

**LECTURERS' PERSPECTIVES ON CHALLENGES FACING FINAL-YEAR
ENGINEERING STUDENTS AT A TVET COLLEGE IN NONGOMA, KWAZULU-
NATAL**

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I declare that the dissertation **LECTURERS' PERSPECTIVES ON CHALLENGES FACING FINAL-YEAR ENGINEERING STUDENTS AT A TVET COLLEGE IN NONGOMA, KWAZULU-NATAL** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the dissertation to originality checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.



SIGNATURE

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DATE

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ABSTRACT

Technical and Vocational Education and Training colleges are institutions of higher learning established to address the growing rate of unemployment globally, more so in developing countries such as South Africa. The Technical and Vocational Education and Training college selected in this study is located in an area where there are high levels of unemployment and poverty. The purpose of the study was to explore the challenges final-year engineering students at a Technical and Vocational Education and Training college at Nongoma, Kwa-Zulu Natal are facing from the perspective of lecturers. There is a dearth of practical and technical abilities among final-year engineering students at this college. The researcher conducted individual and focus-group interviews to acquire lecturers' perspectives of practical and technical abilities lacking among final-year engineering students. The social constructivism theory is used as a lens to view the study. The researcher used a qualitative case study based in the interpretivism paradigm. The data were collected from eleven participants who were purposively selected because they were deemed information-rich with regard to the final-year engineering programme. Data were analysed manually using coding that led to the emergence of themes. The research findings revealed that final-year engineering students at the college are trained in a workshop with damaged tools and outdated machinery, that college lecturers are not participating in a Work-Integrated Learning (WIL) programme that would improve their ability to instruct these students, and that there is a lack of collaboration between the college administration and key stakeholders like the Department of Higher Education and Training. The conclusion and the recommendations from this study include ensuring effective and efficient maintenance culture for the work tool and machines in the workshops required to train the final-year engineering students and ensuring that Technical and Vocational Education and Training college lecturers are engaged for the WIL programme. The Department of Higher Education and Training should also ensure that Technical and Vocational Education and Training colleges form effective partnerships and relationship-building between stakeholders in the industries.

KEYWORDS:

Challenges; employable; engineering lecturers; final-year students; labour market; perspectives; programmes; skills; TVET college; work-integrated learning.

TABLE OF CONTENTS

DECLARATION.....	i
ACKNOWLEDGEMENTS	ii
ABSTRACT	iii
LIST OF FIGURES.....	viii
LIST OF TABLES.....	viii
ACRONYMS AND ABBREVIATIONS	ix
CHAPTER 1: INTRODUCTION AND BACKGROUND TO THE STUDY	1
1.1 INTRODUCTION	1
1.2 BACKGROUND TO THE STUDY	2
1.3 RATIONALE FOR THE STUDY	4
1.4 LITERATURE REVIEW.....	5
1.5 STATEMENT OF THE PROBLEM.....	6
1.6 AIM AND OBJECTIVES.....	7
1.7 RESEARCH METHODOLOGY	8
1.7.1 Research Paradigm	8
1.7.2 Research Approach	8
1.7.3 Research Design	9
1.7.4 Research Method	9
1.7.4.1 Population and sampling	9
1.7.4.2 Data collection instruments.....	10
1.8 TRUSTWORTHINESS.....	12
1.9 ETHICAL CONSIDERATIONS.....	12
1.10 LIMITATIONS AND DELIMITATIONS OF THE STUDY	13
1.11 DEFINITIONS OF KEY CONCEPTS	13
1.12 CHAPTER OUTLINE	14
1.13 CHAPTER SUMMARY.....	14
CHAPTER 2: THEORETICAL FRAMEWORK AND LITERATURE REVIEW.....	16
2.1 INTRODUCTION	16
2.2 THE CONCEPT OF A THEORETICAL FRAMEWORK	16
2.2.1 Significance of the Social Constructivism Theory	17
2.3 THE SOCIAL CONSTRUCTIVISM THEORY.....	19
2.3.1 Perspective of Reality in Social Constructivism Theory	20
2.3.2 The Perspective of Knowledge in Social Constructivism	21
2.3.3 Perspective of Learning in Social Constructivism Theory	22
2.4 LITERATURE REVIEW.....	24
2.4.1 Introduction	24
2.4.1.1 Perspectives on Technical and Vocational Education and Training ...	25
2.4.2 Global Trends in Technical and Vocational Education and Training.....	28
2.4.3 African Trends in Technical and Vocational Education and Training	29
2.4.3.1 TVET colleges in Nigeria	30
2.4.3.2 TVET colleges in Ghana.....	31
2.4.4.3 TVET colleges in South Africa	31
2.4.4.4 White Paper on Post-School Education and Training 2013.....	36

2.4.4.5 The quality of TVET lecturers	37
2.4.4.6 Challenges faced by TVET colleges in South Africa.....	38
2.5 CHAPTER SUMMARY	41
CHAPTER 3: RESEARCH METHODOLOGY	42
3.1 INTRODUCTION	42
3.2 RESEARCH PARADIGM.....	42
3.2.1 Interpretive Paradigm	42
3.2.1.1 Ontological assumptions	43
3.2.1.2 Epistemological assumptions	43
3.2.1.3 Axiological assumption	44
3.2.1.4 Rhetorical assumptions	44
3.2.2 Research Approach	44
3.2.3 Research Design	44
3.3 RESEARCH METHODS	45
3.3.1 Research Site	45
3.3.2 Population and Sampling.....	47
3.4 DATA COLLECTION INSTRUMENTS.....	49
3.4.1 Individual Interviews	49
3.4.2 Focus-Group Interviews.....	50
3.4.3 Non-participant Observation	51
3.4.3.1 Conducting non-participant observation	52
3.4.4 Document Analysis	52
3.4.4.1 Conducting document analysis.....	53
3.6 DATA ANALYSIS.....	53
3.6.1 Individual Interview Data Analysis	54
3.6.2 Focus-Group Interviews Data Analysis.....	54
3.6.3 Non-Participant Observation Analysis	55
3.6.4 Document Data Analysis	55
3.7 MEASURES OF TRUSTWORTHINESS.....	56
3.7.2 Credibility	56
3.7.3 Dependability	57
3.7.4 Transferability	57
3.7.5 Confirmability	57
3.7.6 Ethical Measures	58
3.8 FUNDAMENTAL ETHICAL PRINCIPLES.....	58
3.8.1 Anonymity and Confidentiality.....	58
3.8.2 Privacy.....	58
3.8.3 Permission	58
3.8.4 Feedback.....	59
3.8.5 Respect for Persons	59
3.9 CHAPTER SUMMARY.....	59
CHAPTER 4: DATA PRESENTATION, ANALYSIS, AND DISCUSSION OF FINDINGS	60
4.1 INTRODUCTION	60
4.2 BIOGRAPHICAL INFORMATION	60
4.4.1 Emerging Themes	63

4.5 PRESENTATION OF FIELDWORK WITH SENIOR LECTURERS, STUDENTS AND THE HEAD OF DEPARTMENT	64
4.5.1 Theme 1: Final-year Engineering Students' Way of Dealing with Challenges Experienced in the Learning Environment	65
4.5.1.1 Limited or inadequate resources	65
4.5.1.2 Inadequate practical skills training	66
4.5.1.3 Attending extra lessons during weekends and vacation days	68
4.5.2 Theme 2: Creating an Enabling Environment Aligned to Industrial Placement for Final-year Engineering Students' Internship	69
4.5.2.1 Providing foundational practical skills	69
4.5.2.2 Integration of theory and practice	70
4.5.3 Theme 3: Accessibility of Resources for Students' World of Work	71
4.5.3.1 Inadequate skills training for employment	71
4.5.3.2 Obsolete machines and equipment	72
4.5.4 Theme 4: Lecturers' Perspectives in Assisting Final-Year Engineering Students Overcome Challenges	73
4.5.4.1 Improve lecturers' skills through work integrated learning (WIL) programme	73
4.5.4.2 Formation of TVET college and engineering industry partnership	74
4.6 CHAPTER SUMMARY	76
CHAPTER 5: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	77
5.1 INTRODUCTION	77
5.2 SUMMARY OF MAJOR FINDINGS	78
5.2.1 Summary of Major Findings from the Individual Interviews	79
5.2.2 Summary of Major Findings from the Focus-Group Interviews	79
5.2.3 Summary of Major Findings from Non-Participant Observation	80
5.3 LIMITATIONS OF THE STUDY	80
5.4 CONCLUSIONS	81
5.4.1 Conclusions on Research Question 1	82
5.4.2 Conclusions on Research Question 2	82
5.4.3 Conclusions on Research Question 3	83
5.4.4 Conclusions on Research Question 4	83
5.4.5 Research Question 5	84
5.5 RECOMMENDATIONS FOR FURTHER STUDIES	84
5.5.1 The Training of the Lecturers through the WIL Programme	85
5.5.2 TVET Partnership with the Stakeholders	85
5.5.3 Effective Maintenance of TVET College Infrastructure	86
5.6 CHAPTER SUMMARY	87
REFERENCES	88

APPENDICES	108
APPENDIX A: PROOF OF REGISTRATION	108
APPENDIX B: ETHICAL CLEARANCE	109
APPENDIX C: INFORMATION SHEET	111
APPENDIX D: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT THE CAMPUS	116
APPENDIX E: COLLEGE AND DHET APPROVAL TO CONDUCT RESEARCH	118
APPENDIX F: CONSENT FORM.....	123
APPENDIX G: OBSERVATION CHECKLIST	124
APPENDIX H: INDIVIDUAL INTERVIEWS – SENIOR LECTURERS.....	126
APPENDIX I: FOCUS GROUP INTERVIEW – SENIOR LECTURERS	128
APPENDIX J: INDIVIDUAL INTERVIEWS – FINAL-YEAR ENGINEERING STUDENTS.....	130
APPENDIX K: FOCUS GROUP INTERVIEWS – FINAL-YEAR ENGINEERING STUDENTS.....	132
APPENDIX L: DOCUMENT ANALYSIS.....	133
APPENDIX M: TURNITIN REPORT	134
APPENDIX N: CONFIRMATION OF PROFESSIONAL EDITING	136

LIST OF FIGURES

Figure 1.1: Map of Kwa-Zulu Natal province showing the Nongoma municipality where the TVET College is located	3
Figure 2.1: Three basic assumptions of social constructivism.....	19
Figure 3.1: Map of South Africa showing KZN Province.....	46
Figure 3.2: Map of KwaZulu-Natal province showing all the districts	46
Figure 3.3: Map of Zululand District showing all the towns.....	47

LIST OF TABLES

Table 4.1: Description of participants	61
Table 4.2: Themes and sub-themes.....	63

ACRONYMS AND ABBREVIATIONS

DHET	Department of Higher Education and Training
FET	Further Education and Training
HEQC	Higher Education Quality Council
HRDC	Human Resource Development Council of South Africa
HSRC	Human Sciences Research Council
NC(V)	National Certificate (Vocational)
NEET	Not in Education, Employment or Training
NQF	National Qualifications Framework
NSF	National Skills Fund
RSA	Republic of South Africa
TVET	Technical and Vocational Education and Training
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VET	Vocational Education and Training
WIL	Work-Integrated Learning

CHAPTER 1

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION

TVET colleges are a vital instrument of education established to assist students in acquiring appropriate expertise, technical skills and mentality for productive engagement in a particular engineering trade or business space (Mack & White, 2019). Thus, one of the primary goals of creating TVET institutions throughout the world is to aid in the economic development and expansion of any country by lowering the rate of unemployment (Mends-Brew & Dadzie, 2016).

A developed nation like Germany recognises TVET colleges as Vocational Educational Training (VET) colleges, also called the dual system. The German dual system, according to Deissinger (2022), integrates theoretical instruction in vocational schools with real-world work experiences and organisational contexts. Subsequently, the system assists in improving the economy of Germany by decreasing the rate of unemployment through the acquisition of skills that are practically oriented to students (Eichhorst, Rodriguez-Planas, Schmidl & Zimmermann, 2012). Similarly, in China, the TVET educational system is an essential and pivotal component of the Chinese government education system. In the past few years, the Chinese TVET system has gained widespread attention, boosting the growth and development of the Chinese economy by improving China's employment rate (UNESCO-UNEVOC, 2018). These significant achievements recorded in Germany and China have been accomplished since their respective TVET programmes have a curriculum that emphasises the development of employable skills and skill-based training (Dasmani, 2011).

Conversely, recent studies have revealed that TVET colleges in African nations like Ghana, Kenya and South Africa are yet to achieve such ground-breaking achievements like Germany and China (Anindo, Mugambi & Matula, 2016; Mack & White, 2019). Furthermore, Van der Bijl and Taylor (2016) and Anindo et al. (2016) upholds the view that TVET colleges in Africa, particularly South Africa are facing different challenges. These ranges from the inability to produce employable TVET graduates; insufficient training facilities; inadequate instructional materials; weak

synergy between TVET colleges and municipal or provincial industries for technical practical experience for both the lecturers and students.

As a result, these constraints have resulted in unproductive and ineffective student instruction that focuses solely on the importance of passing their individual final examination at TVET colleges (Van der Bijl & Taylor, 2016).

Hanapi, Safarin and Khamis (2015), on the other hand, indicate that TVET lecturers who are responsible for teaching and equipping engineering students with practical skills and technical expertise do not have the necessary qualifications and are not well-trained or equipped with the required skills to make these students employable.

The primary objective of establishing TVET colleges in most nations of the world was ultimately for the acquisition of technical hands-on knowledge and adequate skills that are sustainable for the economic growth of a country (Anindo et al., 2016). The findings of Anindo et al. (2016) and Van der Bijl and Taylor (2016) seem to be consistent with other research which found that this primary objective has been a difficult task to achieve in TVET colleges in some African countries and in particular South Africa (Badenhorst & Radile, 2018). Until now, no studies have investigated lecturers' perspectives on challenges faced by final-year engineering students at a TVET college in Nongoma, Kwa-Zulu Natal graduates. It is based on this premise that the researcher was prompted to conduct this study to explore lecturers' perspectives on challenges facing final-year engineering students at a TVET college, in Nongoma Kwa-Zulu Natal

1.2 BACKGROUND TO THE STUDY

The Department of Higher Education and Training (DHET) introduced the TVET education system into the South African education system, which assisted the department to comply with international trends and standards (DHET, 2013a). Subsequently, from 2012, all public Further Education and Training (FET) colleges started rebranding as TVET colleges. One explanation given for the transition from FET to TVET colleges in South Africa was because FET colleges have already concentrated on the same vocational education and development of skills that TVET is supposed to facilitate. In 2013, DHET released its "*Policy on Professional Qualifications for Lecturers in Technical and Vocation Education and Training*" (DHET, 2013b) the policy regulates and guides the development and design of TVET Colleges

lecturers' qualifications in South Africa. The qualifications that were introduced from 2016 distinguished TVET college lecturers' qualification criteria from schoolteachers' qualifications. Although this policy aimed at assisting TVET lecturers, particularly engineering lecturers on the platform to gain quality, practical workplace-based learning, it failed to do so because these engineering lecturers lacked the latest modern practical and technical expertise. Perhaps failure to implement the policy was due to the inability of TVET management to establish synergy with recognised and relevant industries to train TVET interns during mandatory 18-months' work-industrial experience.

There are 50 TVET colleges in South Africa, spread among the country's nine provinces, nine of which are in Kwa-Zulu Natal (KZN). There are nine public TVET colleges in the province, and the TVET college where the research was conducted is one of them. It has six campuses: Vryheid, Nquthu, Emandleni (Ulundi), Maputo, Babanago and Nongoma. These six campuses are situated in the northern part of KZN and its span over a large area which cut across three district councils: the Zululand District Municipality, the uMkhanyakude District Municipality and the uMzinyathi District Municipality. However, the Nongoma campus of the TVET college is located in the Zululand District Municipality (Figure 1.1).



