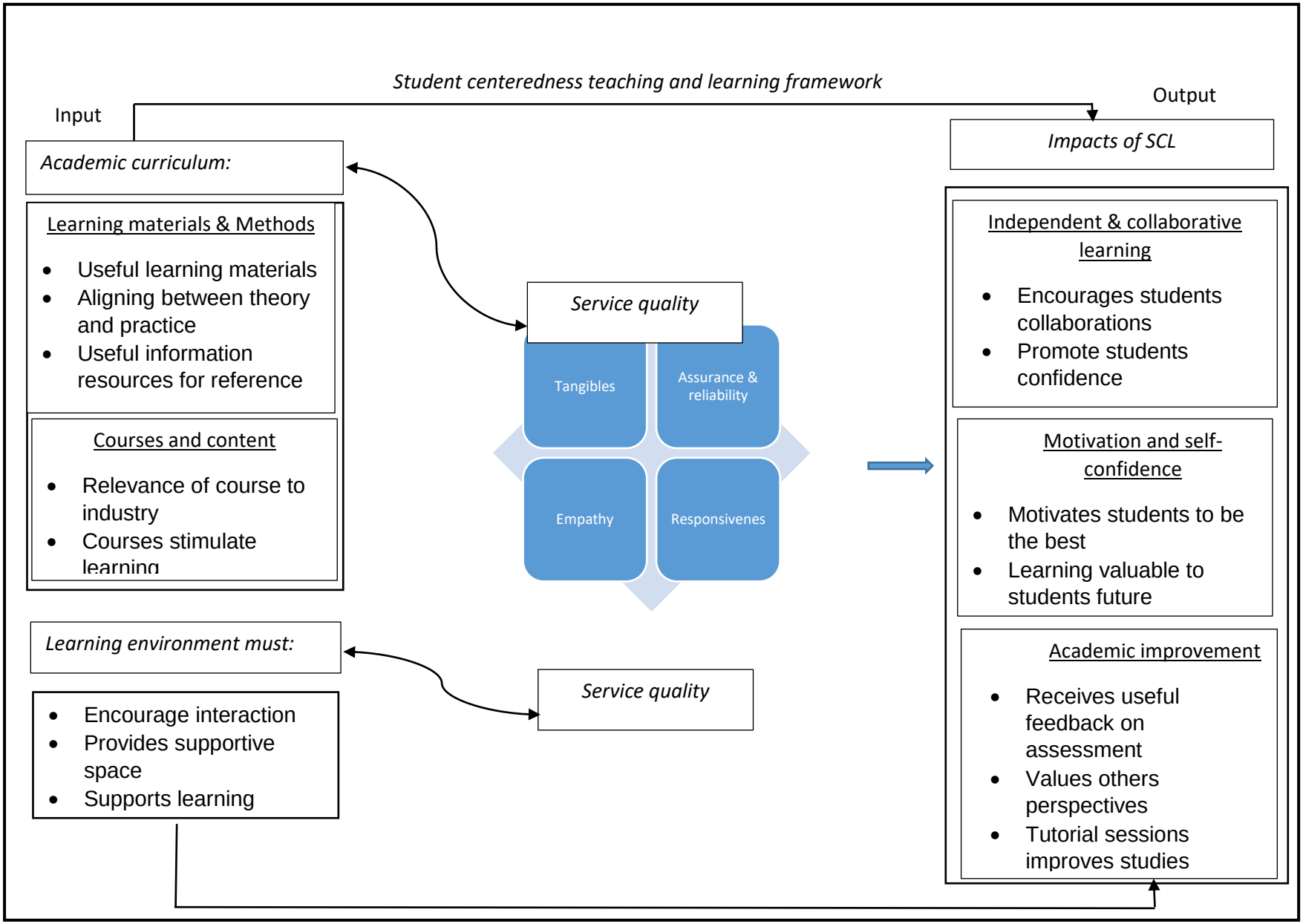
Another gain of student-centered teaching and learning revealed in this study was that it motivates and promotes students' self-confidence. Student-centered teaching gives room for students to express their views during the teaching and learning process, thereby making them active participants in the learning process. This aligns with Stefaniak and Tracey (2015:96) who say that students learn more by experiences and active involvement rather than by observing. The consequence of this is that students start getting engaged in the learning process which could prove valuable for their future - making them more motivated to give their best.

3. Academic improvement

Academic improvement is the general goal of student-centered teaching and learning. Hence learning becomes more interesting when students succeed in their assessments and courses. According to Brooks *et al.* (2021: 2), feedback is one of the key strategies within the formative assessment. As such, useful feedback on student assessment was found to help them improve in their studies. A point worth noting this was not a strong finding in the study. Another strategy uncovered in the study was the

benefit of tutorial support. Hence, the study sees the availability of tutorial opportunities as an important parameter for student academic improvement. This agrees with other scholars that tutorial sessions lead to an increase in students' academic performance (Skoglund, Wall and Kiene 2018: 115; Adebola 2021: 48; Omodan and Ige 2021: 30).

In summary, the findings of the study have been supported by relevant literature. From the discussion, it was confirmed that the selected university uses several teaching methods including PowerPoint display, visual display, and flipped learning. However, there was a challenge in implementing student-centred teaching-learning. The discussion reveals this to include a lack of consolidated policy on student-centred teaching and learning as well as resources constraints. Given this drawback, a student-centered teaching and learning framework was proposed to guide the university in the implementation of student centered-teaching and learning. The framework consists of two parts namely input and output parameter which is moderated by service quality. The next section provides the conclusion and recommendation of the study.


Student centeredness teaching and learning framework
Input
Output
Impacts of SCL
Academic curriculum:
Learning materials & Methods
Useful learning materials
Aligning between theory and practice
Useful information resources for reference
Courses and content
Relevance of course to industry
Courses stimulate learning
Service quality
Tangibles
Assurance & reliability
Empathy
Responsivenes
Learning environment must:
Encourage interaction
Provides supportive space
Supports learning
Service quality
Independent & collaborative learning
Encourages students collaborations
Promote students confidence
Motivation and self-confidence
Motivates students to be the best
Learning valuable to students future
Academic improvement
Receives useful feedback on assessment
Values others perspectives
Tutorial sessions improves studies

CHAPTER SEVEN – CONCLUSION AND RECOMMENDATIONS

7.1 INTRODUCTION

Although student-centered teaching and learning as service delivery are one of the major strands in the selected university's strategic plan, however, there is a lack of comprehensive understanding and process in its implementation. The purpose of this study was to explore students', and key staff, experiences of current strategies aimed at achieving student-centred learning at the selected University of Technology, and the barriers to its achievement. In an attempt to uncover this, the study adopted a mixed sequential exploratory research design to ascertain the degree of successful implementation of student-centred teaching and learning.