Figure 1.1: Map of KZN province showing the Nongoma municipality where the TVET College is located

Source: https://www.sa-venues.com/maps/kwazulu_natal_atlas.htm

the area around the TVET College is associated with high levels of unemployment and poverty, which in some districts can reach 79% (Zululand District Municipality, 2018). The overall population is around 1.4 million citizens, with about 45% of the population presently employed; 7% of the population has Grade 4 as their highest level of qualification and 36% have no formal education or training (Zululand District Municipality, 2020).

Xaba and Mandizvidza (2017) maintain that the lack of industries in the district contributes to this problem of unemployment of TVET graduates in the Zululand District.

1.3 RATIONALE FOR THE STUDY

The TVET educational sector has made a significant socioeconomic contribution to the global economy, assisting in lowering the youth unemployment rate and enhancing their sense of empowerment. In alignment with global trends, the South African educational framework established TVET colleges in an attempt to empower the ever-increasing population of young people with technical practical expertise, proficiency and principles for lifelong learning (Nzimande, 2013). For instance, recent data indicates that the quality of TVET graduates in the job market has come under more scrutiny because these students lack the required technical skills for them to be gainfully employed (Mengistu & Negasie, 2022). These students lack the expertise and technical know-how required for the job market and this has become a significant concern to the researcher. Some literature attributes the problem to TVET lecturers' inexperience in the delivery of technical practical skills since they lack the quality industry-based workplace experience necessary for teaching and learning to assist students to acquire these scarce skills (Van der Bijl & Taylor, 2016) needed to reduce the rate of unemployment among T(VET) graduates, particularly women. Mokwena (2018) argues that acquiring practical or vocational skills through the TVET system should assist them to earn a livelihood.

My main reason for choosing this topic is that the researcher has worked closely with TVET colleges as a lecturer for many years. The researcher was prompted to explore why many of our TVET graduates have remained unemployed after the successful completion of their respective engineering programmes (Buthelezi, 2018). Therefore,

this study aims to explore lecturers' perspectives on challenges facing final-year engineering students at a TVET college in Nongoma, KZN.

1.4 LITERATURE REVIEW

Significant changes have been made to technical training in South Africa since the post-apartheid era in 1994 culminating in the establishment of the TVET college system in 1995. This means that TVET colleges have existed for more than 24 years. Fifty accredited public TVET colleges operate across 264 campuses in both South Africa's rural and urban areas (DHET, 2014). The Continuing Education and Training Act 16 of 2006 regulates the TVET colleges which report to the DHET.

In the last 14 years, South Africa's TVET education system has experienced significant administrative, systemic and curriculum improvements (Buthelezi, 2018). These curricula improvements were geared toward refining the quality of TVET graduates such that TVET graduates possess the required technical scarce skills to increase their chances of gaining employment.

Similarly, Mgijima (2014) maintains that the introduction of the new curriculum and policies into the TVET system was to assist TVET lecturers, particularly the engineering lecturers to acquire quality work-based industrial training. However, the lack of continuous professional and industrial training development for these lecturers has had adverse effects on the quality of TVET graduates turned out into the labour market.

Van der Bijl and Taylor (2016) echo Mgijima's (2014) claim that engineering lecturers in TVET colleges lack industry knowledge and practical experience. According to Mends-Brew and Dadzie (2016) the link between engineering advancement and TVET educational systems is inextricable. TVET colleges must offer courses in the context of their practical application to their specific sectors if they are to accomplish their desired objectives. The learning objectives are designed to produce graduates who are well-equipped with the skills, knowledge and attributes required for carrying out activities related to a specific field of study. However, Hanapi et al. (2015) assert that there is little or no synergy between industries and TVET colleges in South Africa and this problem contributes to the quality of TVET graduates released into the employment market.

The researcher identified a knowledge gap that no researchers have addressed, namely, lecturers' perspectives on key challenges faced by the final-year engineering students of a TVET college in Nongoma KZN. The current solutions to these challenges facing the final-year engineering students tendered by recent studies have been inadequate. Therefore, the researcher has chosen to conduct a study to better explore these problems. The theoretical framework the researcher used for this study is social constructivism theory. It was Lev Vygotsky who first developed the social constructivism theory (Sjoberg, 2007), which is based on particular assumptions, namely reality, knowledge, and learning (Andrews, 2012).

The researcher selected the social constructivism theory since it is an interpretivist framework in which individuals seek to understand their environment and construct meanings that represent their experiences (Creswell, 2014). Furthermore, this study emphasises learning through experience and professional conversation, which is in line with the social constructivism theory, which upholds the view that knowledge is built through social interaction to promote learning.

1.5 STATEMENT OF THE PROBLEM

In South Africa today, the essential high-level technical abilities are now lacking among TVET graduates, especially among engineering students who have entered the workforce (Sibiya & Nyembezi, 2018). The situation has reached an alarming level since lecturers saddled with the responsibility of equipping the students with these scarce skills also require essential training needs such as work industry training (Zinn, Raisch & Reimann, 2019). This situation prompted the researcher to conduct this research since the final-year engineering students of the TVET college are presently experiencing a similar plight.

An examination of available literature reveals that few researchers have explored lecturers' perspectives on challenges faced by final-year engineering students at a TVET college in Nongoma, KZN (Van der Bijl & Oosthuizen, 2019; Zinn, Raisch & Reimann, 2019). Hence, this research study aims to address the following research question:

What are lecturers' perspectives on challenges facing final-year engineering students at a TVET college in Nongoma, KZN?

Emanating from the main research question, the following sub-questions emerged:

- How are final-year engineering students at a TVET college in Nongoma, KZN, dealing with the challenges experienced in the learning environment?
- How have these challenges facing final-year engineering students at the TVET college in Nongoma, KZN influenced their industrial placement for internship programmes?
- How do lecturers at a TVET college in Nongoma, KZN, create an enabling learning environment for final-year engineering students?
- How can lecturers improve existing procedures and resources to assist final-year engineering students of TVET college to overcome these challenges?
- How can the college management form partnerships to assist final-year students with job placement?

1.6 AIM AND OBJECTIVES

The aims and objectives of this research are to:

- establish ways that will assist final-year engineering students at the TVET college in Nongoma, KZN in dealing with the challenges experienced in the learning environment;
- establish how these challenges have influenced final-year engineering students in industrial placement for internship programme;
- establish how lecturers at the TVET college in Nongoma, KZN can assist in creating an enabling environment for final-year engineering students;
- propose ways on how lecturers can assist in improving the existing procedures and resources so as to assist final-year engineering students of TVET college to overcome these challenges; and
- suggest ways in which the college management can form partnerships in assisting final-year student with job placement.

1.7 RESEARCH METHODOLOGY

1.7.1 Research Paradigm

The research paradigm that was used for this study is interpretivism, defined by Creswell (2014) as a broad philosophical perspective on the environment and nature that the researcher brings to a study. To gain an inside perspective of the phenomenon, it is important for the researcher to understand the essential beliefs or assumptions of how people perceive the world (Guba & Lincoln, 1994).

The interpretivist paradigm was used for this study since the researcher interacted with lecturers in their natural environment and recorded individual conversations of lecturers to establish what was taught and learned. Furthermore, the interpretivist paradigm adopts a qualitative research approach which is also related to social constructivism. The interpretivist paradigm was selected for this study because it helped participants to answer research questions based on their experiences and their perception of truth.

1.7.2 Research Approach

Creswell (2014) describes the research approach as a work plan that includes a description of specific assumptions to be observed, the technique for data collection and specifics on the examination and evaluation of the data obtained. A research approach assisted the researcher to examine and identify the significance individuals or groups attach to a human or social concern. This study used the qualitative research approach to explore the detailed look of the phenomenon under study. The researcher used a qualitative research approach because it emphasises the idea of data gathering from a natural perspective. Another merit of using the qualitative research approach is that it allows the researcher to study the behaviours of individuals which occur naturally; to collect first-hand information straight from the root by spending time in the setting; to interact with participants and to present a detailed description of their actual words through video recording (McMillan & Schumacher, 2010). These distinctive features assisted with the potential adequacy of quality assurance techniques when adopting a qualitative research approach. This was achieved by paying attention to important criteria like confirmability, credibility, dependability, and transferability to increase the trustworthiness of the qualitative approach of this study (Mayan, 2016).

1.7.3 Research Design

Research design signifies a logical set of statements that illustrate how the researcher wishes to carry out their study (Yin, 2014). A research design sets out a structure for gathering and examination of data (Bryman & Bell, 2014). The researcher used a case study research design as it requires a detailed and intensive review of one or more cases to be analysed in depth by the researcher. The case study design is distinguished from other designs since it focuses on identifying a bounded structure or system (Bryman & Bell, 2014). The case study design supports the use of qualitative methods such as individual conversations (structured interview), focus-group discussions and non-participant observation. These data-gathering techniques were combined to arrive at a reliable outcome for the study.

1.7.4 Research Method

1.7.4.1 Population and sampling

McMillan and Schumacher (2014) describe a population as a group of individuals or events from which a sample is drawn and to which results can be generalised. In this study, the population consisted of final-year engineering students, senior lecturers and the head of department. For the researcher to give a useful description of the total population, a sample of the selected participants should include essential variations in the population.

Sampling refers to hand-picking of a selection of individuals from the population or community who are highly experienced and knowledgeable about the phenomenon of the study (Chilisa, 2014; McMillan & Schumacher, 2014). However, purposeful sampling is described as a process where the researcher decides on a sample based on group understanding or experience (Cohen, Manion, & Morrison, 2018). For this study, purposeful sampling was adopted because it helped the researcher identify and choose individuals who were most matched to the demands and goals of the study. The selection of participants for this study was done according to a list of specific criteria that was outlined by the researcher. Purposeful sampling for this study was conducted according to the following criteria:

- Experienced engineering lecturers (senior lecturers and head of departments) at a TVET college in Nongoma, KZN province with minimum teaching and learning experience of at least 5 years.

- These experienced engineering lecturers' lives in KZN province and particularly in Nongoma municipality.
- Current final-year engineering students at a TVET college in Nongoma, KZN province.

The participants included five senior lecturers, one head of department (HoD) and five current final-year engineering students as at the time of data collection.

1.7.4.2 Data-collection instruments

In this study, the researcher used four instruments of data collection, namely, individual interviews, focus-group interviews, non-participant observation and document analysis. One basic principle of data collection is to ensure that any techniques used in acquiring data are relevant to the research questions and can provide the applicable answer to the study (Johnson & Christensen, 2014).

The first instrument the researcher used for this study was individual interviews. An interview is a commonly used method of gathering information or data in qualitative research. Maree (2016) describes an interview as a two-way discussion in which the interviewer (the researcher) asks the participant questions to gather information and to learn about ideals, beliefs, views, opinions and behaviours of the participants toward a phenomenon. Denscombe (2014) defines individual interviews as a question-and-answer approach between two individuals (the participant and the research). Individual interviews were adopted since the participants might propose an insight or solution to the research problem during this question-and-answer time that was in the form of conversation. The researcher also ensured that all conversations with each participant are recorded using an audio recorder. This assisted the researcher to understand the context of the challenges the participants were facing concerning their experiences and knowledge of the trade. It also assisted in collecting rich data for the study.

The second instrument that was used for collecting data was focus-group interviews. Bryman and Bell (2014) define a focus-group interview as a qualitative method dealing with how individuals convey their opinions and perceptions on a phenomenon when they are in a group. The focus-group interview has become a popular instrument since it examines the ways the selected participants working together, construe and understand the research topic. Therefore, focus-group interviews were used since

they helped the researcher gain a sense of how the participants felt about the challenges and their experiences over the period.

The third instrument that the researcher used as a tool for collecting data was non-participant observation. The literature shows there are different descriptions of how observation in qualitative research should be conducted. However, Bryman and Bell (2014) describe non-participant observation as a situation where the observer (the researcher) observes the process of discussion among the selected participants but does not participate in the discussion. The researcher as a non-participant observer recorded and wrote down vital information in his field notes during the individual interviews and analysed the proceedings during the focus group interview. After all the sessions, the researcher then reflected on how any of the information could be beneficial to the study. Using non-participant observation means that the researcher can take steps to “ensure systematic and rigorous approaches to sampling, field notes, and data collection to increase transparency” (MacFarlan, 2020). The fourth and last instrument used by the researcher to collect data was document analysis. According to Bowen (2009), document analysis is a methodical process for reading through or assessing written materials, both printed and digital. Documents that may be used for systematic evaluation as part of a study take a variety of forms. They include attendance registers, Portfolios of Evidence (PoE) and Portfolios of Assessment (PoA). These instruments were chosen for this study because they offered information on the context in which research participants functioned in a situation in which, to borrow a phrase, text provides context.

1.7.4.3 Data analysis and interpretation

Data analysis in qualitative research, according to Okeke and van Wyk (2015), is the process of assessing the gathered data in a way that is pertinent to the gathered data.

The data analysis and interpretation are important features of the research process used for effective data analysis. The researcher used thematic analysis and created categories for themes based on the aims and objectives of the study. The collected data were organised into major themes that covered interpretations and conclusions from the data analysed there, which resulted in a reduction of the data. Chapter 3, under the heading of research methodology, goes into greater depth about this aspect.

According to Henning, Van Rensburg and Smit (2014), transcription should then be analysed manually and themes should then be developed in a systematic, comprehensive and rigorous manner to give rich meaning to the study. Furthermore, the data collected during this study was examined using content analysis. Kumar (2014) describes content analysis as the process of reviewing interview transcriptions or field notes to identify the major trends that emerge from the respondents' answers. The researcher selected content analysis since it helped to summarise the data generated through non-participant observation, individual and focus-group interviews.

1.8 TRUSTWORTHINESS

Trustworthiness is a concept where the researcher establishes the truth value of the study. According to Given and Saumure (2008) and Chilisa (2014), trustworthiness refers to how qualitative researchers ensure that the combination of the findings from all data-collection instruments are credible, dependable, transferable and confirmable to achieve the outcomes of the study. The researcher used these four strategies to maintain the trustworthiness of the study. The researcher sought to ensure the trustworthiness of the study by ensuring that the data were factually based on perceptions, knowledge and experience of the selected participants.

1.9 ETHICAL CONSIDERATIONS

The ethical guidelines of the University of South Africa (Unisa) served as the research study's guide. The researcher endeavoured to adhere strictly to the university ethics research policy. Furthermore, the researcher provided all participants with a thorough explanation of the study's objectives and all the procedures used. Because of Corona-19 pandemic, the researcher also educated and enlightened the participants on the importance of social distancing, sanitising of hands and wearing face masks during the duration of the study particularly throughout the process of data collecting. The confidentiality of all participants was guaranteed by ensuring that their names were not divulged. This process was done by using pseudonyms for all the participants. The use of fictional names safeguarded the identities of all involved. The researcher also ensured that the participants understood the ethical essence of voluntary involvement and the right of withdrawal if they wished to do so both before and during the study.

1.10 LIMITATIONS AND DELIMITATIONS OF THE STUDY

This research study was delimited to a TVET college in Nongoma, KZN province. However, this study can also assist in providing useful information when researching any TVET college in all nine provinces in South Africa.

A limitation could be that, since the researcher is an electrical engineering lecturer at the TVET college and the research study focuses on lecturers' perspectives on key challenges facing the final-year engineering students of the college, the outcome of the study might be subjective. This implies that the researcher might unwittingly influence the participants' views in terms of the study. Other limitations include the availability of the selected participants (lecturers) for the individual interviews and focus-group interviews owing to the tight schedule of the participants. Therefore, the researcher endeavoured to draw up a suitable schedule that was flexible and not cumbersome for the participants.

1.11 DEFINITIONS OF KEY CONCEPTS

Some of the key concepts and words that helped define this research study include the following:

- Labour market refers to the populace that are employed. In this study, the labour market means the sector of the economy or the area of employment that students enter after graduating from TVET colleges (Anindo et al., 2016).
- Lecturer refers to a person who works as an instructor in a university or other institution of higher learning. Van der Bijl and Taylor (2016) describe a lecturer as a well-informed individual who is charged with educating students in practical and technical abilities.
- Perspective refers to a point of view or a particular way of viewing an issue. In this study, perspective refers to the lecturer's viewpoint or the lens through which the state of affairs in the college with regard to the final-year students is viewed (Mack & White, 2019).
- Skills can be described as expertise or mastery of discipline. For the purposes of this study, skills means the technical knowledge that students gain while completing their courses at TVET colleges (Dasmani, 2011).

1.12 CHAPTER OUTLINE

Chapter 1: Introduction and background to the study

A broad summary of the study is provided in this chapter. This includes the introduction and the rationale for the study, the problem statement of the study, research aims and objectives, research questions, the significance of the study, delimitation of the study and concept definitions.

Chapter 2: Theoretical framework and literature review

The chapter provides a literature review while detailing the conceptual framework of the investigation with regard to information on lecturers' perspectives on challenges facing final-year engineering students at a TVET college in Nongoma, KZN.

Chapter 3: Research methodology.

The chapter focuses on the research process in depth, and includes the research paradigm, research approach, research design and the research methodology that was adopted for research.

Chapter 4: Data presentation, analysis and discussion of findings

In this chapter, the researcher provides the data and the findings of the study. The results were presented after careful data analysis of the data obtained through individual interviews, focus-group interviews and non-participant observation.

Chapter 5: Summary, conclusions and recommendations

In this chapter, the researcher summarises the results of the study and present conclusions drawn from the study as well as possible suggestions for further research.

1.13 CHAPTER SUMMARY

This chapter outlines that this study focused on the challenges facing final-year engineering students at a TVET college in Nongoma, KZN. The chapter has introduced the background, the need for the study and also identified the research problem. The chapter further state the research questions, aims and objective as well as the rationale of the study. An overview of the theoretical framework that was

adopted for this study was also explained and a brief literature review was described to assist in shedding light into the study.

Lastly, the research paradigm, research approach, research design, data-collection techniques, data analysis and definition of key concepts that relates to the study was also discussed. The next chapter will provide a detail description of the theoretical framework that was adopted and the literature review for the study.

CHAPTER 2

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 INTRODUCTION

In the preceding chapter, the researcher gave the background information and an overview of the study. It was noted that TVET colleges were founded to aid in the development and expansion of any country's economy. The current chapter discusses the social constructivism theory that serves as the theoretical framework that was used as a lens for this study. In addition, this chapter also gathers information from the literature on the lecturers' perspectives on the challenges facing engineering students in TVET colleges.

2.2 THE CONCEPT OF A THEORETICAL FRAMEWORK

According to CohenMiller and Pate (2019), a theoretical framework is a theory or set of theories that is used as a lens through which to view a research study. It can also be described as a structure that is used to guide the study. The theoretical framework is made up of chosen assumptions or theories that direct the researcher's data gathering and inform how the researcher wants to approach the study (Osanloo & Grant, 2016).

A theoretical framework establishes the researcher's intellectual position in accordance with his argument and level of understanding of the issues and topics under debate. This is because the researcher's ideology influences the research approach. As a result, this impacts the research environment and the participants in terms of how the researcher perceives, engages with and treats his methodology or strategy for this study. As a point of reference, a theoretical framework serves as the foundation for observations, concept definitions, study design, interpretations and generalisations, much like the frame that relies on a foundation explains the general layout of a structure (Passey, 2020). The theoretical framework provides a clear grasp of or lends meaning to the interconnectivity among the factors that may have an impact on the defined results arising from the research focus, design, structure, presentation and publication (Heale & Noble, 2019). The researcher explored the lecturers' perspectives on the challenges facing final-year engineering students at a TVET college in Nongoma, KZN, employing a theoretical framework. Therefore, the

theoretical framework serves as a guide for the investigation of the phenomenon. To examine and investigate this study resolutely, the researcher used the social constructivism theory to construct a narrative of the phenomenon experienced from the lecturers' perspective.

2.2.1 Significance of the Social Constructivism Theory

The social constructivism theoretical framework presents an outline that is used as a foundation for this study, and it offers a structure that assisted in describing the conceptual, methodological and philosophical approaches the researcher used in this study. According to social constructivism theory, language and social interaction are the two primary ways that knowledge is created (Vygotsky & Cole, 2018). For this reason, the researcher selected the social constructivism theoretical framework as the lens for this study to establish how lecturers and students share knowledge in the natural setting. In addition, social constructivism allows lecturers to let their students generate their own questions, develop their own ideas and evaluate the feasibility of such views. Thus, the social constructivism perspective is subjective as it relies on lecturers' interpretation of their personal experiences via a different understanding to develop his unique view on how the impact lecturers' perspective on the challenges facing final-year engineering students in TVET colleges.

The first step in conducting research is choosing the methodologies that will be used, along with their justification. Thus, the theoretical framework outlines the research's methodology, theoretical viewpoint, and epistemology. It offers and helps the researcher to conduct the research and lay out the interpretation of the findings. The significance of the theoretical framework is determined by the extent and depth of the research done using the available data and the stage of its development. The theoretical framework needs to be appropriate, logically constructed and support the fundamental research questions. Social constructivism is suitable for this study because the researcher examines and investigates a topic within the context of participants' existence, experience, and knowledge (Johannesen, 2020).

The theoretical framework is essential to this study since it enables readers to analyse the fundamental assumptions. Second, the theoretical framework logically links the reader to prior knowledge, provides a foundation for hypotheses, and establishes the study technique. Third, a theoretical framework helps to answer the why-and-how-

questions and enables an intellectual shift from just describing a reality that a researcher has observed to developing various components of the phenomenon. Fourth, it helps the researcher pinpoint the boundaries of those generalisation while also assisting in the identification of the variables that contribute to an interest phenomenon. Fifth, a theoretical framework also underlines the need to investigate how those crucial variables may change and within what circumstances. Sixth, a theoretical framework helps to limit the scope of relevant data by concentrating on specific factors and establishing the particular perspective that the researcher will adopt in assessing and analysing the data to be gathered (Grant & Osanloo, 2015).

In this study, the social constructivism theory was used to assist the researcher to stress the significance of the setting in which learning occurs and the social situations that lecturers create in the learning environment for the final-year engineering students. It is apparent that lecturers at TVET colleges, especially those in engineering field, see social interactions as a key factor in achieving learning objectives. (Kapur, 2018). Similarly, in terms of social constructivism, the core objective of learning and education is focused on the overall growth and development of the students. This is enhanced as lecturers create the environment in which the students improve their academic learning and practical skills. However, students must also learn to establish and align their attitudes, values, behavioural traits, action and emotions. Furthermore, the social constructivism theory is related to post-modernism in qualitative research and emanates from sociology.

Theorists on social constructionism examine how people in a society interact socially to produce knowledge and truth. As a result, language creates concepts that give a person a method to organise their experiences of the outside world (Andrews, 2012). Social constructivism stresses that interactions with other people are essential for all cognitive processes, including learning. Therefore, qualities of the collaborative process within an educational community such as the TVET educational sector are crucial for learning. According to social constructivists, the collaborative elaboration process, which involves sharing individual perspectives, leads to students constructing understanding together (Van Meter & Stevens, 2000) and this construction cannot be accomplished alone within individuals (Greeno, Collins & Resnick 1996).

2.3 THE SOCIAL CONSTRUCTIVISM THEORY

Social constructivism is strongly influenced by Vygotsky's work which promotes that knowledge is initially formed in the social context before being embraced and used by people (Eggen & Kauchak, 2004). The social constructivism theory, according to Andrews (2012) and Kim (2001), is focused on basic assumptions about reality, knowledge and learning. Language and culture, in Vygotsky's view, serve as the frameworks through which people perceive, express and comprehend reality. This is because individuals' intellectual growth and worldview are both significantly influenced by culture. Furthermore, learning concepts are communicated through language, interpreted and understood through the use of interaction within a cultural environment. However, knowledge is not only socially established but co-established. These three fundamental tenets are related in that social constructivism believes that people learn about their environment and themselves through their experiences. (Akpan, Igwe, Mpamah & Okoro 2020).

Figure 2.1 shows how the three basic assumptions of social constructivism are interrelated and interwoven.

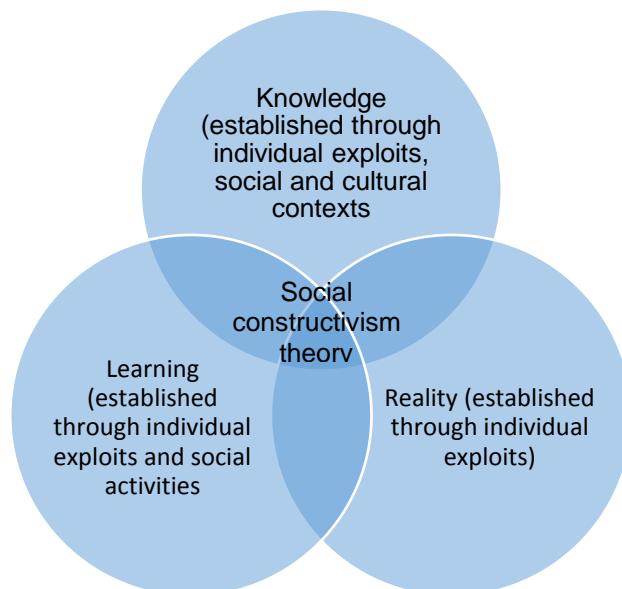


Figure 2.1: Three basic assumptions of social constructivism

Reality cannot be achieved through individual pursuit. Reality is not predetermined; rather, it is created by human interaction. Knowledge is achieved through individual or human effort using social and culture activities while learning can be achieved through

individual participation in social activities. The researcher in this study used these three basic assumptions to explore the lecturers' perspectives. Through reality, human activity is established through individual pursuits; through knowledge, it is established using individual social and cultural context and through learning, it is established through social activities.

Consequently, for the researcher to apply any models of instruction for this study that will be rooted in the perspectives of social constructivists, it is vital to understand the propositions of these basic assumptions.

2.3.1 Perspective of Reality in Social Constructivism Theory

According to social constructivists like Bruner (1996) and Piaget (1972) who are regarded as the leading scholars within cognitive constructivism, and Vygotsky, regarded as the leading social constructivist scholar, reality does not exist outside of a social context. Social constructivists believe that reality is established through an individual's pursuit. According to these scholars, reality is created through actions rather than existing beforehand. Kukla (2000) contends that the collective features of a society or group create the environment in which it exists. As a result, reality cannot be known unless it is socially constituted. It is assumed that as reality is not constituted prior to social interaction, individuals can discover it. Therefore, reality can be described as a way by which lecturers construct knowledge together (Kim, 2001). The researcher holds the view that the lecturers' perspectives are a significant component in the administration and implementation of the theoretical and practical content for final-year engineering students in the TVET colleges. The lecturers in the TVET colleges, particularly engineering lecturers, should be able to develop their competence during the learning process as they work towards achieving the various learning outcomes for final-year engineering students. However, the researcher believes that no two individuals will have the same understanding, tolerating to the existence of several realities. In other words, an individual actively experiences reality, which then shapes it. According to the constructivist viewpoint, any individual's perception or construction is equally valid as that of any other individual, given that it functions within a particular context.

2.3.2 The Perspective of Knowledge in Social Constructivism

Another basic assumption that is vital to social constructivism is the perspective of knowledge. The perspective of knowledge according to social constructivists (Ernest 1999; Gredler, 1997; Prat & Floden, 1994) affirms that knowledge is a socially and culturally formed human product. By interacting with one another, individuals can create meaning in the environment they live in (Thomas, Menon, Boruff, Rodriguez & Ahmed 2014). Similarly, Piaget (1977) reaffirms that knowledge is contrived by students through their relationship with their society or environment. Furthermore, Vygotsky (1986) advocates that culture and language are significant factors in cognitive development by perception, and culture and language are frameworks that underpin individuals' experience, communication and understanding of reality. Knowledge of the student can exist individually, and this can be internalised as it is assimilated from an exterior reality to the interior reality of the student (Applefield, Huber & Moallom 2001). As a result, experiences will become realistic as one gains knowledge of their immediate surroundings or society.

This study seeks to investigate the lecturers' unique perspectives on the challenges facing final-year engineering students and this can be associated with culture, language and environment which can be used to assist these students. Furthermore, Kim (2001) reaffirms that social constructs influence human cognitive structures. According to Kim (2001), knowledge may be seen as a unique, socially and culturally formed product. It is in this situation that the researcher tries to establish whether lecturers believe that students can make meaning from what they learn through individual knowledge and experience related to their living environment. This is because lecturers operate within the academic context in which the final-year engineering students socially construct knowledge, meaning and reality as they use it.

According to Kapur (2018), through participation in activities, students can gain knowledge that is derived from their experiences. The knowledge that is imparted to the student by the lecturers is at times rather too theoretical and conceptual. However, the student who is regarded as an adult learner when they go to a TVET college, undergoes several experiences in his life and acquires knowledge based on these experiences. These individuals can enrich their understanding and can interpret the significance of knowledge that they acquire in college as well as in their environment. The researcher agrees with Kim (2001) and Kapur (2018) that knowledge is seen as

an individual, socially and culturally created item. As a result, lecturers work and live within the theoretical and practical contexts that their students use to socially build their knowledge, meaning and reality.

2.3.3 Perspective of Learning in Social Constructivism Theory

The third assumption of the social constructivism theory is learning. McMahon (1997), holds the view that learning is a process whereby students learn to uncover the world around them. Learning not only happens within an individual nor does it passively develop from external forces. Vygotsky (1986) also asserts that relationships between students and their peers, lecturers and other experts are important for learning to flourish. Subsequently, the researcher advocates that through conversation, discussion, cooperation and feedback, teacher and lecturers can construct a learning environment that enhances the potential of students to interact with one another. Vygotsky emphasised that learning is an active process that requires that students generate knowledge as they work to make sense of their experiences and endeavours. The researcher maintains and holds the same view as Vygotsky that individuals actively construct new knowledge as they interact with their environment. In the classroom or workshop, for instance, where students gain theoretical and practical skills, the social constructivist perspective of learning can be used to encourage students. Learning is achieved using practical approaches in workshops to create in-depth knowledge and reflect on and discuss what the students have gained or learned.

In the late 1920s, Semenovich Vygotsky developed the idea of Zone of Proximal Development (ZPD), which he continued to improve on until 1934 (Shabani, Khatib, & Ebadi 2010). Vygotsky defined ZPD “as the difference between actual development as measured by independent problem-solving and potential development as measured by problem-solving under adult supervision or in partnership with more experienced peers” (Vygotsky & Cole 1978). The idea that people learn best when collaborating with others during teamwork is best depicted by the ZPD definition. It is through such collaborative endeavours with experienced people that learners acquire new ideas. The researcher agrees with the ZPD definition and theory since it advocates learning through collaborative efforts and dialogue. In other words, the perspective of learning in social constructivism has demonstrated that learning is a social activity that develops via students’ active participation in their environment. According to social constructivism, learning is meaningful when people, like students,

are forced to participate in social cohesion activities like interacting and collaborating. Therefore, the researcher argues that lecturers need to encourage students to participate actively in learning activities in order to accomplish learning outcomes in the form of developing practical skills.

Social constructivists state that meaningful learning only happens when an individual is involved in any social activities such as collaboration or interaction. The present study advocates that engineering students learn to acquire practical skills in TVET colleges through social activities; for instance, through collaboration or interaction with their lecturers or their peers. Learning can be used to derive meaning or the importance of the social experience of a concept. Therefore, it recognises the uniqueness and compound nature of each student, such as values and principles which are a core feature of the learning process (Applefield et al., 2001).

The researcher concurs with Schunk (2012) that learning should be viewed not only as a process of learning integrated into a knowledge community, but also as a process of learning rather than an individual's collection of knowledge. The researcher corroborates the view that during learning, students are expected to construct meaning and the students should diligently try to come up with something interesting from the experiences that they have gathered which can be related to any topic or situation that is known to the student. This process will assist final-year engineering students in effectively gathering and transferring their respective experiences of any topic or situation to the workplace once they are gainfully employed. Consequently, the research upholds the view of social constructivism which claims that knowledge is built upon previously acquired knowledge, with new information being incorporated into and extending the current network of understanding.