The qualitative phase of data was first collected and analysed. This was done by conducting focused group interviews with the students before administering the questionnaire. The findings were used to drive the development of a quantitative instrument (questionnaire). Strands of data were collected and analysed separately and integrated sequentially to address the research objectives. This chapter, therefore, summarises and outlines the main findings obtained from both phases. In line with achieving the research of study, this chapter provides recommendations on how student-centred teaching and learning could be effectively implemented in the selected university.

7.2 Findings from the study

This section explains the overall findings of the study from the qualitative and quantitative phases. The findings are presented in line with the research objectives of this study.

7.2.1 To identify student-centered curriculum policies and strategies that currently exist in two departments of the selected university, specifically with promoting student autonomy and lifelong learning skills.

As documented in the literature, the use of interactive methods of teaching and learning is reported to encourage student's interest in the subjects as well as their engagement (Yakovleva 2014:76). From a South African higher education perspective, the Department of Higher Education and Training mandates universities to improve learning opportunities through the use of diverse modalities. From the quantitative phase, it emerged that the majority of the students (75.1%) agreed that lecturers use several methods of teaching in the selected university such as PowerPoint display, visual display, and flipped learning to help them learn (Table 5.10). Nevertheless, the qualitative interview with the HoDs indicated that most staff are reluctant to leave the traditional lecturer-centered chalk and board method.

In terms of policies, another key finding is that while student-centred teaching and learning is embedded in the university Envision 2030, staff interviewed revealed that it is not clearly communicated nor defined among the university stakeholders.

7.2.2 To establish students' (1st and 3rd years) experiences of these strategies from the perceptive of the students studying in two departments and two different year cohorts using the Service Quality Model

It is worth stressing here that the researcher is not only looking beyond teaching and learning support as an item of service delivery – but also at other aspects of student support. In line with achieving research objective two, the key findings from the study revealed a mixed expression of student experiences at the selected university. For example, it emerged that while some of the third-year students, particularly from Chemical Engineering were satisfied with their teaching experiences, others were dissatisfied. In terms of students' dissatisfaction, the key findings indicate that students were dissatisfied with the teaching skills of the lecturers, overcrowding of the classrooms, excessive workload, and state of the infrastructure such as bathrooms and lecture venues.

Furthermore, the key findings from the qualitative phase revealed that first-year students had concerned about the teaching abilities of some of the lecturers. The students' dissatisfaction with the teaching also agrees with the quantitative phase where nearly half (40.8%) of the students appeared dissatisfied with the style of teaching delivery (Table 5.35).

On the contrary, some of the third-year students interviewed expressed satisfaction with the academic staff caring attitudes and courteous behaviour. This agrees with quantitative findings where the majority of the students (65%) agreed that most staff give students individual attention (Table 5.43).

7.2.3 To enquire from academic staff tasked with oversight of the implementation of these SCL strategies in the two departments, about the successes and impediments to their implementation.

In line with achieving research objective 3, the key finding from the study revealed that the implementation of student-centered teaching and learning at the selected university is occurring piecemeal and in isolated pockets within the university. It was uncovered that the two departments face different challenges in the implementation of student-centered teaching and learning. In the department of Chemical Engineering, for example, the study revealed that the department is yet to develop a common vision which has necessitated different interpretations by different lecturers. It also emerged from the interview with the HoDs that there is resistance to change by lecturers from the traditional approach of teaching to student-centered teaching and learning.

Another impediment to the implementation of student-centered teaching and learning in the selected university is constraints on resources. It was uncovered that the lack of teaching aids in the lecture venues and large student numbers had slowed the transition from the traditional to student-centered teaching and learning approach

On the other hand, the findings revealed that the department of Information and Corporate Management has a designed program that incorporates elements of student-centered teaching and learning such as the introduction of various modules, incorporating various forms of assessment, implementing continuous assessment to ensure that students are not judged based on one final exam.

7.2.4 To recommend improved implementation strategies, should these be seen to be very necessary.

Part of the research inquiry this study sought to address was to propose a strategy that could improve the implementation of student-centered teaching and learning at the selected university. From the finding of this study, it was revealed that students had a concern with the service quality, particularly the state of the infrastructure. More so, there is no consolidated policy of student-centred teaching and learning strategies

at the selected university. Hence, and in achieving research objective four, a student-centered teaching and learning framework was proposed for the selected university – to help solidify and improve the implementation of the SCL policies (See Chapter 6, Section 6.6).

7.3 Recommendations of the study

Part of the objectives this study sought to address was to make recommendations on how student-centred teaching and learning could be further implemented to enhance students' satisfaction at the selected university. Drawing from the study findings from both the qualitative and quantitative phases, the following recommendations were proposed:

7.3.1 Student-centric curriculum

From the finding of the study, it was found that the academic curriculum allows the student to take charge of their learning process. The majority of the students expressed confidence in the learning materials and content of the courses. Hence, this study proposed that students of the selected university curriculum be student-centric in approach. This could be achieved by providing students with the opportunities to design and co-create their learning process with the lecturers. This view can be supported by HoD1 (ICM) where it was indicated that students form part of the advisory board that was behind the introduction of a new curriculum. Moreover, extant literature suggests that the co-creation of curricula enhances students' engagement, motivation, identity development, and self-learning abilities.

7.3.2 Administrative service improvement

While extant literature suggests that students seek empathy, responsiveness, and assurance during their academic development process, it emerged from this study that some students of the selected university were not completely satisfied with the administrative staff's commitment to service. While the university scored high on tangibles, there was a concern with administrative staff providing error-free records, as well as, providing quick and prompt services. Similar observations were reported by another scholar in the same university that students are dissatisfied with the commitment to the delivery aspect of service quality. Hence, the study recommends that the university pay critical attention to administrative staff service delivery. This

may be achieved by re-training administrative staff on the importance of quality service delivery that aligns with the university ENVISION 2030.