Social constructivism is closely related to epistemology, which is a philosophical examination of the nature of knowledge. Epistemology guides the researcher in understanding whether the teaching of practical skills used in the college workshops is appropriate and relevant to acquire knowledge and skills required in the workplace. The epistemological stance of the researcher is that learning is based on solving practical problems. Additionally, it happens socially through conversations with others and shared experiences, allowing original views to be compared with known facts to make sense of the social or environmental context.

Therefore, the researcher holds the view that social constructivism is applicable to lecturers as members of a group of people. Hence, learning emanates from group discussion activities and dialogue between the lecturer and the students not as activities or events that take place within the individual. The dialogue between lecturers and students improves overall learning. For that reason, learning is viewed as an active, socially engaged activity rather than as a passive process of growth in response to external factors. For this reason, the social constructivism theory was chosen for this study primarily because it emphasises the importance of society, culture and context in perceptions of what occurs in society and in the construction of knowledge based on this understanding (Derry, 1999; McMahon, 1997). According to the researcher, the social constructivism theory can be used to examine this study, especially in the TVET educational sector because the knowledge structure is based on the perspectives of lecturers. The fundamental premise of social constructivism is the belief that people rationalise their experiences by building models of the social world based on how it functions, with the underlying premise that language is the most important method through which people construct reality (Amineh & Asl, 2015). Social constructivism is also described as an interpretive framework in which people attempt to define their reality and create meanings that reflect their experiences. These meanings are made through interaction with others rather than being anchored within an individual. (Creswell, 2014).

2.4 LITERATURE REVIEW

2.4.1 Introduction

In the previous section, the researcher discussed and outlined the features and significance of the social constructivism theory as the theoretical framework that was used to shape this study. The discussion focused on the three basic assumptions that encompass this framework. In this section, the researcher examines the different kinds of literature that helped to support and provide relevant evidence for the study. O’Gorman and Macintosh (2015) describe a literature review as a methodical approach to locating, evaluating and analysing the prior research produced by academics, scholars and researchers. Before formulating an argument or justification, the primary objective of this literature review is to educate the researcher about the topic and assist them in understanding the literature. As a result, this literature review section assisted the researcher to provide context information for this study. The

primary goal of this literature review is to support this study in order to help the researcher reach and accomplish the four major goals of the a literature review (Mudavanhu, 2017). One of these four objectives is to assist the researcher to identify and summarise relevant theory that shape the study. Second, it assists the researcher by pointing out arguments in favour of and against concepts, evaluating the significance of studies' claims, and noting the shortcomings of earlier studies. Third, it helps the researcher uncover gaps in the literature, topics that have not received enough attention, and areas that still need further investigation. Finally, it provides the researcher with information on the intended research, which serves as a justification, background, or context for the research, and guides the selection of a suitable design and research technique (Mudavanhu, 2017; O'Gorman & Macintosh, 2015).

For this reason, the researcher regards the review of literature as crucial in leading him to enable the reader to get an overview of this research study.

2.4.1.1 Perspectives on Technical and Vocational Education and Training

TVET has existed over many years in most nations of the world (Buthelezi, 2016; Kuehn, 2019). However, over the past 30 years, the TVET sector has undergone global change and adaptation (Buthelezi, 2018; McGrath, Akooje, Gewer, Mabizela, Mbele & Roberts, 2006). These changes can be attributed of the perceived benefits of study and work. The researcher supports the view that vocational training can be linked to human development initiatives and the rhetoric on ending poverty, which are also seen as the foundations for economic progress (Akoojee, 2008; McGrath et al., 2006). Government officials, policymakers and other stakeholders argue that TVET systems must be responsive to the requirements of the economy, with a greater emphasis on personal development and citizenry (McGrath et al., 2006). Admittedly, many definitions have been used to describe the TVET sector in an effort to come up with a fitting name, including apprenticeship training, VET, career and technical education and workforce education. In response, UNESCO provided a thorough explanation of how a changed VET system must be a component of a transformative approach to development (UNESCO, 2016). McGrath, Ramsarup, Zeelen, Wedekind, Allais, Lotz-Sisitka, Monk, George Openjuru and Russon (2020) maintain that a credible, inclusive skills system must be established to support people, groups and organisations. This would generate opportunities to provide a reasonable livelihood

for people and, thus, enhance the socioeconomic and human development growth of any nation. However, the researcher holds the view that final-year engineering students in TVET colleges do not acquire relevant, adequate practical and technical skills during their respective programmes. Therefore, this study aims to explore lecturers' perspectives on challenges facing final-year engineering students at a TVET college in Nongoma, KZN.

At the 30th session of the UNESCO General Conference in Paris and the Second International Congress on TVET in Seoul in 1999, the term “technical and vocational educational and training” was accepted and used to characterise the combined practice of education and training with a focus on preparing people for employment (UNESCO, 1999). As part of this international initiative, the DHET changed the names of South Africa's public FET colleges to TVET colleges at the beginning of 2012. In doing so, DHET sought to align the South African educational system with global trends and standards. Subsequently, South Africa's TVET system underwent a transformation, and in January 2014, the Minister of Higher Education and Training, Blade Nzimande, said that all FET colleges, not only public ones, would become TVET colleges. This means that, after this shift is complete, the word “FET” will eventually become obsolete. (Technically, all FET colleges are now TVET colleges, even though they still call themselves FET colleges).

According to the White Paper on Post-School Education and Training (DHET, 2013a) on engineering and business TVET programmes, 152 technical colleges were integrated into 50 major multi-campus colleges starting in 2002, and these new institutions were dubbed FET colleges. Now, these colleges are known as TVET colleges. In this name, the nature and primary function in the complex post-secondary education and training system are better reflected. As of 2013, there were 50 multi-campus colleges with about 260 campuses in the TVET sub-system. These TVET colleges fall under the DHET's jurisdiction through the FET Colleges Amendment Act (No. 3 of 2012), which made them a matter of national concern. Subsequently, there has been a big shift since 2013 and these colleges are primarily accountable to the national department rather than the provincial education departments.

The researcher focuses on TVET colleges as a vital instrument of education established to assist students in acquiring the appropriate expertise, technical skills and mentality for productive engagement in a particular engineering trade or business

space (Mack & White, 2019). TVET colleges focus on jobs in the engineering and construction industries that offer training for the mid-level skills necessary to improve the South African economy.

The description of TVET has eluded scholars and there has been no precise definition for the term (Maclean & Lai, 2011; Powell, 2014). According to McGrath et al. (2020), TVET education can be delivered in a variety of ways both formal or informal, aimed at a variety of age groups, and provided by public, commercial or non-governmental organisations. Mokwena (2018) describes VET as an instrument used to empower and equip people who lack the basic essential skills for accessing employment opportunities. Furthermore, Hilal (2012) described TVET as a crucial component that enhances economic empowerment, self-employment and productivity. In South Africa for instance, the goal of the establishment of TVET colleges was to assist in decreasing the high levels of unemployment and strengthening the country's economic growth. However, economic empowerment has been unachievable since the final-year engineering students in TVET colleges are unable to find work-industrial placements and have low technical and cognitive skills.

In the same vein, McGrath (2011) argues that TVET is widely acknowledged as providing different forms of learning that are primarily intended to assist participation in the labour force. McGrath (2012) further maintains that the preparation for the labour market through TVET should include features that will assist in eradicating poverty, inequality and injustice. Similarly, DHET (2013) characterises TVET colleges as adaptable establishments that provide a variety of courses that range in length from a week of training to certifications that take several years to complete. Furthermore, Eichhorst et al. (2012) describe TVET institutions as a vehicle for improving the chances of employment for the increasing number of young people who lack the means, fundamental technical skills and drive to pursue higher education. The researcher agrees with this viewpoint since TVET colleges supply students with specific occupational knowledge and practical technical skills which are independent of place, content and the provider of education.

Furthermore, the description of TVET by Yasunaga (2014) suggests that non-formal technical and vocational education and training is a way of investing in people, particularly those who are barred from formal education to acquire knowledge, skills,

values and attitudes to improve their lives. Moreover, Baatjes and Mathe's (2014) assessment of non-formal TVET programmes has taken place in different settings within an environment. On the contrary, Billet (2020) views TVET institutions serve as a platform for educating students in practical, usually non-academic activities that are connected to a particular vocation, trade or occupation in order to prepare them for the workforce. In addition to these definitions, the researcher through different scholars and authors understands that TVET can contribute to the economic development of any nation through skills acquisition. Another assumption is that TVET provides alternative training and skills development for students who are less intellectually gifted. Since not everyone has the opportunity to attend university, TVET can bridge the skills gap for mid-level occupations like those required by artisans. Additionally, through providing economic opportunities, TVET is thought to be able to reduce poverty and enhance the general well-being of the poor.

2.4.2 Global Trends in Technical and Vocational Education and Training

In the global economy, the TVET educational system has contributed immensely to socioeconomic growth and youth empowerment by reducing the rate of unemployment in any nation (Haasles & Gottschall, 2015). Developed nations of the world which include Germany, the United Kingdom and Japan, and developing countries like China have implemented the TVET system in the educational sector to reduce unemployment (Zinn, Raisch & Reimann 2019).

In this regard, Van der Bijl and Oosthuizen (2019) and Mokwena (2018) view TVET education as vital instruments used in modifying the socio-economy policy of Western countries where the competency-based education model originated in countries like the United States during the Second World War. Similarly, the Japanese economic success can be attributed to the efficiency of their TVET educational system (Akoojee, 2008).

In Germany, the TVET educational sector is referred to as VET and this system is called the dual system. The dual system has assisted in improving the economy of Germany by decreasing the rate of unemployment through the acquisition of skills that are practically oriented to students (Eichhorst et al., 2012). Vogler-Ludwig (2009) acknowledged that the success in the German system can be ascribed to the fact that the TVET educational system of apprenticeship can be regarded as dual. Training is

carried out in two tiers; the first part is delivered hands-on by expert supervisors while the second is part-time classroom-based training. The establishment in the private sector generally offers on-the-job training while technical vocational schools belong to the public education system.

According to Tang and Shi (2017), the Chinese TVET system enjoys massive support from both government and non-government resources in reforming education and vocational training. Barabasch and Huang (2008) maintain that China has made enormous economic progress due to an effective and efficient TVET system.

The researcher argues that Germany, China, and Japan have TVET programmes that are robust in equipping the youth of their respective nations with the desired skills for employment. Van der Bijl and Oosthuizen (2019); Mokwena (2018) and Akoojee (2008) do not explain how the socio-economy policy of developed countries can be used to address challenges faced by such developing nations. Nonetheless, efficient systems are needed in developing nations like South Africa, Nigeria and Ghana.

2.4.3 African Trends in Technical and Vocational Education and Training

The TVET educational system in Africa have not experienced the enormous socioeconomic growth and human development developed countries have enjoyed since inception (Anindo, Mugambi & Matula, 2016; Kennedy, Udoetuk & Ufot, 2017). On the contrary, the poor socioeconomic growth and ineffective human development in Africa in countries like Ghana, Nigeria and South Africa can be attributed to various challenges ranging from the inability to produce employable TVET graduates; insufficient training facilities; inadequate instructional materials; weak synergy between TVET colleges and municipal or provincial industries for technical practical experience for both the lecturers and students (Van der Bijl & Taylor, 2016).

There are many factors that contribute to TVET colleges in Africa being inefficient (Geda, 2021). Some of these problems include funding inadequacies; harsh, unfavourable and unequipped workshops; shortage of equipment and lack of appropriate training of students by the lecturers due to broken-down or damaged machines, equipment and work tools. In addition, Buthelezi (2018) asserts that while the majority of TVET lecturers hold degrees in the field, not all of them are qualified as lecturers. According to Sibisi (2019), some of the older lecturers have the requisite qualifications and they have also worked for many years as facilitators, trainers and

artisans, giving them a wealth of practical knowledge in the field. However, most newly hired lecturers come from the educational sector rather than industry, and they frequently hold diploma- or degree-level credentials without any practical experience (Wedekind, 2016).

2.4.3.1 TVET colleges in Nigeria

According to Nigeria's National Policy on Education (Federal Republic of Nigeria (FRN), 2004), TVET education is a viable system that can provide the skills required for agricultural, commercial and economic development as well as being a method of preparing students for careers in different fields and successful participation in the labour market. The TVET educational system in Nigeria is tasked with delivering practical skills required for employment, economic development, and social advancement (Kennedy et al., 2017; Okoye & Arimonu, 2016). As a result, the empowerment of individuals through hands-on practical training has the potential to increase economic growth and lower unemployment rate which would relieve poverty (Ayinde, 2008). Therefore, in Nigeria, the TVET educational system is acknowledged as a tool for empowerment in the growth of human capital for economical, industrial and national development. The TVET educational system a comprehensive system that fosters personal growth and readiness for the workforce, equips students with the knowledge and abilities needed to find job, reduce poverty and promote commercial, agricultural and economic growth (FRN, 2004).

In Nigeria, the TVET educational system can be accessed through different kinds of institutions and at different levels. These institutions include polytechnics, technical colleges of education, universities, and other post-secondary institutions (FRN, 2004). According to the Universal Basic Education Commission (2013), Nigeria's 9-year basic education programme sets admittance requirements for technical colleges based on student performance at the conclusion of the programme. However, the TVET educational system in Nigeria has encountered several challenges, and the administrators' failure to address these challenges reduce the effectiveness of TVET delivery. These challenges include a poor public reputation in the industry, inadequate educational and learning resources, a shortage of competent teachers and support staff, poor implementation, and the absence of a coherent TVET policy to direct the system (Uwaifo & Uddin, 2009).

2.4.3.2 TVET colleges in Ghana

In contrast to Nigeria, Ghana has undergone extensive revisions to its TVET educational system since it was integrated into the country's main training and education systems (Baffour-Awuah & Thompson, 2012). Among the regulations, laws and policies affecting the expansion, improvement and provision of TVET education in Ghana is the 2004 TVET Policy (GoG, 2004). TVET in Ghana is intended to serve the Ghanaian urban working population by bridging the skills gap which can help increase productivity and expand the economy. In Ghana, TVET education is offered in different institutes under the auspices of various groups and organisations. Palmer (2007) contends that the TVET educational system, which is provided through informal apprenticeship training and vocational training institutions, is a crucial tool in job creation as it gives the unemployed marketable skills.

Unfortunately, the provision of skills by multiple providers without the implementation of regulatory requirements led to the provision of substandard and ineffective skills that cannot drive the economy (Council For Technical and Vocational Education and Training (COTVET), 2012). The COTVET was established to oversee all aspects of TVET in the nation with the goal of providing high-quality practical skills for job creation and economic expansion. The achievement of this goal, however, is elusive.

According to Boateng (2012), those who are unable to function in an academic environment are to blame for the challenges that Ghana's TVET educational system is currently facing. Boateng went on to emphasise that the demand for cutting-edge technology skills and shifting family arrangements are among the problems facing the TVET educational system today. Similarly, Palmer (2007) argues that the one-year skills training component in Ghana, which is not applicable for all vocations, does not afford apprentices the opportunity to become self-employed. Boateng (2012) and Palmer (2007) failed to address the challenges from the lecturers' perspective which is the focus of this study.

2.4.4.3 TVET colleges in South Africa

Unlike Ghana and Nigeria, South Africa's TVET educational system faced several challenges. Following the end of the apartheid rule in 1994, the TVET educational system in the Republic of South Africa underwent significant and drastic change

(Mummenthey 2010; Wedekind, 2010; Wedekind & Watson, 2012). As was the case with all South African education previously, these institutions originally known as technical colleges were racially and ethnically separated (Sayed, 2003). Beginning in 2000, TVET colleges experienced a number of significant governmental, institutional and curriculum reforms.

TVET colleges were initially included in the FET band (i.e. Grades 10–12) but were swiftly transferred to the DHET's purview in 2010 once it was determined that they were in fact delivering post-school programmes (DHET, 2013a). The change was introduced by combining 150 technical institutions into 50 multi-sited colleges that were open to all students irrespective of race, class, gender or religion. The mergers brought together lecturers from various backgrounds which led to difficulties related to racial and cultural ideas that were not adequately addressed (Kraak, Paterson & Boka 2016).