7.3.3 Conducive learning environment

Extant literature suggests that a conducive learning environment encourages students learning and development. While it was found that the learning environment of the institution encourages students' interactions with other students, some of the students interviewed raised a complaint about the number of students in classes, the lack of an adequate support system for those with disabilities, and the state of some of the infrastructures such as lecture venues and restroom. For the selected university, an unconducive learning environment is of concern as it may have a negative consequence on the students' academic performance. It is worth appreciating here that not all the learning environments and infrastructure available at the selected university are bad – and some may be necessary (number of students in classes) given resource constraints and the DHET mandate to increase enrolment. Nevertheless, a conducive learning environment is highly recommended for actualising student-centred teaching and learning. The selected university should pay attention to the infrastructures such as lecture venue capacity, and restroom space.

7.3.4 Consolidated student-centred teaching and learning framework

One of the core concerns uncovered in the study was that the implementation of student-centered teaching and learning occurs in silos within the departments. This is evidenced in the interview with the HoD2 (CE) where it was mentioned that the department is yet to develop a common vision for student-centred teaching and learning. The consequence of this is that the implementation of student-centered teaching and learning varies from lecturer to lecturer. Extant literature also indicates that student-centered approaches in many universities are occurring piecemeal and in isolated pockets within the universities. Without a uniform institutionalised framework to guide the implementation of student-centered teaching and learning, achieving it may become more challenging. This study highly recommends the implementation of a consolidated student-centred teaching framework to guide the lecturers. More so, from the interview conducted with the HoDs, there seems to be a lack of custodianship of student-centred teaching and learning policy at the selected university. Therefore, it is also recommended that the management appointing an individual to drive the policy will be of great significance in its implementation.

7.4 Limitation of the Research

The researcher is currently employed in a secretarial staff position in one of the departments in the Faculty of Engineering. The researcher believes that her employment in that office may have influenced the responses received during data collection. This is what Chiesa and Hobbs (2008:67) describe as the Hawthorne effect which is the effects of being researched and may influence how participants performed in the presence of the researcher. Another limitation of the study is the inability of the researcher to test the developed framework and the usage of only two departments further limits the study.

7.5 Areas for Further Research

Student-centered teaching though widely discussed in the literature and has gathered attention among researchers and academia still is subject to different interpretations. More so, there has not been a consensus agreement among academic experts on how best to implement it in a higher education institution. This has made it difficult to develop single strategies for implementing student-centered teaching and learning. From a South African perspective, the shift from an industrial to a knowledge economy requires that Higher Education Institutions adopt more student-centered approaches. Hence, future studies will seek to explore the extent of implementation of student-centered teaching and learning in South African higher education institutions. Another area for future research is testing the impact of the proposed student-centred teaching and learning framework.

7.6 Conclusion

In summary, this study had explored the students', and key staff, experiences of current strategies aimed at achieving student-centred learning at DUT, and the barriers to its achievement. Evidence shows that while there are several methods of teaching, staff are reluctant to leave the traditional lecturer-centered chalk and board method. Student-centered teaching and learning are not clearly communicated nor defined among the staff. Nevertheless, some challenges were uncovered were had impeded the implementation of student-centered teaching and learning. Among these include lack of resources as well as lack of a common vision. The study, therefore, recommends a student-centric curriculum, and consolidated student-centred teaching and learning framework policy. This study also recommends, the improvement of

administrative services rendered to the students as well as creating a conducive learning environment.

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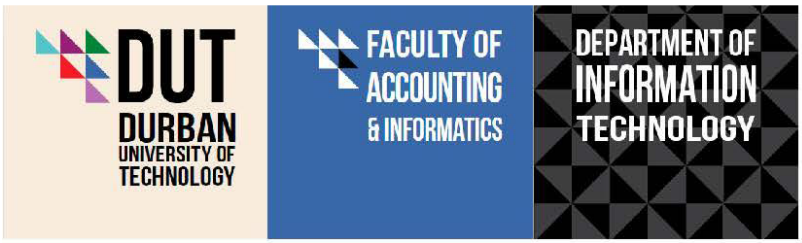
APPENDIX

Appendix A: Ethical clearance letter



Faculty Research Office
Durban University of Technology
Date July 11, 2020

Student Khanyisile Nelisiwe Ntuli
Student Number: **20721638**
Degree: Master of Management Sciences in Administration and Information Management
Email: khanyisilen@dut.ac.za

Dear Khanyisile:

ETHICAL APPROVAL: LEVEL 2
Your email correspondence in respect of the above refers.
I am pleased to inform you that the Faculty Research Ethics Committee (FRC) has granted preliminary permission for you to conduct your research "Is student-centred teaching and learning (SCL) being successfully implemented at a leading University of Technology? A case study of two departments"
You are required to present the letter at your research site for permission to gather data at your research site. Please also note that your research instruments must be accompanied by the letter of information and the letter of consent for each participant, as per your research proposal.
Ethics clearance is valid from the date provisional approval is issued to a student. So a student has to apply for recertification 3 months before the date of this expiry. Also, only if a student has submitted for examination are they not required to apply for recertification. Recertification is required every year until after corrections are made, after examination, and the thesis is submitted to the Faculty Registrar.
A summary of your key research findings may be submitted to the FRC on completion of your studies.
Kindest regards.

Yours sincerely

Prof Richard C Millham
Dept of IT, Faculty of Accounting and Informatics
Ritson Campus
Durban University of Technology
Durban, South Africa, 4001
Richardm1@dut.ac.za
+(27) 031 373 5542

Appendix B: Letter of permission

LETTER OF PERMISSION TO CONDUCT RESEARCH AT DUT

Director for Research and Postgraduates Support
Tromso Annex, Steve Biko campus
Durban University of Technology
P.O. Box 1334
Durban
4000

20 February 2020
Department of Chemical Engineering
Steve Biko campus
Durban
4000

Dear Prof Duffy

I am studying towards a Master's Degree of Management Sciences in Administration and Information Management. My research study is entitled: Is student-centred teaching and learning (SCL) being successfully implemented at a leading University of Technology? A case study of two departments.

This is a request to be granted permission to conduct research with some academic staff and students at the Durban University of Technology to enable me to gather data for my research. The participants for the study will include key staff members that are involved in the implementation of SCL strategies, as well as all the first and third level registered students in the departments of Chemical Engineering and Information and Corporate Management.

It is envisaged that this case study will indicate the degree of successful implementation of the current academic curriculum in the service delivery of student-centred approaches and the challenges faced. The study will be of value to the selected UoT particularly to students and staff in the implementation of the new SCL curricula.

I have also completed the ethical checklist for research approval.