According to the DHET (2013a), TVET colleges replaced FET colleges under the presumption that the new name more accurately reflects the nature and function of the system in the varied post-secondary education and training system, similar to the dual TVET systems used in Germany and China. The dual system makes sure that students typically spend some of their technical and vocational training in the classroom and some in the workplace. Typically, the dual training programme lasts for two to three years. However, South African TVET colleges do not currently have an efficient programme in place to provide a dual-system programme.

The province of KwaZulu-Natal, where this study was conducted, is home to nine of these colleges. Each TVET college now has a governing body called a College Council. The College Councils were tasked with creating mission statements, strategy plans, and other important strategic planning tools (FET Act 1998). This represented a move toward TVET college autonomy and financial control. The 1998 Act was replaced by the FET Colleges Act of 2006 which gave autonomy to colleges to hire all new personnel, including lecturers, although the government continues to appoint managerial staff. Lastly, in January 2007, the new National Certificate Vocational curriculum was introduced. It was a brand-new TVET college credential created to offer students a vocationally oriented alternative to the academic Grades 10–12 provided by senior secondary schools in the traditional educational system. The

programme aimed to eliminate outdated barriers between academic and vocational training and education, and is distinguished, not by the vocationalisation of education, but rather by a strong foundation of broad knowledge coupled with practical application (Department of Education, 1998).

Since their establishment, TVET colleges have been seen as a means of delivering skills that address the demands of the nation's economy (Buthelezi, 2018). TVET colleges were established and positioned in most countries of the world to address priority skills demand by delivering sound general-vocational programmes that would prepare young people for entry into the workplace (Gewe, 2016). However, despite the establishment of these TVET colleges to produce a vibrant workforce that will help improve the economic growth and development of the nation, TVET colleges still face significant challenges with regard to work-industrial placement for their respective final-year engineering students. The benefits of "study and work" are seen as key components of economic development and are not unique to South Africa (McGrath, 2005; McGrath et al., 2006; Akoojee, 2008).

According to Rauner and MacLean (2008), TVET education is seen as a critical component in many nations for enhancing the competitiveness of industries and economic sectors. This was confirmed by the World Bank (2010:47), which noted that "young people in the developing world need to be equipped with advanced skills beyond literacy to succeed in today's competitive global economy," and that "the time has never been better to invest in young people in the developing world". Numerous policy adjustments were required for the revival of TVET colleges in South Africa, which led to many unforeseen consequences (DHET, 2013a). In South Africa, the introduction of TVET was seen as an empowering tool and strategy for addressing social inequities resulting from the racialised access to skills development during the apartheid era (Republic of South Africa (RSA), 2014). Furthermore, it is considered to be a system that can deliver the knowledge and abilities necessary for employment as well as for technological, social and economic advancement (Akoojee, 2010; RSA, 1998a; RSA, 2008). In an effort to offer and create equal opportunities for skills development and acquisition in South Africa, the democratically elected government began overhauling the education and training system in 1995, which included the TVET sector.

Technical education was first introduced throughout the country by the railways and the mining industries (Barnes, 2004). Since there was a shortage of skilled labour as the railway structure developed, the administration of the railway established the apprentice system to train skilled artisans (Barnes, 2004). According to Mummmenthey (2010), the only recognised workplace-based training (VET) system that existed during the apartheid era was the apprenticeship system of the 1920s, which was essential to maintaining the supply of technical and vocational training (Apprenticeship Act of 1922). At that time, it was a training programme that was only available to white South Africans. In the past, the apprenticeship system in South Africa served as the main route for the development of intermediate skills and the qualification of white artisans for various important industry sectors.

According to Stumpf and Niebuhr (2012), many technical colleges and formal vocational training institutions were founded in South Africa in 1981. This was a response to a quickly expanding need in the engineering, railway and other rising parastatals of the time, as well as the mining industry in South Africa. Ultimately, this expansion assisted in creating employment for the growing young population but as events unfolded, the TVET colleges were unable to produce quality trained students into the workforce. The emphasis of TVET educational system was to focus on apprenticeship and artisan training which was mainly reserved for white South Africans. Sayed, Kanjee and Nkomo (2013) explained that TVET educational programmes were provided in technical colleges that had separate educational systems for white students and black students throughout the apartheid era. Blacks received mainly theoretical training or very basic workshop-based practical skills or were trained on limited industrial activities. For this reason, marginalisation and discrimination was meted out to blacks.

Akoojee, Gewer and McGrath (2005) reaffirm that the history of the apartheid administration played a significant role in the TVET educational system in South Africa. TVET education was not available to all citizens during the apartheid era since it was controlled by that system of government. Under the apartheid system, there were few options for education and training as well as a low level of training quality. The lack of skills development in the RSA was exacerbated by the apartheid system's training legacy (Badroodien, 2003).

The post-apartheid South African government oversaw a period of extensive policy reform that included changes to the nation's education and training systems after the establishment and inauguration of a democratically elected government in 1994. (Ngcwangu, 2014). These policies were intended to correct past inequalities and imbalances and to advance, enhance and deliver TVET to all who needed it. The quality of the education provided and subsequently the success of its students is one of the crucial indicators of the White Paper on Post-School Education and Training 2013. For this reason, TVET colleges require a qualified, experienced and professional teaching staff. As the TVET educational system grows, the number of lecturers must increase to accommodate rising student enrolment in TVET colleges. There should be enough lecturers to cover all the discipline areas required by the colleges, and growth should not lead to overcrowded classes that undermine the quality of education.

An important part of the South African economy is the Post-School Education and Training (PSET) segment. Notably, a number of significant educational changes have had an important influence on the TVET industry. The two distinct areas that make up the PSET system are universities and TVET colleges. While the latter is new and developing and has seen a major change in its profile since 2013, the former is relatively well-established.

Currently, there are 50 public TVET institutions and 26 public universities operating from more than 260 sites around the nation (11 traditional universities, six universities of technology and nine comprehensive universities). Different educational opportunities are offered by the universities. For example, traditional universities offer general, formative and professional academic programmes leading to undergraduate, master's and doctoral degrees while comprehensive universities incorporate parts of both and universities of technology provide undergraduate programmes that are career-focused. In addition, the PSET sector includes the adult basic education and training provided by community colleges, as well as the skills training of workers and new workers.

The PSET sector has significantly raised young graduates' employment prospects and their expected remuneration from those jobs. Additionally, the PSET sector has expanded technical knowledge and practical application, which has had a positive social and economic impact and accelerated business and employment growth

(DHET, 2014). The PSET sector has made it easier to obtain higher education and skills training, which is one of its main goals. In addition to increasing funding for workplace training, the government has increased the capacity of universities and TVET colleges. While enrolment at universities has increased considerably, enrolment at TVET colleges has increased even more. The National Student Financial Aid Scheme (NSFAS), which has expanded dramatically, has been the main instrument for enhancing access to the PSET system for young people from low-income households (Nzimande, 2013).

2.4.4.4 White Paper on Post-School Education and Training 2013

In an effort to unite the racially segregated technical colleges into a well-functioning system capable of serving the TVET education demands of the twenty-first century, the democratically elected government in South Africa published the White Paper on PSET in 2013. According to the White Paper, post-school consists of the following institutions and is governed by the DHET. It covers all educational and training options for people who have finished school, those who have not finished school, and those who have never attended school.

The paper set out the requirements for the design of the PSET system to be able to satisfy the expectations of the South African economy (DHET, 2013a). The White Paper's main policy goals included creating a post-school system that could contribute to a just, equitable, non-racial, non-sexist and democratic South Africa. In addition, a PSET system that is responsive to the requirements of all South Africans, the economy and all employers was envisaged. The White Paper focused on the public TVET colleges' expansion and improvement, as well as its appeal, which are the DHET's top priorities. The paper indicates that there were a number of areas that needed to be strengthened and improved. These aspects include management and governance, enhancing the standard of teaching and learning, creating programmes that are responsive to the needs of the community and local markets, and enhancing the infrastructure and services for student support. Additionally, the White Paper states that emphasis would be placed on collaboration with employers at both the systemic and college level. The White Paper sets out a vision for the PSET system in the RSA that is to be accomplished by the year 2030.

2.4.4.5 The quality of TVET lecturers

TVET lecturers are essential in providing a skilled labour force that can support a country's economic growth (Van der Bijl & Oosthuizen, 2019). To create a workforce that is capable and employable, TVET college lecturers need a combination of credentials and experience to give them the teaching or pedagogical skills, workplace-related competency and credentials. Thus, TVET college lecturers are considered essential to facilitate learning efficiently and should be competent to train their students. Therefore, Zinn, Raisch and Reimann (2019) argue that the quality of TVET lecturers ultimately influences the standard of TVET qualifications, programmes, delivery and the system as a whole. According to the policy on professional qualifications for lecturers in TVET sector (DHET, 2013b), professionally qualified TVET lecturers in South Africa should have a solid understanding of their area of specialisation and must be professionally qualified to manage teaching and learning environments. Additionally, TVET lecturers should be knowledgeable about the needs of business and industry in the workplace and be able to use the courses they teach to help prepare students for the workforce. Van der Bijl and Oosthuizen (2019) claim that professionally certified TVET lecturers must possess proficiency in at least three areas, including academic or subject matter knowledge, pedagogy and workplace credentials and experience.

The success of the teaching procedures that lecturers use are greatly influenced by their professional abilities and technical competence (Grollmann, 2008). Raising the standard of prerequisite qualifications and the education obtained to get those prerequisites is one tool to increase the calibre of TVET lecturers (Fejes & Köpsén, 2014). In the past, TVET lecturers in South Africa were not expected to possess a formal teaching credential in order to be hired as lecturers in TVET colleges (Mgijima, 2014). Furthermore, Mgijima (2014) holds the views that technical expertise and practical training were the main criteria used when engaging TVET lecturers. This suggests that the majority of TVET college lecturers in South Africa either lack the necessary teaching credentials or are unqualified for the job. Due to a severe lack of lecturers in various professions, particularly engineering, retired experts or professionals are often hired as lecturers. Terblanche (2017) asserts that the challenge facing TVET college lecturers is their lack of expertise in the industry and in knowledge of practical skills. Although, these TVET lecturers possess the theoretical

knowledge to teach and coach students, they lack the practical skills required to train and equip them (HRDC, 2018). In addition, TVET colleges have been forced to hire teachers straight out of high school who are recruited and trained for their lecturing responsibilities (Wedekind, 2016). This narrative of employing TVET lecturers either straight from the industries or from graduating final-year students can be corroborated and validated by the researcher who is a lecturer in a TVET college. Currently, the challenge is that many lecturers have academic credentials but lack work-related credentials and industrial work experience. The current situation makes it extremely difficult for TVET colleges to align their programmes with market demands (Van der Bijl & Oosthuizen, 2019; Zinn et al., 2019). According to Baffour-Awuah and Thompson (2012), the effectiveness of TVET lecturers affects how well TVET programmes are delivered. This is because lecturers have a significant impact on the quality of education and training. Thus, it is crucial that they receive the necessary training and preparation (Fareo, 2013). Collaboration between industry and TVET lecturers will enhance the lecturers' competence and advance the efficiency of a responsive TVET area of study, according to UNESCO (2012). The quality and performance of TVET lecturers can also be improved through a partnership with industry.

A major obstacle for TVET colleges is the need for practical skills that are applicable to the South African labour market (Batholmeus & Pop, 2019). Consequently, effective implementation of industry-based Work-Integrated Learning (WIL) is necessary to properly equip and educate TVET lecturers in order for them to ensure that they understand the expectations of the labour market and to generate TVET graduates who can fulfil these increasing demands (Van der Bijl & Taylor, 2016). According to Taylor and van der Bijl (2018), the importance of WIL to TVET lecturers is that it will assist them expand their industry knowledge and competence which will improve their teaching abilities. Nevertheless, research by Duncan (2017) and Wedekind (2016) found that TVET lecturers in South Africa lack the WIL experience necessary for upgrading their practical and technical abilities. As a result, they lack confidence in their capacity to impart practical knowledge to their students.

2.4.4.6 Challenges faced by TVET colleges in South Africa

In South Africa, the challenges facing TVET colleges are particularly severe. According to Wanjala, Chepkoech and Khatete (2020), the state of infrastructures at

the TVET colleges is negatively impacting manpower development. In most TVET colleges, particularly the TVET colleges in KZN province, the machines, equipment and work tools provided in the engineering workshops are either limited or insufficient (Delubom, Marongwe & Buka, 2020). According to Badenhorst and Radile (2018), the lack of uniformity causes the system to become fragmented. Significant academic issues affecting the TVET college management teams were revealed by the Training Needs Assessment Study ordered in 2014. Besides the TVET college administration's lacklustre leadership and management abilities, lecturers also faced difficulties in a variety of areas related to teaching and learning. As a result, there are glaring gaps in their capacity to satisfy the demands of effective lecturing. The fact that the lecturers at these colleges are members of the under-represented group of educators is at the forefront of the many challenges plaguing the TVET industry in South Africa (Baatjes 2014).

Kuehn (2019) argued that the time allocated for practical skills training in TVET colleges for the duration of completion of the students' programmes, in most cases, is insufficient to acquire the required technical and practical skills. In addressing the challenge of insufficient time allocated for acquiring practical skills in TVET colleges, Reddan and Harrison (2010) argued that TVET colleges need to redesign their curricula and the amount of time allotted for practical skills instruction. This will be in line with the demands of the labour market, particularly the engineering industry. In order to accomplish this, TVET programmes must put an emphasis on results in terms of the skills, knowledge and attitudes needed by industry. As a result, TVET education policies should be flexible to meet business needs. According to Ismail (2018), an improvement in teaching and training in the PSET sector is a national and local priority, and the creation of new qualifications for lecturers in the TVET sector was a direct response to this need. Therefore, the researcher upholds the views of Baatjes and Mathe (2014) and Ismail (2018) that the improvement of qualifications will respond to and assist in the training needs of lecturers, thereby contributing immensely to the education and training needs of the students in the PSET sectors who require skills to find employment.

It is noted that these challenges are being faced by TVET colleges in KZN. Apart from the challenges of unqualified TVET lecturers and inadequate work-industrial experience exposure for TVET engineering lecturers (Badenhorst & Radile 2018),

final-year engineering students at a TVET college in KZN are facing the challenges of receiving and acquiring inadequate technical and cognitive skills when they are trained (Buthelezi, 2018).

Regarding credentials, over 60% of TVET college lecturers lack professional qualifications, and a significant portion lack pedagogical training and expertise in vocational fields (Sibiya & Nyembezi, 2018). This is because higher education institutions do not provide training for TVET college lecturers. Additionally, these lecturers are expected to use fixed instructional techniques and uniform content when they begin instructing (Baatjes, 2014). According to Collins (1991), these practices are the result of the human capital theory, which opposes the “emancipatory critical practice” of vocational education. Consequently, the researcher acknowledges that TVET college lecturers in Nongoma, KZN, have identified emancipatory critical practice in TVET educational sector as one of the major issues facing final-year engineering students.

Yassim, Rudman, and Maluleka (2019) maintain that lecturers are regarded as mere educators and facilitators, which is the main factor that contributes significantly to the deskilling of lecturers. Another factor, which is related to TVET colleges in South Africa, is that these colleges provide students the learning opportunities necessary for them to acquire practical skills and techniques that are useful in the workplace. According to Maluleke and Harley (2016), one major challenge in the South African TVET sector is the so-called “low recommendation status” TVET colleges receive when they are compared to other institutions of higher learning like universities. This status frequently makes it difficult for graduates to find employment. This was supported by Sibiya and Nyembezi’s (2018:33) tracer study of TVET graduates, in which they claimed that graduates had difficulty finding employment because “employers are sceptical of the quality of education delivered at these institutions”. Some graduates ended up being underemployed, especially those from township colleges, which were underfunded during apartheid and whose educational standards might not have been on par with those of former whites-only technical colleges (Sibiya & Nyembezi, 2018). Thus, this challenge of unemployment experienced by TVET graduates can be attributed to the lack or shortage of work tools and insufficient practical training equipment in TVET colleges (Audu, Aede, Yusri & Muhammad, 2013). Although this study may have been conducted some time ago, it nonetheless

highlights the current problems that TVET colleges confront and emphasises the significance of this study on the challenges final-year engineering students are facing in reaching the job market. According to Buthelezi (2018), a significant issue in TVET colleges is the lack of machines or delays in the supply of practical work tools that are needed by lecturers to train and equip students with the practical and technical skills in the workshop. However, the late arrival and shortage of training materials has been a recurring phenomenon in TVET colleges as corroborated by Dasmani (2011).