Thank you

Ms KN Ntuli
Student Number: 20721638
Cell Number: 074 292 7114
Email: khanyisilen@dut.ac.za

Dr JP Skinner
Supervisor
031 373 5654

Mr M Ngibe
Co-supervisor
031 373 5858

Appendix C: Gate keeper letter

Directorate for Research and Postgraduate Support
Durban University of Technology
Tromso Annexe, Steve Biko Campus
P.O. Box 1334, Durban 4000
Tel.: 031-3732576/7
Fax: 031-3732946

14th July 2020
Ms Khanyisile N. Ntuli
c/o Department of Information and corporate Management
Faculty of Accounting and Informatics
Durban University of Technology

Dear Ms Ntuli

PERMISSION TO CONDUCT RESEARCH AT THE DUT

Your email correspondence in respect of the above refers. I am pleased to inform you that the Institutional Research and Innovation Committee (IRIC) has granted **Full Permission** for you to conduct your research "Is student-centred teaching and learning (SCL) being successfully implemented at a leading University of Technology? A case study of two departments" at the Durban University of Technology.

The DUT may impose any other condition it deems appropriate in the circumstances having regard to nature and extent of access to and use of information requested.

We would be grateful if a summary of your key research findings can be submitted to the IRIC on completion of your studies.

Kindest regards.
Yours sincerely

DR LINDA ZIKHONA LINGANISO
DIRECTOR: RESEARCH AND POSTGRADUATE SUPPORT DIRECTORATE

Appendix D: Letter of information

Title of the Research study: Is student-centred teaching and learning (SCL) being successfully implemented at a leading University of Technology? A case study of two departments

Principal Investigators/ researcher Ms Khanyisile Nelisiwe Ntuli (BTech)

Co-Investigator/s/supervisors: Dr. Jane Skinner (PhD) and Dr. Musawenkosi Ngibe, (PhD)

Brief Introduction and Purpose of the Study

This study aims to explore students' and key staff, experiences of the current strategies aimed at achieving student-centred learning at DUT, and the barriers to its achievement. The study will be delimited to two academic departments at DUT (Information and Corporate Management and Chemical Engineering). The researcher believes that these two different departments would provide interesting, contrasting, target groups from which differences and similarities of experience could be drawn. It will seek to know the extent to which their current curriculum experience is positioned for student-centeredness.

Outline of the procedure

The researcher will compile a set of questions and interview schedules that will be submitted to staff and students where it is applicable. The researcher will request permission from the department and course lecturers as well as from the DUT Research office to personally administer the questionnaire to full-time first and third-year undergraduate level students under the department of Information and Corporate Management and Chemical Engineering at DUT. Price, Jhangiani and Chiang (2015: 144) advised that focused group interviews should be carried out with a relatively small group of participants. Hence, the number of expected participants in the proposed study will be relatively 8-10, and or until theoretical saturation is reached. On receipt of ethical clearance, the researcher will conduct interviews with the

students. With your permission the interview process will be recorded to make sure that accurate information is captured, which in accordance with the guidelines proposed by Ghauri and Gronhaug (2010: 40), the focus group interview is expected to last between 30 minutes to two hours to achieve the most promising results. A researcher assistant will be present during the interview process. This will be adopted during the study to ensure that the researcher's position and any personal beliefs are shaped. Thus, the role of being a secretarial staff member, does not intrude during data collection. The study will take place in Durban, DUT campus where you are studying.

Risks and Discomforts to the Participant

As a participant to this research you will not be exposed to any risks or discomforts.

Benefits to you and the Researcher

As a researcher, I will gain knowledge and understanding of service delivery of student-centred education at the university. Students and staff will use this as a platform to share and express their views and opinions.

P**articipants May Withdraw from the Study**

Any participants who feel uncomfortable or unwilling to continue with the study will be allowed to withdraw. All participation is totally voluntary.

Remuneration

No monetary value will be awarded to participants.

Costs of the study

You will not will not be liable for any costs by participating in this study.
All expenses will be paid by the researcher.

Confidentiality

Confidentiality and anonymity will be guaranteed such that no one will be able to identify the participants. No names will be used. The information will not be disclosed to anyone except the supervisors and will be used only for research purposes. Staff will be interviewed separately and privately. This will ensure that you are protected against any form of victimization. All completed questionnaires and tape recording of interviews will be stored in a locked cupboard in my supervisors' office and disposed by shredding after 5 years.

Research-related injury

The study is purely interactive discussion sessions and will not be exposing the participants to any form of injury.

Persons to Contact in the Event of Any Problems or Queries

Please contact the researcher on (074 292 7114 or 031 373 2218), my supervisor Dr. Jane Skinner (083 658 5951) or the Institutional Research Ethics Ādministrator on 031 373 2375. Complaints can be reported to the Director: Research and Postgraduate Support, Dr LZ Linganiso on 031 373 2326, reseachdirector@dut.ac.za. DUT P.O. Box 1334, Durban 4001.

Appendix E: Consent letter

CONSENT (RESEARCH PARTICIPANTS)

Statement of Agreement to Participate in the Research Study:

I hereby confirm that I have been informed by the researcher Miss Khanyisile Nelisiwe Ntuli, about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: (to be obtained).

- I have also received read and understood the above written information (Letter of Information) regarding the study.
- I am aware that the results of the study, including my personal details regarding sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare that I am prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation in this study will be made available to me.

Full Name of Participant thumb print	Date	Time	Signature /

I, Khanyisile Nelisiwe Ntuli herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Khanyisile Nelisiwe	07 July 2020	KN Ntuli
Full Name of Researcher	**Date**	**Signature**

Witness only)	**Date Signature (in case of thumb print)**

Appendix F: Interview guide

FOCUS GROUP INTERVIEW QUESTIONS FOR STUDENTS

1. What are the factors that influenced your choice of courses at the DUT? Please elaborate further.

2. Do you feel that the teaching and administrative staff are usually helpful and supportive? Please give some examples.

3. How does the environment stimulate your learning experience at the university?

4. Has your experience of the selected university improved, stayed the same or maybe even become worse, over the three years?

5. Does your learning experience at the university meet your preconceived expectations of the university? Please provide reasons.

6. Please can you describe any critical incidents that you were satisfied or dissatisfied with the teaching and learning process at the university? Describe the circumstances that led to the incidence.

7. Do you think the learning approach and academic curriculum prepares student enough to meet the demand of industry? Kindly elaborate your reasons.

8. In your experience, are there any aspects you would like to see improved concerning either the administration or the service delivery of teaching and learning you have experienced at the selected university? Please elaborate.

SEMI-STRUCTURED INTERVIEW QUESTIONS FOR ACADEMIC STAFF

1. The term “student centeredness” has become a “buzz word” in most South African universities. Can you please share your experiences and / or challenges, in implementing the SCL policies of the department?

2. In your own view, do you think if the implementation of the SCL process in your department has been satisfactory?

3. Can you share your experience of implementing the new student-centred approach in your class?

4. Can you elaborate on the influence the new academic curriculum has on enhancing quality teaching and learning?

5. Does your department have any methods in place that could be used to assist students who are academically struggling?

6. Any recommendations you can suggest that could help with the implementation of SCL curriculum developments?

Appendix G: Questionnaire

1. **SECTION A: DEMOGRAPHIC PROFILE**

DIRECTIONS: PLEASE MARK WITH AN (X) IN THE APPROPRIATE BOX.

1.1	**Ethnic Group (Voluntary)**	
	African	1
	Asian	2
	Coloured	3
	White	4
1.2	**Please specify your gender**	
	Male	1
	Female	2
1.3	**Level of study**	
	First-year	1
	Third-year	2
1.4	**Age in years**	
	17-20	1
	21-23	2
	24 or above	3
1.5	**Please indicate your department**	
	Information and Corporate Management (ICM)	1
	Chemical Engineering (CE)	2

2. **Section B: Students' understanding of the service delivery of student-centred teaching and learning at the selected University**

Directions: The following set of statements relates to your experience concerning student-centred teaching and learning service delivery at your department. Kindly place an (X) in the appropriate block in the table below. The questions under the sections were adapted from other studies (Meguid, and Collins 2017; Lekena, and Bayaga 2018; Meehan and Owells 2018).

STATEMENTS RELATED TO THE EFFECT OF CURRENT ACADEMIC CURRICULUM ON TEACHING AND LEARNING

NO	STATEMENTS	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
2.1	Most of my courses have stimulated my enthusiasm for further learning	1	2	3	4	5
2.2	Most of the lecturers explained the relevance of the course to the work environment	1	2	3	4	5
2.3	Most of the lecturers use several methods of teaching to help me learn (e.g. PowerPoint display, visual display, flipped learning)	1	2	3	4	5
2.4	Most of the lecturers provide immediate feedback on individual or group work	1	2	3	4	5
2.6	Most of the courses encourage me to be confident about tackling unfamiliar problems	1	2	3	4	5
2.6	Most of the lecturers provide useful sources of information for reference	1	2	3	4	5
2.7	The syllabus of each of the courses was well explained at the beginning of the course	1	2	3	4	5
2.8	Most lectures provide useful, constructive feedback to help me learn	1	2	3	4	5
2.9	Most lecturers are available during consultation times outside of class	1	2	3	4	5
2.10	Information about assessments is generally communicated clearly	1	2	3	4	5
2.11	Most courses are delivered as outlined in the syllabus guide	1	2	3	4	5
2.12	In most cases, the learning material provided is useful	1	2	3	4	5
2.13	In most cases and there is an alignment between theory and practice	1	2	3	4	5

2.14	The workload is manageable in most courses	1	2	3	4	5

3. **STATEMENTS RELATED TO STUDENT EXPERIENCES OF THE IMPACT OF STUDENT-CENTRED TEACHING AND LEARNING**

NO	STATEMENTS	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
3.1	I am required to develop the confidence to investigate new ideas	1	2	3	4	5
3.2	I am required to pre-read before lectures	1	2	3	4	5
3.3	I am encouraged to work in collaboration with other students	1	2	3	4	5
3.4	I am required to reflect on, discuss with others, and defend what I learned	1	2	3	4	5
3.5	I am given opportunities to engage in meaningful activities without the lecturer being present	1	2	3	4	5
3.6	The tutorial sessions help me to improve on my academic achievements	1	2	3	4	5
3.7	I feel challenged to think for myself	1	2	3	4	5
3.8	I feel involved and part of the classroom activities	1	2	3	4	5
3.9	I feel free to express my views during the teaching and learning process.	1	2	3	4	5
3.10	I have opportunities to explore how I could personally use what I learn	1	2	3	4	5
3.11	I nearly always receive useful feedback on my assessments to help me improve	1	2	3	4	5
3.12	I consider what I learn valuable for my future	1	2	3	4	5

3.13	I feel motivated to do my best work	1	2	3	4	5
3.14	I feel I am achieving the learning outcomes in most of the courses	1	2	3	4	5
3.15	My current university experience encourages me to value perspectives other than my own	1	2	3	4	5
3.16	Overall, I am satisfied with the style of teaching delivery in my department	1	2	3	4	5

4. STATEMENTS RELATED TO STUDENT EXPERIENCES OF SERVICE QUALITY

NO	STATEMENTS	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
4.1	My department has good admission procedures to recruit appropriately qualified students	1	2	3	4	5
4.2	Most administrative staff provide error-free records	1	2	3	4	5
4.3	Most staff tell me exactly when a service will be performed	1	2	3	4	5
4.4	Most staff show an interest in solving my problems	1	2	3	4	5
4.5	Most administrative staff in my department provide quick and prompt services	1	2	3	4	5
4.6	Most administrative staff provide accurate and timely information	1	2	3	4	5
4.7	Most staff dress neatly	1	2	3	4	5
4.8	My department has up-to-date equipment	1	2	3	4	5
4.9	Most staff in my department treat students courteously	1	2	3	4	5

4.10	Most staff give students individual attention	1	2	3	4	5

5. STATEMENTS RELATED TO THE LEARNING ENVIRONMENT AND ITS ADMINISTRATION

NO	STATEMENTS	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
5.1	The learning environment encourages me to interact with other students	1	2	3	4	5
5.2	The learning environment supports my learning	1	2	3	4	5
5.3	The learning environment provides a supportive space in which I feel appreciated, acknowledged and respected	1	2	3	4	5
5.4	The administration system in my department is effective (e.g., it clearly explains what to do or where to go)	1	2	3	4	5
5.5	We have appropriate lecture venues, computer laboratories, online resources, library resources, etc.	1	2	3	4	5

6. SECTION C: ADDITIONAL COMMENTS

6.1	What incidents have you experienced that led to your satisfaction or dissatisfaction with student-centred teaching and learning service delivery?