This study addressed the challenges faced by final-year engineering students which hinder these young TVET graduates from securing suitable internships or employment after leaving college. This study focuses on the challenges facing young TVET graduates and how to address these challenges, thereby contributing to the body of knowledge about the TVET sector. With reference to the lecturers' perspectives on the low unemployment status of TVET graduates, the HRDC (2018) argues that the perception of TVET colleges has been negatively impacted because this problem has historically been seen as the "weakest" in the South African educational system.

Most of this literature is yet to address lecturers' perspectives on the challenges facing final-year students in the TVET college. For this reason, this study was conducted to identify some of the gaps created by these challenges from the TVET lecturers' perspectives.

2.5 CHAPTER SUMMARY

In this chapter, the researcher presented the theoretical framework that was used as a lens for this study. Guided by the three basic assumptions that encompass the social constructivism theory, the researcher shaped the study. Furthermore, the chapter also presented a review of the literature on the TVET educational system globally, in Africa and notably in South Africa. The next chapter presents a detailed explanation of the research methodology use in the study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

In the preceding chapter, the researcher covered the relevant literature review and the theoretical framework that served as a lens for this study. This chapter presents a detailed and comprehensive discussion of the research methodology. The researcher provides an overview of the research paradigm, research approach, research design and research methods used in this study. Furthermore, this chapter discusses sample selection, data collection, data analysis, research ethics and concerns with trustworthiness that were identified during the study.

3.2 RESEARCH PARADIGM

Researchers have different viewpoints and approaches to viewing and engaging with their surroundings. However, certain principles and rules are designed to guide the researcher's beliefs and actions. Such principles and rules are referred to as a paradigm. Therefore, a paradigm is described as a collection of beliefs, concepts, values and views that comprise a framework for perceiving reality (Kamal, 2019).

The research paradigm that was used for this study was interpretivism. It is a method, model or pattern for conducting research. It is a set of ideas, beliefs, or understandings within which theories and practices can function (Creswell, 2014). To gain an inside perspective of the phenomenon, the researcher needs to gain an understanding of essential beliefs or assumptions about how people perceive the world (Guba & Lincoln, 1994) such as individual perspectives and beliefs on the challenges facing final-year engineering students at a TVET college. The approach and techniques the researcher used in collecting data are discussed in the proceeding section.

3.2.1 Interpretive Paradigm

The research is based on the interpretive paradigm, which focuses on reality, values and context. Although interpretive researchers employ systematic methodologies, they claim that various socially created realities exist (Alharahsheh & Pius, 2020). This research looked at how people understand and make meaning of their own experiences and the world around them.

The researcher was able to provide a thorough understanding of some contexts with the help of the interpretive paradigm. These contexts include cross-cultural research, factors influencing a specific development through qualitative data collection and interpretation leading to in-depth information and conclusions that may differ from others, as suggested by Saunders, Lewis and Thornhill (2012). This is because the interpretive paradigm is based on individual contributions whereby meaningful findings are produced (Thanh & Thanh, 2015). The ontological assumptions, epistemological assumptions, axiological assumptions and rhetorical assumptions are additional aspects of the interpretative paradigm that aided the researcher in this study.

3.2.1.1 Ontological assumptions

Ontological presumptions, according to Maarouf (2019), are based on the nature of reality. According to Okeke and van Wyk (2015), the interpretivist paradigm employs a diverse approach to exploring and understanding social reality. To understand the challenges facing final-year engineering students, during this study, the researcher spent quality time observing and interacting with these students and their lecturers in both their class and workshop activities. In the non-participant observation sessions, the researcher was able to gather information from documents and listening to the lecturers about the challenges final-year engineering students are facing during the developing of practical and technical skills.

3.2.1.2 Epistemological assumptions

The epistemological assumption deals with the nature of knowledge and truth (Chilisa, 2012). The researcher's interactions with both students and lecturers during class and workshop activities assisted in providing him with knowledge and understanding relating to some of the challenges these final-year engineering students faced during their programme. This strategy supports Okeke and van Wyk's (2015) assertion that knowledge is socially created by individuals and is flexible. In using non-participant observations, individual and focus group interviews, the researcher came close to the participants and was able to understand the lecturers' perspectives on the challenges that final-year engineering students were facing.

3.2.1.3 Axiological assumption

The axiological assumption emphasises that it is values that matter (Chilisa, 2012). Okeke and van Wyk (2015) add that interpretivist researchers openly disclose their beliefs and prejudices as well as the type of data they get from the field since they recognise the value-laden character of social research. What stands out for the researcher in axiology is the association and interrelationship among participants as encapsulated in the African concept of Ubuntu, namely, 'I am because we are' (Okeke & van Wyk, 2015).

3.2.1.4 Rhetorical assumptions

Rhetorical assumptions deal with the language of research. The language of research for interpretivism is usually in the words of participants. Generally, it would be suitable to write in the first person indicating that the researcher was participating in what was being researched. However, it depends on the person writing the research report (De Vos, Strydom, Fouché & Delpont, 2012). Therefore, the researcher's choice in this study was to express himself in the third person.

3.2.2 Research Approach

This study takes an in-depth look at the phenomenon under investigation using a qualitative research approach. Flick (2019) defines qualitative research as a technique for obtaining and analysing empirical data that centres on the individual in their natural environment, whose behaviours and viewpoints on certain subjects are methodically obtained and analysed in their historical context. Similarly, Bell, Bryman and Harley (2018) hold the view that qualitative research emphasises the socially constructed nature of reality and that the researcher and the field of study have a close interaction. In order to provide study participants' voices a chance to be heard about their concerns and practices, the researcher used a qualitative research approach, which has a tendency to focus on a holistic view of the person and environment.

3.2.3 Research Design

Research design, according to Yin (2014), is a systematic set of statements that shows how the researcher intends to conduct his study. Creswell and Creswell (2017) defined research design as a guide used by researchers to methodically collect and examine the data needed to answer the research question of the study. In a similar vein, Kumar

(2019) described research design as a method for directing the research process to produce reliable and accurate outcomes depending on the research questions. The purpose of a research design is to place the researcher in a specific location to gather data directly related to the research topic (Snyder, 2019).

In this study, the researcher adopted a case study research design for this study. Thomas (2021) defines case study research as a thorough investigation of the complexity and uniqueness of a specific initiative, policy, institution, programme, or system in a “real-life” environment from multiple perspectives. Therefore, it is important to emphasise the definition of a case study research which aligns with the research study that examined lecturers’ perspectives on the challenges facing final-year engineering students at a TVET college in Nongoma KZN. A qualitative case study was used in this study since it offered the researcher a way to investigate complex events in a real-life environment (Duff, 2018; Harrison, Birks, Franklin & Mills, 2017). Furthermore, the case study approach is research-based, inclusive of different methods of collecting data and is evidence-led.

3.3 RESEARCH METHODS

3.3.1 Research Site

This study was carried out at a TVET college, KZN. The college is situated in Nongoma. Nongoma is one of the five major towns in Zululand District, KZN province in South Africa.

Nongoma is located 360 km from Pietermaritzburg, the KZN capital city and 300 km from Durban. Figure 3.1 is a map of South Africa showing KZN province. Figures 3.2 is a maps of the KZN province showing all the districts and Figure 3.3 is a map of Zululand showing all the municipalities in the district respectively.

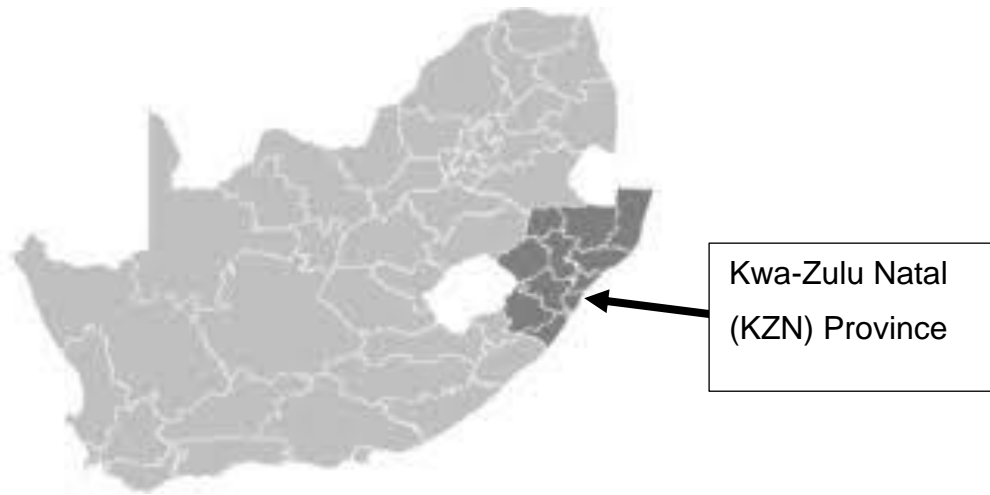


Figure 3.1: Map of South Africa showing KZN Province

Source: <https://southafrica-info.com/land/south-africa-quick-facts/attachment/map-of-south-africas-nine-provinces/>



Figure 3.2: Map of KwaZulu-Natal province showing all the districts

Source: https://www.sa-venues.com/maps/kwazulu_natal_atlas.htm



Figure 3.3: Map of Zululand District showing all the towns

Source: <https://municipalities.co.za/map/125/zululand-district-municipality>

3.3.2 Population and Sampling

Creswell (2014) describes a population as a group of aspects (objects or persons) that possess the same characteristics defined by the sampling criterion determined by the researcher. According to Gill (2020), sampling in qualitative research is the method of choosing participants for a research study from a set of people or things in a larger population. The aim is to find small groups or individuals who are experienced and informed about the phenomenon being studied (Brooks, Bee & Rogers 2018).

Tables 3.3 and 3.4 show the number of senior lecturers, the HoD and final-year engineering students that were purposively selected for this study.

Table 3.3: Senior lecturers and HoD

Participants	Gender	Programme	Age	Years of lecturing experience
Senior Lecturer 1	Male	Electrical engineering	56	26
Senior Lecturer 2	Male	Electrical engineering	37	10
Senior Lecturer 3	Male	Electrical engineering	35	9
Senior Lecturer 4	Female	Civil engineering	44	10
Senior Lecturer 5	Female	Civil engineering	43	15
HoD	Male	Electrical and Civil engineering	46	26

Table 3.4: Final-year engineering students

Participants	Gender	Age	Programme
Student 1	Female	22	Final-year electrical engineering
Student 2	Female	22	Final-year electrical engineering
Student 3	Female	24	Final-year electrical engineering
Student 4	Male	29	Final-year electrical engineering
Student 5	Male	32	Final-year electrical engineering

In selecting experienced and skilled participants for this study, the researcher used the purposive sample procedure as described by Kamal (2019). The researcher used purposive sampling by first carefully considering the characteristics of the population. He chose a sample of senior lecturers who had a minimum of eight years' lecturing experience in engineering studies and were knowledgeable in the subject, the HoD and the campus manager who were the custodians of all PoAs and PoEs that could reveal challenges over time. Also selected for the study, were five current final-year engineering students.

3.4 DATA COLLECTION INSTRUMENTS

During this study, the researcher used individual interviews, focus-group interviews, non-participant observation and document analysis as instruments for collecting data.

3.4.1 Individual Interviews

According to Jain (2021), an interview is one of the best methods for gathering data for a case study since it combines open-ended questions in a facilitated conversation between the interviewer and the participants. Similarly, Gill and Baillie (2018) described an individual interviews as a medium that allows the interviewer to obtain detailed information from the participants because they can give insights, thoughts and knowledge regarding the phenomenon under study. The use of one-on-one interviews was chosen as a method of data collection because they "are excellent for interviewing participants who are not hesitant to talk, who are eloquent, and who can communicate their ideas comfortably" (Creswell, 2014:page 202). All the participants were interviewed.

3.4.1.1 Conducting Individual interviews

In this study, the researcher conducted one individual interview for each of the 11 participants. These 11 participants included five senior lecturers, one HoD and five final-year engineering students. Open-ended questions to elicit detailed information and follow-up on issues that participants' responses raised, probes and tactfully timed pauses were employed by the researcher. Arising from the face-to-face interaction that comes with interviews, a friendly mood predominated. A digital recorder was used to capture the interviews. By using a recorder, the researcher was able to get a more accurate account of the interview and avoid unnecessary delays from having to write

out my answers. To supplement the data that was recorded, the researcher also made notes (McMillan & Schumacher, 2010). The interviews were conducted in the boardroom for all participants. To allow the interview to flow smoothly, the researcher used an interview guide consisting of questions (Appendix H and J) to interview participants and subsequently collect necessary information. The interview session for all 11 participants ranged between 30 and 45 minutes. Consequently, the interview process allows the researcher to gain a thorough understanding of the participants' knowledge and practice on the skills required to demonstrate mastery in the use of the machinery and equipment in the workshop.

3.4.2 Focus-Group Interviews

A focus-group interview is described by Nuttavuthisit (2019) as an interview with several participants including the researcher who acts as a facilitator. The focus groups involve group interaction and the collaborative creation of meaning through the use of specific questions on a closely focused subject. The researcher conducted two focus groups. The first focus group consisted of five senior lecturers and one HoD, while the second focus group was made up of five engineering final-year students. These 11 participants selected for this study demonstrated the greatest insight and confidence during their respective individual interview sections and were purposively selected again to participate in the focus-group interview.

3.4.2.1 Conducting focus-group interviews

Two focus-group interviews were conducted during this study. One focus group was conducted with five senior lecturers and the HoD while the other focus-group interview was conducted with five final-year engineering students. The researcher's quest in using focus-group interviews with the participants was to extract their specialised understanding of the challenges facing final-year engineering students. The emphasis was to obtain in-depth insight into their experiences and opinions on the topic, and not necessarily on reaching consensus among the participants.

The first focus-group interview session with the senior lecturers and HoD was audio-recorded and was conducted according to a flexible focus-group guide (Appendix I). The interview was conducted in the boardroom of the campus, thereby creating a comfortable and relaxed atmosphere in a familiar and non-threatening setting which was also private and free from interruptions. The researcher conducted the focus-

group interviews and took down notes himself. The focus-group interviews lasted approximately 60 to 90 minutes. The researcher started off the discussion with a general welcoming note and thanked participants for agreeing to participate in the session. The researcher then asked the questions guided by the schedule guide. The researcher asked probing questions where necessary to seek additional information, to clarify issues and to stimulate a lively discussion. The nature of the questions was non-threatening and was aimed at encouraging participation from all the participants. At all times, the researcher endeavoured to maintain a non-interfering stance, except when seeking the clarification of responses. The focus-group interviews followed the natural course of a group discussion. To encourage ongoing participation, the researcher adapted my interview guide when necessary to stimulate conversation, as is typical when using a flexible interview guide (McMillan & Schumacher, 2010). The researcher also noted moments of tension, turf-guarding and dominance by some participants which occurred at times. Heightened emotions were evident at times when a participant hotly pursued a point in an attempt to explain or clarify meaning, that is, to position a point of view. Overall, the focus-group interviews provided more detailed information than the researcher initially anticipated. In general, the participants were eager to share their experiences of training students with damaged and obsolete work tools and equipment. In addition, the focus group interviews generated a broad overview of issues of concern regarding TVET transformation such as lack of WIL programme for lecturers and the need for synergy between college management and stakeholders.

The second focus-group interview with the final-year engineering students was also recorded with the digital recorder. The interview with students was also conducted in the boardroom of the campus and the session lasted 55 minutes. During this focus group, the researcher was able to gain insight into the experiences and perspectives of the students.

3.4.3 Non-participant Observation

When the observer observes a group passively from a distance without participating in the group activities, this is called non-participant observation. According to Barrett and Twycross (2018), non-participant observation is a powerful tool for data collection in qualitative research studies because it enables the researchers to record a wide range of information, including verbal and non-verbal communication actions. To put

the observation process in context, the researcher who happened to be a lecturer at the college, took time out to observe how the senior lecturers trained and equipped their final-year engineering students with practical skills.

3.4.3.1 Conducting non-participant observation

In qualitative studies, non-participant observation describes a situation in which the observer observes without influencing or participating in any way. To put everything in context, the researcher took some time during the study to observe the engineering workshops and how senior lecturers train and equip final-year engineering students with the resources available in the workshop. The style of observation that the researcher applied included noting the items according to an observation checklist prepared beforehand (Appendix G). The things the researcher observed included the obsolete machines and equipment and the damaged and unrepaired work tools that were used by senior lecturers to train the final-year engineering students in the workshops. Furthermore, the observation included practical classes sessions on Tuesdays and Wednesdays where senior lecturers were observed in different sessions training and equipping final-year engineering students on how to install electric motors and distribution boards with outdated and damaged work tools. The practical classes were in three sessions on Tuesdays and Wednesdays, and the researcher observed three different senior lecturers training and equipping the final-year engineering students in groups of five or six due to limited resources. This confirmed the responses made by some of participants during the individual and focus-group interview session.

3.4.4 Document Analysis

The fourth instrument used in this study for collecting data was document analysis. For qualitative researchers, Casey and Wong (2020) state that documents are secondary sources of data. Additionally, Mik-Meyer (2020) asserts that documents such as minutes of meetings, memos and working documents are useful in qualitative research. Documents such as attendance registers, PoEs and PoAs were used in this study to obtain data on the challenges facing final-year engineering students.

3.4.4.1 Conducting document analysis

According to Alam (2020), document analysis is helpful for gathering data about a programme, comprehending the programme's nature and discovering the motivations behind the programme's creation. In other words, document analysis is used to acquire relevant information that involves knowledge contained in existing documents. Documents like PoEs, PoAs, students' academic records, student attendance registers and student enrolment forms were reviewed and critically analysed (Appendix L). These documents were examined, particularly samples of textbooks alongside work schemes and lesson plans. In addition, the subject and assessment guidelines were examined. In conclusion, because the PoAs and PoEs included all the planning for the teaching-learning experiences that lecturers used, the researcher focused on these and followed their lead. From the documents provided, the researcher hoped to learn how lecturers perceived the challenges that final-year engineering students were facing. They showed how these final-year engineering students were able to interpret and correlate the theoretical aspects of the course to practical skills. These document analyses provided the researcher with a wealth of knowledge and information to process.

3.6 DATA ANALYSIS

Data analysis is a crucial component of every research study and calls for the careful processing of data in order to extract meaning from it (Richards & Hemphill, 2018). It involves analysing and re-analysing of evidence into relevant theory, themes and categories through a dynamic process of reasoning, thinking and theorising (Bergin, 2018). According to Linneberg and Korsgaard (2019), the most fascinating aspect of qualitative data analysis is that it allows the researcher the opportunity to review the data in a systematically reliable way and to present a coherent understanding of the research problem (McMillan & Schumacher, 2014). In this study, the data analysis process involved determining patterns, main themes and sub-themes from the responses given by the participants. To draw closer to the text, make meaning and translate the data collected, the researcher analysed the information manually and developed themes and patterns using thematic content analysis.

Analysing the data from qualitative research depends on coding. Coding is the act of summarising data or text with a conceptual description as part of the qualitative

research process (Saldaña, 2021). Furthermore, Saldaña (2021) confirms that the process of coding entails gathering text or data, which can be found in materials like books, documents, transcripts of interviews, journals, field notes, videos, observation checklists and e-mail messages. Similar to data collection, coding calls for compiling data segments that explain the same concept or phenomenon at a single location (Schreier, 2020). In coding, texts that are relevant to a particular theme, concept or category are chosen and programmed into that node. In this study, the process of coding started with the transcription of data. The interview transcriptions were broken down into more manageable pieces after reading the information provided by each participant. The procedure allowed the researcher to compile data in order to interpret it and provide a written analysis of the findings

3.6.1 Individual Interview Data Analysis

According to Husband (2020), data collection and analysis take place simultaneously in qualitative study. Transcribing the data from the recordings is the first step in data analysis, according to Roulston (2020). For the individual interviews, the researcher transcribed the recorded data verbatim after listening to the recordings. The researcher started this task right after the first interview and proceeded to listen to the recordings after the day's interviews were over. The researcher reviewed the transcription against the recordings word-for-word to ensure accuracy and referred to the field notes when the transcription was completed. For the purpose of verification, clarification, and, if necessary, any changes or additions, the researcher provided the interview transcripts to each participant after the individual interviews. As a result, the participants were able to see that they were significant knowledge providers in the advancement of educational reform. The participants' participation as co-agents in the research process was confirmed by the transparency with which the transcripts were handled (Creswell & Poth 2018).

3.6.2 Focus-Group Interviews Data Analysis

The data handling procedure after the focus-group interviews was the same as that for the individual interviews. In this instance, the researcher took notes on his perceptions and observations during each session and promptly wrote a summary of the focus group interviews. The initial focus interview recording was then transcribed verbatim and the transcription was then compared to the recording. The researcher then carefully examined, thought about, and compared the notes he had taken on my

own during the first focus-group interview with the senior lecturers and HoD with the transcripts, expanding his notes as a result. The researcher looked closely at his notes from the second focus-group session with the final-year engineering students and expanded the report he had written right away. During the process of listening, summarising, transcribing and thorough member-checking, the researcher was able to get a comprehensive understanding of the entire set of data (McMillan & Schumacher 2010). After first hearing each audio, the researcher read and reread the transcripts, summaries, field notes and my own reflections. Coding began when the researcher started to locate potential codes in the data, which was the start of the next level of research. When all the transcribed data were coded, the researcher began to group related codes into themes (McMillan & Schumacher, 2010) and then identify discrepant cases. At this point, the researcher extracted the rich data out of the original text and grouped them with other examples of rich data on the same topic to start identifying emerging themes that recurred across the data set.

3.6.3 Non-Participant Observation Analysis

The style of observation that the researcher applied include noting the items in an observation checklist prepared beforehand and is included as Appendix F of this dissertation. The researcher observed the use of obsolete machines and equipment during practical training classes in the workshop by senior lecturers to equip final-year engineering students. Some of the participants had revealed this challenge during the individual and focus-group interviews. Furthermore, the use of lack of appropriate work tools to train final-year engineering students resulted in senior lecturers grouping these students into groups of five or six during practical classes.

3.6.4 Document Data Analysis

Document analysis entails the analysis of personal documents such PoAs, PoEs, class timetables and other relevant official documents. These documents were analysed by comparing them with laid-down policy and guidelines governing the establishment of TVET colleges. The process of analysing these documents was guided by a document analysis checklist (Appendix L). The timetable revealed that the time allocated for practical training classes for final-year engineering students was two hours weekly but was supposed to be five hours weekly when compared to the White Paper for Post-School Education and Training.

3.7 MEASURES OF TRUSTWORTHINESS

According to Mandal (2018), in order for any qualitative study to be accepted as reliable, adequate data must be obtained through various approaches and presented or carried out in order to establish the authenticity, dependability and importance of the study. Credibility, transferability, dependability, and confirmability are necessary to support the findings in a qualitative investigation, ensuring trustworthiness (Bloomberg & Volpe, 2019). The researcher gathered data from four different instruments and from various research participants in order to provide a clear understanding of the current situation and to ensure the validity of the research study. The rationale for using different instruments and sources of information was to enhance the value of data, which is a quality of triangulation.

3.7.1 Triangulation

The researcher used the triangulation technique to increase the trustworthiness of this study. Triangulation, according to Creswell (2012), is the process of gathering data through a number of approaches from a wide range of individuals and environments. Triangulation was used by the researcher to derive the same meaning using at least three separate approaches, which increased the study's trustworthiness. The researcher used document analysis, non-participant observation and individual and focus group interviews. By using multiple data-collection techniques, the researcher could offer a rounded view of the study, thereby gaining an extensive knowledge of the richness and complexity of human perception. With these processes, the researcher used triangulation to ease the likelihood that one's assumptions would suggest bias or limitations of a specific method (McMillan & Schumacher, 2014).

3.7.2 Credibility

Credibility is defined as the degree to which study findings are believed to be trustworthy and logical which depends on how closely they reflect reality (McMillan & Schumacher, 2014). These included non-participant observations, document sources, focus-group and individual interviews and document gathering methods. By so doing, the researcher could compare the findings from various sources. The researcher attended three sessions with senior lecturers active in programmes. These sessions were in form of interaction through individual interviews, a focus-group interview and non-participant observation, to get a comprehensive understanding of their

perceptions, while the researcher held two sessions with the final-year engineering students, namely, an individual interview and a focus-group interview. In both instances, the objective was to develop a relationship of trust with the participants. In conducting the semi-structured interviews, the researcher did member checks by rephrasing and probing the feelings and perceptions of the participants to obtain a more complete meaning of the phenomenon and to use several sources to collect data. The data collected were recorded throughout the study to ensure the accuracy of transcripts and notes and were shared with participants.

3.7.3 Dependability

Dependability is achieved by a process known as auditing. According to De Vos et al. (2012), the process necessitates creating an audit trail that includes the researchers' documentation of the data, methodology and decisions made during the study. In this study, the researcher made sure that dependability was attained by interacting with the participants and explaining each step of the research process to create an audit trail.

3.7.4 Transferability

The term "transferability," which is often referred to as "generalisability", refers to the extent to which conclusions may be drawn about a larger population or context based on the data and setting of the research study (De Vos et al., 2012). It is in transferability that the researcher asked whether the findings of this research conducted in a specific context would be generalised. The researcher involved a small number of senior lecturers in the TVET college environment with regards to challenges facing final-year engineering students in TVET colleges. Therefore, it was such that the generalisation of findings in this study was quite limited. Despite this limitation, the researcher provided a thorough description of the research context and findings to give readers enough information to assess whether these findings are applicable to other contexts (Henning, Van Rustenburg & Smit, 2013).

3.7.5 Confirmability

Confirmability is an objective metric that measures how effectively the investigation's conclusions are confirmed by the findings. To achieve confirmability, the researcher discussed the study at length with another researcher in the field of TVET to verify the information gathered.

3.7.6 Ethical Measures

Ethics is described as a set of moral principles recommended by a person or group to provide rules and behavioural expectations towards respondents, researchers, and institutions (De Vos et al., 2012). Ethical consideration entails recognition of potential ethical challenges throughout the study (Henning et al., 2013).

3.8 FUNDAMENTAL ETHICAL PRINCIPLES

3.8.1 Anonymity and Confidentiality

All parties acknowledged in writing their acceptance of the confidentiality and privacy concerns. The researcher reassured participants that he would go above and beyond to maintain their anonymity and confidentiality. In addition to keeping participant contact information and transcripts separate, he used pseudonyms. The researcher changed certain information that might identify a participant when he transcribed the interviews. However, the researcher made sure, that the information he altered did not affect the intended meaning of the participants' words in any way.

3.8.2 Privacy

In order to respect research participants' privacy, one must minimise unwarranted intrusions into their personal space and person and make sure that nothing related to the study breaches this principle (Bryman, 2012). The focus-group interviews took place in a location that was convenient for the participants. During the fieldwork, interviews were held at the campus site while participants went about their normal routines. This gave the participants privacy and prevented production time loss.

3.8.3 Permission

The University of South Africa's College of Education provided ethical approval for the study (Appendix B). The ethical clearance certificate issued is valid from 2021 and 2024. The researcher also communicated with the participants to get their permission to participate in the study and before the session began, each participant received a consent form.

The researcher issued a warning to participants beforehand to make sure that no revelations would be detrimental to participants or the TVET college. During the first meeting with the participants, the researcher introduced himself and went through his plan to conduct a study there. The researcher offered proof that he was registered at

the University of South Africa (Appendix A). The researchers' permission to conduct study for their college was confirmed to the participants by the certificate from the research ethics committee.

3.8.4 Feedback

To uphold the ethical value of respect for people, the participants involved in the research study must receive feedback. The researcher went back to the participants after the study was finished to provide feedback. This provided the participants a chance to accept or reject the researcher's conclusions and enabled him to make corrections before the study was finally published. The fact that their contributions were recognised was appreciated by the participants. Participants will receive a second piece of feedback after the researcher present his dissertation to the coordinators.

3.8.5 Respect for Persons

People have the freedom to choose and decide what is best for themselves, and research should respect that right. Research acknowledges that some people may not be able to exercise this autonomy for a variety of reasons, and that these participants should be protected by taking any additional steps necessary to defend their rights (Bryman, 2012).

3.9 CHAPTER SUMMARY

This chapter focused on how the research was conducted to elicit the perspectives of lecturers on the challenges facing final-year engineering students at a TVET college in Nongoma, KZN. A case study research design was used as a strategy to collect data. This chapter described the qualitative research approach and purposive sampling used to select five senior lecturers, one HoD and five final-year engineering students of the college for this study. Thus, a total of 11 participants were selected. Interviews and focus groups were conducted.

Finally, data were also gathered from documents and non-participant observations. The ethical issues and methods for establishing trustworthiness were taken into account. In the next chapter, the findings from the participants in the study are presented and discussed in detail.

CHAPTER 4

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

4.1 INTRODUCTION

The researcher discussed the research design and methodology used in this study in the preceding chapter. The choice of the data-collection instruments was also addressed. In this chapter, the presentation, analysis and discussion of the data are the key points of discussion. The themes gathered from focus-group and individual interviews, non-participant observation and document analysis are presented in this chapter. The process of data analysis contributed to the achievement of the aim of the study, which was to examine lecturers' perspectives on the challenges facing final-year engineering students at a TVET college in Nongoma, KZN. The main research question was: What are lecturers' perspectives on challenges facing final-year engineering students at a TVET college in Nongoma, KwaZulu-Natal? Subsequently, the following sub-questions emerged:

- How are final-year engineering students at a TVET college in Nongoma, KZN, dealing with the challenges experienced in the learning environment?
- How have these challenges facing final-year engineering students at the TVET college in Nongoma, KZN influenced their industrial placement for internship programmes?
- How do lecturers at a TVET college in Nongoma, KZN, create an enabling learning environment for final-year engineering students?
- How can lecturers improve existing procedures and resources to assist final-year engineering students of TVET college to overcome these challenges?
- How can the college management form partnerships to assist final-year students with job placement?

4.2 BIOGRAPHICAL INFORMATION

There were 11 participants in total who took part in the study. This group consists of five final-year engineering students, five senior lecturers and the HoD for the electrical and civil engineering programmes. The biographical information sought to establish

the gender and the programme to which lecturers are attached. The gender difference was an important variable in the analysis of the study because it shows the exact number of respondents per gender and demonstrates how a dominant gender could affect the overall outcome of the study. Descriptive data were used to calculate the frequency counts of gender as illustrated in Table 4.1 below:

Table 4.1: Description of participants

Participants	Gender	Age	Programme	Years of lecturing experience
Senior Lecturer 1 (SLM 1)	Male	56	Electrical Engineering	26
Senior Lecturer 2 (SLM 2)	Male	37	Electrical Engineering	10
Senior Lecturer 3 (LM 3)	Male	35	Electrical Engineering	9
Senior Lecturer 4 (SLF 4)	Female	44	Civil Engineering	10
Senior Lecturer 5 (SLF 5)	Female	42	Civil Engineering	15
Head of Department (HoD M)	Male	46	Electrical and Civil Engineering	22
Student 1 (FYFS 1)	Female	22	Final-Year Electrical Engineering	-
Student 2 (FYFS 2)	Female	22	Final-Year Electrical Engineering	-
Student 3 (FYFS 3)	Female	24	Final-Year Electrical Engineering	-
Student 4 (FYMS 4)	Male	29	Final-Year Electrical Engineering	-
Student 5 (FYMS 5)	Male	23	Final-Year Electrical Engineering	-

Table 4.1 indicates that there were eleven (11) participants who contributed to the study. The table shows that three of the senior lecturers were male, representing 60% and two participants are female, representing 40%. The participants are a small portion of the population representing the whole population of senior lecturers and students attached to the final-year engineering programme of electrical and civil engineering.