6.2	What would be your recommendations for the further development of student-centred teaching and learning in your Department?

Thank you for your time in completing the questionnaire.

Warm regards

Appendix H: Factor analysis results

1 Validation of the effect of current academic curriculum on teaching and learning at the selected University

Using the eigenvalues greater than one, the PCA for the extracted revealed a two-factor dimension explaining 55.5% of the total variance (Table 1). This suggests that the 14 statements are loaded into two different dimensions.

Table 1: Factor extraction for students' understanding of the service delivery of student-centred teaching and learning at the selected University

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.566	46.899	46.899	6.566	46.899	46.899	4.549	32.490	32.490
2	1.204	8.602	55.502	1.204	8.602	55.502	3.222	23.012	55.502

Extraction Method: Principal Component Analysis.

	Factors	Reliability	Component	
			1	2
Q2.3	Learning materials and methods	0.897	.586	.461
Q2.6			.778	
Q2.7			.671	.348
Q2.9			.678	.390
Q2.10			.747	
Q2.11			.743	
Q2.12			.792	
Q2.13			.621	
Q2.1	Courses and learning	0.786	.393	.533
Q2.2				.662
Q2.4				.804
Q2.5			.346	.625
Q2.8			.442	.596
Q2.14				.586
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				

a. Rotation converged in 3 iterations.

As shown in Table 1, Factor 1 contained 8 items under the dimension “learning materials and methods”. Factor 2 contained 6 items categorised under the dimension “courses and learning”. The Cronbach’s alpha score for the two dimensions was above the recommended value of 0.70. This suggests the emerged factors have good reliability.

Confirmatory factor analysis (CFA) was further used to validate the EFA analysis. The model reveals a good fit to the data (Chi Square= 269.689; df=76; p< 0.001; cmindf=3.549; RMSEA=0.027; CFI=0.935; TLI=0.922; IFI=0.935). As shown in Figure 1, all items loaded significantly on their hypothesised latent constructs that demonstrate a constructs validity. The standardised factor loading with a value of 0.50 or higher, provides strong evidence of convergent validity (Hair et al. 2010). As shown in Table 5.6, the average variance extracted (AVE) for dimension learning materials and methods had factor loadings above the recommended value, which suggest adequate convergent validity for the dimensions. However, the AVE values for the dimension courses and learning was lower than the recorded value. In terms of the discriminant validity, the AVE values dimensions measured for both dimensions were higher than MSV and ASV values, thus failing to support discriminant validity.

Table 2: Convergent and discriminate validity for the effect the current academic curriculum had on teaching and learning

	Composite reliability	**Convergent validity**	**Discriminant validity**	
		AVE	**MSM**	**ASV**
Learning materials and methods	0.746	0.522	0.689	0.689
Courses and learning	0.887	0.388	0.689	0.689

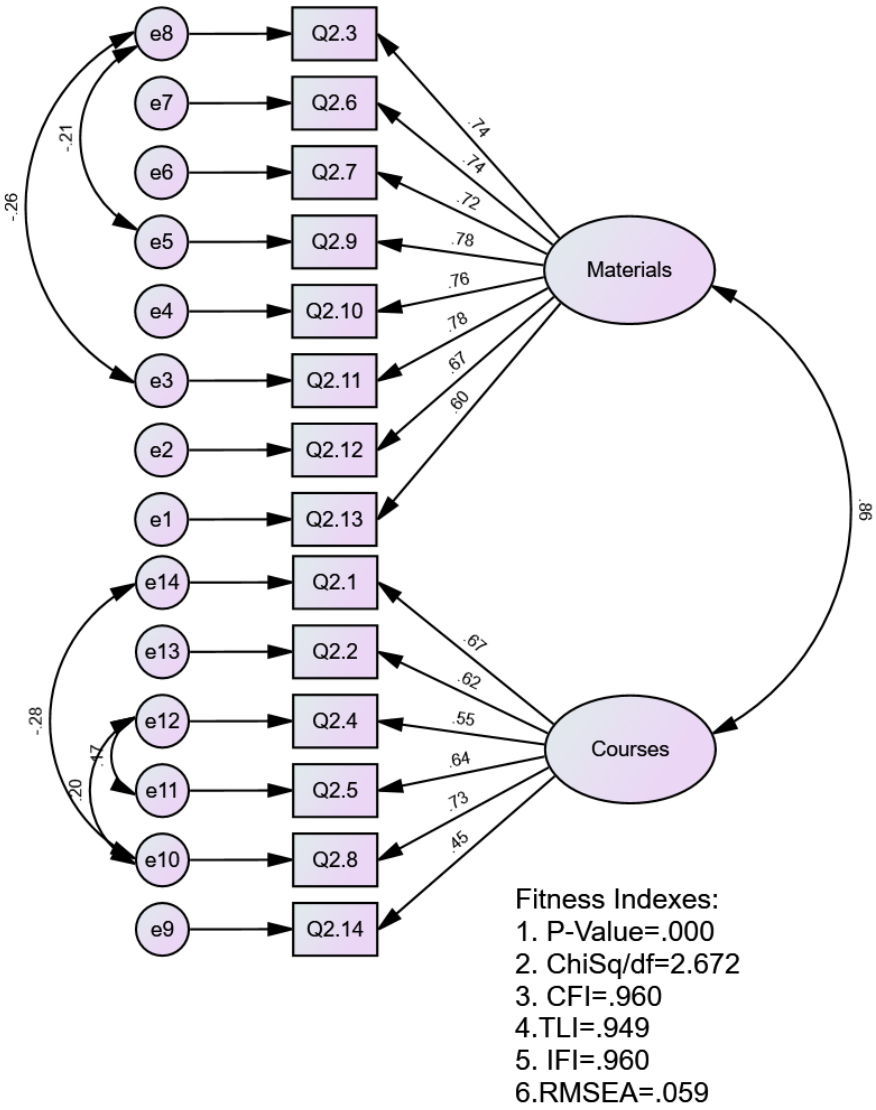


Figure 1: CFA for students' understanding of the effect the current academic curriculum had on teaching and learning

2 Validation of student experiences of the impact of student-centred teaching and learning

Using the eigenvalues greater than one, the PCA for the extracted items revealed a three-factor dimension explaining 57.7% of the total variance (Table 3). This suggests that the 14 statements are loaded into three different dimensions.

Table 3 Factor extraction for student experiences of the impact of student-centred teaching and learning

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.991	43.691	43.691	6.991	43.691	43.691	3.541	22.131	22.131
2	1.155	7.221	50.913	1.155	7.221	50.913	3.305	20.657	42.788
3	1.085	6.779	57.692	1.085	6.779	57.692	2.385	14.904	57.692

Extraction Method: Principal Component Analysis.

	Factor	Reliability	Component		
			1	2	3
Q3.3	Independent and collaborative learning	0.823	.758		
Q3.1			.723	.364	
Q3.2			.705		
Q3.4			.687		.355
Q3.5			.561		.328
Q3.7			.470	.313	
Q3.8			.467	.388	.442
Q3.14	Motivation and self-confidence	0.826		.726	
Q3.9			.304	.707	
Q3.13			.453	.617	
Q3.10				.606	.362
Q3.16				.562	.378
Q3.12			.351	.536	.361
Q3.6	Academic improvement	0.709	.337		.829
Q3.11				.388	.693
Q3.15				.484	.534

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 10 iterations.

Drawing from the above table, three factors emerged while 2 items with loading below 0.5 were dropped from further analysis. Factor 1 contained 5 items under the dimension “Independent and collaborative”. Factor 2 contained 6 items categorised

under the dimension “Motivation and self-confidence”. Factor 3 contained 3 items categorised under the dimension “Academic improvement”. The Cronbach’s alpha scores for the three dimensions were above the recommended value of 0.70. This suggests the emerged factors have good reliability.

Confirmatory factor analysis (CFA) was further used to validate the EFA analysis. The model reveals a good fit to the data (Chi Square= 272.348; df=68; p< 0.001; cmindf=4.006; RMSEA=0.079; CFI=0.928; TLI=0.903; IFI=0.928). As shown in Figure 2, all items loaded significantly on their hypothesised latent constructs that demonstrate a constructs validity. As shown in Table 5.7, the average variance extracted (AVE) for dimension factor 1 “Independent and collaborative learning” had factor loadings above the recommended value, which suggests adequate convergent validity for this dimension. However, the AVE values for the dimensions “Motivation and self-confidence” and “Academic improvement” were lower than the recommended value of 0.5, which suggest a lack of convergent validity for these two dimensions.

In terms of the discriminant validity, the AVE values dimensions three factors (1-3) were higher than MSV and ASV values, thus failing to support discriminant validity.

Table 4: Convergent and discriminate validity for student experiences of the impact of student-centred teaching and learning

	Composite reliability	**Convergent validity**	**Discriminant validity**	
		AVE	**MSM**	**ASV**
Independent and collaborative learning	0.843	0.521	0.596	0.559
Motivation and self-confidence	0.833	0.395	0.762	0.680
Academic improvement	0.670	0.409	0.762	0.641

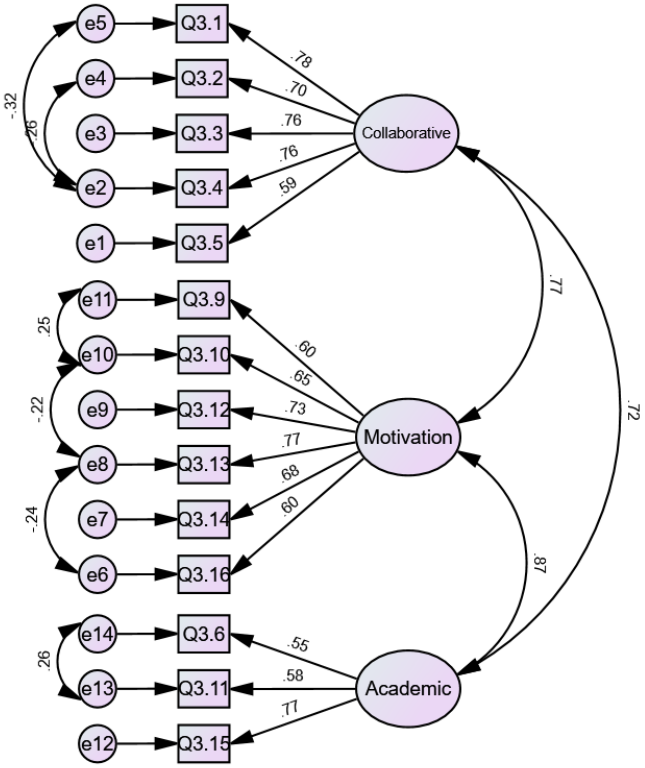


Figure 2 CFA for students' understanding of the service delivery of student experiences of the impact of student-centred teaching and learning

3 Validation of student experiences of service quality

Using the eigenvalues greater than one, the PCA for the extracted items revealed a clear dimension explaining 52% of the total variance (Table 5). This suggests that the 10 statements are loaded into a single dimension categorised as service quality. The Cronbach's alpha scores for the dimension was above the recommended value of 0.70, which suggests that the factor had good reliability.

Table 5: Factor extraction for student experiences of service quality

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.200	52.000	52.000	5.200	52.000	52.000

Extraction Method: Principal Component Analysis.

	Factor	Reliability	Component
			1
Q4.9	Service quality	0.896	.782
Q4.8			.771
Q4.4			.764
Q4.3			.752
Q4.5			.733
Q4.7			.722
Q4.10			.722
Q4.6			.674
Q4.2			.637
Q4.1			.634

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Confirmatory factor analysis (CFA) was further used to validate the EFA analysis. The model reveals a good fit to the data (Chi Square= 102.105; df=32; p< 0.001; cmindf=4.006; RMSEA=0.079; CFI=0.928; TLI=0.903; IFI=0.928). As shown in Figure 4, all items loaded significantly on their hypothesised latent constructs that demonstrate a constructs validity. As shown in Table 6, the average variance extracted (AVE) for dimension was below the recommended value of 0.5. This indicates inadequate convergent validity for this dimension. In terms of the discriminant validity, the AVE value for the dimension was higher than MSV and ASV values, thus failing to support discriminant validity.

Table 6: Convergent and discriminate validity for student experiences of service quality

	Convergent validity
	AVE
Service quality	0.459

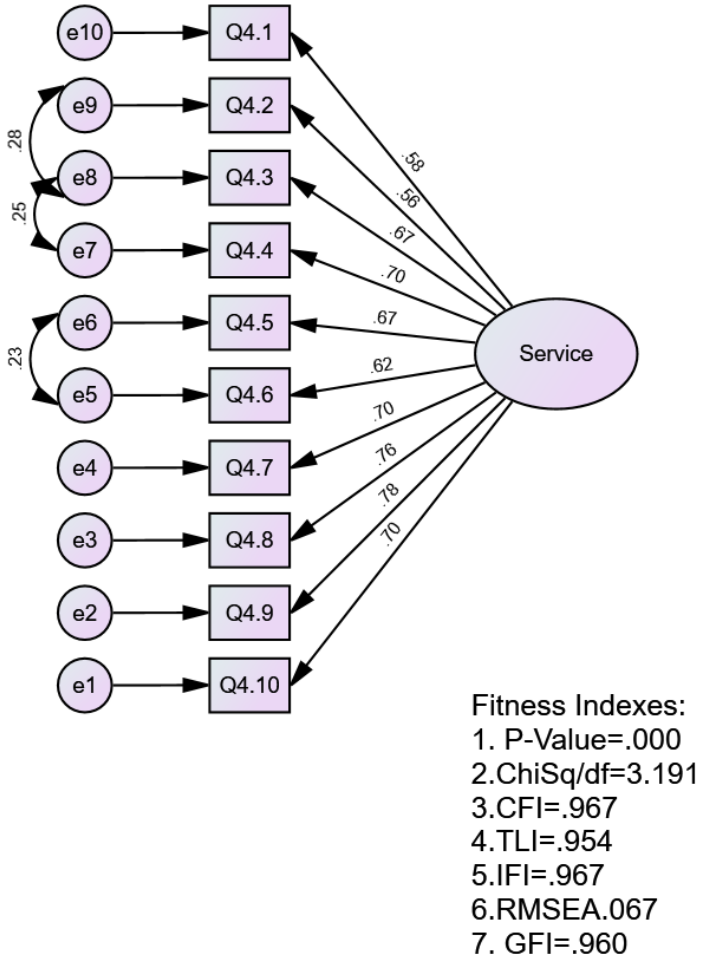


Figure 4 CFA for service quality dimension

5.8.4 Validation of the construct learning environment and its administration

Using the eigenvalues greater than one, the PCA for the extracted items revealed a clear dimension explaining 52% of the total variance (Table 7). This suggests that the 5 statements are loaded into a single dimension categorised as the learning

environment and its administration. The Cronbach's alpha scores for the dimension was above the recommended value of 0.70, which suggests that the factor had good reliability.

Table 7 Factor extraction for the construct learning environment and its administration

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.796	55.914	55.914	2.796	55.914	55.914
Extraction Method: Principal Component Analysis.						

	Factor	Reliability	Component
			1
Q5.3	Learning environment and its administration	0.798	.790
Q5.1			.789
Q5.2			.770
Q5.4			.741
Q5.5			.637
Extraction Method: Principal Component Analysis.			
a. 1 components extracted.			

Confirmatory factor analysis (CFA) was further used to validate the EFA analysis. The model reveals a good fit to the data (Chi Square=16.801; df=4; p< 0.001; cmindf=4.006; RMSEA=0.079; CFI=0.928; TLI=0.903; IFI=0.928). As shown in Figure 5, all items loaded significantly on their hypothesised latent constructs that demonstrate a constructs validity. As shown in Table 8, the average variance extracted (AVE) for dimension was below the recommended value of 0.5. This indicates inadequate convergent validity for this dimension. In terms of the discriminant validity, the AVE value for the dimension was higher than MSV and ASV values, thus failing to support discriminant validity.

Table 5.8: Convergent and discriminate validity for the learning environment and its administration

	Convergent validity
	AVE
Service quality	0.431

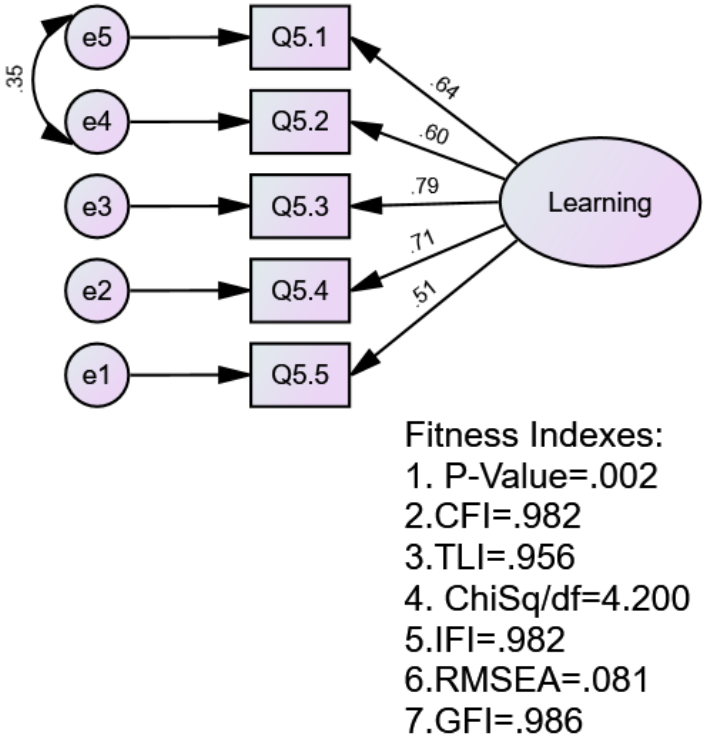


Figure 5 CFA for the learning environment and its administration dimension

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Date: 24 March 2022

Re: Khanyisile Nelisiwe Ntuli (20721638)

Faculty of Accounting and Informatics, Durban University of Technology

Master's Dissertation: **Is student-centred teaching and learning being successfully implemented at a leading University of Technology? A case study of two departments**

I confirm that I have proof-read, language edited and lay-out edited the above mentioned work by Ms. **Khanyisile Nelisiwe Ntuli**. I am a freelance editor specialising in proofreading and editing academic documents. I returned the document to the author with track changes so correct implementation of the changes in the text and references is the responsibility of the author.

My first degree which I obtained at DUT was Nat.Dip: Journalism (1994). I obtained a Btech: Journalism (2011). I went on to complete an M.Phil: Quality Management (2017), and DPhil: Peace Studies (2021). I was employed as a writing tutor at the ML campus Writing Centre for the year 2015.

I am satisfied that the editing and proof-reading of the above-mentioned wok meets the post-graduate guidelines as enumerated.

Dr Maleni Thakur
24 March 2022