With reference the participants' gender, ages, level of study, and the programme difference were important variables in the analysis of the study because they show the exact number of participants per gender, age and level of study in the engineering programme. In addition, the variables demonstrate how a dominant age, gender, level of study and the programme could affect the overall outcome of the study. Descriptive data were used to calculate the frequency counts of age and gender. The study statistically shows that there was a gender balance between the male and female participants due to the frequency of three male and two female participants.

The frequency distribution in the table revealed that most of the participants were aged 60s with (n=1) representing 10% followed by 40s with (n=5), representing 90%

The frequency distribution in Table 4.1, also indicates that two of the participants were male, representing 25% and six participants are female, representing 75%. The study statistically shows that there was no gender balance between the male and female participants due to the frequency of two male and nine female participants. The frequency distribution in Table 4.1 revealed that the participants were all engaged in the engineering programme representing 11 (100%).

4.3 DATA ANALYSIS

It is essential for the researcher to abide by several key guidelines when analysing qualitative data (Henning et al., 2014) including keeping in mind the study's overarching research question(s) and constantly reminding oneself of the qualitative research's purpose. One of the most exciting research tasks is the analysis of qualitative data because it gives the researcher the opportunity to reflect and continue in their pursuit of analytical accountability about the interpretation of evidence from the data. The researcher personally transcribed the data, engaging with it inductively and approaching it from specific to more general viewpoints. The researcher manually

analysed the text and created themes using thematic content in an effort to become more familiar with the text and better understand and interpret the data (Henning et al., 2014).

4.4.1 Emerging Themes

The researcher developed four themes based on the research questions. The data was collected from five engineering programme final-year students, five senior lecturers and one HoD. Questions were posed to the participants in the focus groups and individual interviews. Based on the ethical considerations of the study which includes participants' consent, the interviews were audio-recorded.

Samples of participants' original transcripts are included in appendices H, I, J and K of this thesis and are translated for ease of reference to the reader. The views of the participants are cited in italic to provide the evidence. In Table 4.2, the researcher presents the themes and sub-themes guided by the main research question and sub-questions of the study. Thereafter, the researcher provides a comprehensive discussion of the analysis of data and discussion of findings.

Table 4.2: Themes and sub-themes

Research questions	Research instrument	Main themes	Sub-themes
In what are the ways are final-year engineering students at a TVET college in Nongoma, KZN dealing with challenges experienced in the learning environment?	Individual interviews (Appendix H and J)	Final-year engineering students' way of dealing with challenges experienced in the learning environment	<ul style="list-style-type: none"> • Limited or inadequate resources • Inadequate practical skills training • Attending extra lessons during weekends and vacation days
How are lecturers at a TVET college in Nongoma, KZN creating		Creating an enabling environment	<ul style="list-style-type: none"> • Providing Foundational practical skills

Research questions	Research instrument	Main themes	Sub-themes
an enabling environment aligned to industrial placement for final-year engineering students' internship?	Focus group interviews (Appendix K)	aligned to industrial placement for final-year engineering students	<ul style="list-style-type: none"> • Integration of theory and practice through excursion to industries
How do resources help to prepare final-year engineering students for the world of work at a TVET college in Nongoma, KZN?	Individual interviews and non-participant observation (Appendix G and K)	Accessibility of resources for students' world of work	<ul style="list-style-type: none"> • Inadequate skills training for employment • Obsolete machines and equipment
What are lecturers' perspectives in assisting final-year engineering students overcome challenges?	Focus-group interviews (Appendix I and K)	Lecturers' perspectives in assisting final-year engineering students overcome challenges	<ul style="list-style-type: none"> • Improve lecturers' skills through WIL programme • Formation of TVET college and Engineering Industry Partnership

4.5 PRESENTATION OF FIELDWORK WITH SENIOR LECTURERS, STUDENTS AND THE HEAD OF DEPARTMENT

For the researcher to qualify this study as an evidence-based inquiry, he made use of qualitative data to present the participants' actual words as presented in the themes and sub-themes that follow:

4.5.1 Theme 1: Final-year Engineering Students' Way of Dealing with Challenges Experienced in the Learning Environment

The sub-themes under this main theme reveal the participants' views about how the senior lecturers attempt to assist the final-year engineering students deal with the challenges in the learning environment.

4.5.1.1 Limited or inadequate resources

Due to limited or inadequate resources, senior lecturers encourage their final-year engineering students to share the limited resources in groups of five or six. The small group learning endeavours were evident in the responses given by the senior lecturers in the focus-group discussions. In helping students deal with the challenges of the creation of an enabling learning environment, the SLM 1 stated that:

Upskilling and reskilling help us to alleviate the challenges students experience in the electrical engineering learning environment. This is done yearly throughout their practical skills classes to familiarise them with the environment of engineering programme.

In the same way, SLM 2 added:

I have learned to cultivate a culture of teamwork among students.

In expressing his viewpoint, the HoD, similar to SLM 1 and SLM 2, pointed out that:

More practical skills training sessions are usually carried out in groups, in an attempt to help create a conducive learning environment where students collaborate with one another in learning.

In the second focus-group discussion, the researcher interacted with students represented as male or female final-year engineering students (FYMS or FYFS). The researcher focused on the first theme posed to senior lecturers but wanted to get students' points of view. Their responses about dealing with the challenges of the creation of an enabling learning environment were almost identical as indicated by student (FYFS 1) who responded by saying:

Since we must share and learn practical activities in groups of 5 or 6 most times when we are in the workshop, we always struggle to learn.

FYFS 2 corroborated this, saying:

We are always asked to participate in the learning and training of practical skills in groups. This practice poses challenges because we learn at different speeds and in different learning styles.

FYFS 3 concurred with FYFS 1 and FYFS 2 and elaborated her viewpoint, saying:

But we are trained with limited resources by our lecturers, and we are always encouraged to share machines and work tools all the time.

From the responses, it was found that limited or inadequate resources were highlighted as challenges in both focus group discussions. The findings validate findings by Wanjala et al. (2020) (cf. 2.7) and Delubom et al. (2020) (cf. 2.7) that lack of infrastructure and inadequate supply of basic material resources in TVET colleges have the potential to hinder the quality of practical training students acquire in TVET colleges. In this regard, the theoretical framework used in this study, namely social constructivism which emphasises the collaborative nature of learning, is well illustrated in participants' responses. However, it is unlikely that the development of knowledge in the acquisition of practical skills in the programme will be realised. An attempt to curb the challenges experienced by final-year engineering students would be to modify the theoretical aspects to meet student's needs in the context of the availability and accessibility of resources. In so doing, the researcher contends that modification of the theoretical components of the programme has the potential to help students construct their knowledge and reality towards addressing the challenges they face in the learning environment (cf. 2.3).

4.5.1.2 Inadequate practical skills training

Another vital challenge raised during the focus-group discussions with both senior lecturers and final-year engineering students was that of inadequate practical skills training. Practical skill acquisition is a vital tool required for technical and vocational training. It is evident from the views expressed by one SLM 2 who pointed out that:

The challenges include disparity in skills training that is acquired in the workshop compared to the skills required in the labour market.

SLM 3 mentioned that:

The challenges are numerous. The late arrival of learning and training resources and work tools for skills training.

The HoD response supported the view of SLM 2 and SLM 3, stating that:

The challenges include inadequate resources and infrastructural development for skill training.

Similarly, during the second focus-group discussion with final-year engineering students, the responses provided by (FYFS 1) revealed that:

The resources in the college's workshops are usually not accessible since the workshops have few numbers of work tools and machines that we can practice and train. This is due to some damaged and unrepaired work tools and machines in the workshop.

FYFS 2 reaffirmed what FYFS 1 said that:

Despite the number of practical skill activities, our lecturers line up to train and equip us with the basic practical skills, the unavailability of some machines and equipment when it is time to use the workshop has been a major concern for me.

FYFS 3 responded by saying:

The resources we are exposed to during our practical skill training classes in the workshops are not sufficient particularly with the consumables given to us.

While FYMS 4 added that:

The resources provided in our workshops are few. Some of the work tools, machines and equipment we have engineering workshops are either damaged or malfunctioning. The resources and consumables provided for our practical skill training classes are usually insufficient.

FYMS 5 stated that:

The resources provided for practical skill training are always inadequate. We are always advised and encouraged by our lecturers to learn and share the insufficient resources provided to us.

According to Geda (2021), practical training skills acquisition in TVET colleges is meant to influence the development of skills and behaviours of students. Practical skills acquisition is expected to develop and prepare these students for the labour market so that they can be employable once their competency can be proven. Consequently, since the final-year engineering students struggled to carry out practical activities on their own if their lecturers were not in the workshop as a result of group practical training they had received, the acquisition of practical skills becomes a challenge. With reference to Section 2.4.8 of this thesis, TVET colleges were established to meet the demand for different kinds of skills necessary for employment and socioeconomic development. However, TVET colleges are experiencing the challenge of skills training resources such as broken-down and unrepaired machines, equipment and work tools, late supply or delivery of training tools to final-year engineering students and use of old and obsolete machines. These challenges have adversely affected the practical skills development of the final-year engineering students at the TVET college in Nongoma, KZN.

4.5.1.3 Attending extra lessons during weekends and vacation days

In the interview sessions with the senior lecturers, it was revealed that senior lecturers conducted extra practical lessons during weekends and vacation days. Both participants (lecturers and students) further explained that due to limited or inadequate resources in the engineering workshops, the need for extra practical lessons was agreed upon by the lecturers and students.

SLM 3 commented by saying:

Since the time allocated for practical classes are usually insufficient due to shortage of machines and equipment. I encourage students to come for extra hours of practical classes on weekend and during vacation.

The statement by SLM 3 was also buttressed by FYMS 4 who said:

I am not satisfied with the quality and standard of technical and vocational training the researcher am currently receiving at the college. For this reason, the researcher am compelled to attend extra practical classes on a weekend to practise with the few functional machines and equipment. I am thankful for the initiative; however, it has financial implications for my parent who receives a social grant.

It is evident from the findings that the special arrangement the final-year engineering students made with their lecturers was aimed at assisting them to experience individual one-on-one practical skills training with their lecturers in the workshop. Likewise, this arrangement sought to minimise the challenges of practical skill acquisition in the engineering workshops through learning in a group of five or six. This shows that the senior lecturers made a determined effort to train and equip students with practical skills on an individual basis by making special arrangements on weekends and during vacation.

Similarly, from the timetable of practical classes, the researcher observed that final engineering students were allocated three-hours weekly; one-hour per day, for a maximum of three months. During the practical skills training classes, the researcher observed that the students were given twenty minutes of the practical skills training period. The time allocated was done to accommodate the students divided into groups. They were clearly not given adequate time to acquire practical and technical skills in the engineering workshop (cf. 2.7) because the students need enough time to practice the handling and operating of these machines, equipment and work tools. Under these circumstances, the effort of scheduling extra practical classes with their lecturers indicates how final-year engineering students dealt with the challenge of practical skills acquisition.

4.5.2 Theme 2: Creating an Enabling Environment Aligned to Industrial Placement for Final-year Engineering Students' Internship

4.5.2.1 Providing foundational practical skills

During the observation of the engineering workshops, the researcher observed that the senior lecturers demonstrated basic practical skills to a group of students on the

steps and procedures of how to install an induction motor. The researcher was guided by the observation checklist in Appendix G. It was clear that the lack of material resources which should play a vital role in assisting final engineering students in acquiring basic foundational practical skills hindered not only the students but also the senior lecturers from equipping the students with these basic practical skills. In the same way, the old-fashioned machines and outdated physical structure of the workshop exacerbated some of these challenges which hindered the acquiring of foundational practical skills. According to Biggs (2003), students must first obtain a sufficient foundation of theoretical knowledge before they can start to apply it in a practical environment. The students were able to apply what they were taught theoretically in the classroom with the practice of basic practical skills in the workshop. Hence, the researcher holds the view that the practice of equipping students with foundation of practical skills may arise out of knowledge, learning and reality which are the three core assumption of the social constructivism theory (cf. 2.3), the theoretical framework that was adopted as a lens for this study

4.5.2.2 Integration of theory and practice

Integration of theory and practice is an act of effectively integrating learning of theory in classroom with workplace practice or practical skills acquired in the workshop. The findings revealed that in pursuit of balancing theory and practice, a few ideas were provided by the participants. Some of the participants stated that during balancing theory and practice, the students should be allocated sufficient time in the workshops.

FYFS 1 suggested that:

Sufficient time should be allocated to practical skills training classes in the workshop.

FYFS 2 affirmed what FYFS 1 said by stating that:

Our practical skills training classes should be prioritised over classroom learning.

FYMS 4 added that:

Limited time is assigned for practical skills classes in workshop when compared to the amount of time given to classroom activities.

These students' views and concerns were corroborated by SLM 2 and the HoD.

SLM 2 pointed out that:

To improve the practical and technical ability of our students in the workshop, the time allocated for practical classes should be revisited.

HoD added that:

But to enhance the quality of practical skills classes offered to our student in the campus, the researcher have proposed that time assigned for practical classes to be 60% of the entire programme.

It is evident from the findings that workplace skills and knowledge require that students acquire both practice and theory during their academic career at a TVET college. Theory and practice cannot be separated from one another. Being able to apply hands-on practical skill is just as important as an understanding of its theoretical context (Anido, Fernandez & Llamas, 2001). It is, therefore, crucial for TVET colleges to ensure the integration of theory and practice to enhance the quality of practical skills of these students. For this reason, the researcher maintains that students need to be exposed to both practice and theory in an engineering curriculum, especially if they are to develop the right TVET graduates' attributes such as problem-solving, investigation and technical know-how.

4.5.3 Theme 3: Accessibility of Resources for Students' World of Work

4.5.3.1 Inadequate skills training for employment

One vital role of the TVET colleges is not only to equip students with technical and vocational skills, but to broaden students' minds with a range of knowledge, skills and attitudes. However, the engineering programme at the TVET colleges is not responsive to the needs of the job market, particularly that of the engineering industry. Chamadia and Shahid (2018) assert that skills taught in TVET colleges do not align with the skills demanded by the market. The researcher agrees with this viewpoint since the employability of TVET graduates is affected because the acquired skills do not align appropriately with the demands of the industry.

4.5.3.2 Obsolete machines and equipment

During the individual interviews with the final-year engineering students, some of them raised concerns about the challenges they were experiencing in the engineering workshops.

FYFS 1 revealed that:

The workshops that we used for training are very old. Some of the machines and work tools we use apart from being old, are insufficient to go round all the students and we have to share these resources when we are the workshop.

FYFS 2 narration was that:

Our workshops are old. The machines and training tools are also old and ineffective. I do not believe we can get good quality technical and vocational skills with these old infrastructures in the college.

FYMS 5 echoed what FYFS 1 and FYFS 2 said by adding that:

The machines and equipment that lecturers are using to train us in the workshop are either old or damaged and waiting for repairs.

One of major limitations in the TVET sector cited by Geda (2021) (cf. 2.4.4) is the decline in the standard of training machines, equipment and the lack of maintenance facilities in TVET colleges. However, TVET colleges were established to meet the demand for different kind of skills necessary for employment and socioeconomic development of any nation (cf. 2.4.7). The challenge of obsolete machinery and a decline in the standard of training machines, equipment and work tools in the workshops considerably hindered the empowerment of students with practical skills of TVET graduates. Consequently, the researcher upholds the view that since these students are trained using obsolete machines, equipment and work tools, the practical and technical skills acquired by the students at the TVET college will not be relevant in the industries.

4.5.4 Theme 4: Lecturers' Perspectives in Assisting Final-Year Engineering Students Overcome Challenges

The researcher conducted individual interviews with all the participants (final-year engineering students, senior lecturers, and HoD) after an extensive observation of the workshops and lecturers' practical classes with the final-year engineering students. The individual interviews with participants tended to confirm observations and insights that the researcher had previously discovered.

4.5.4.1 Improve lecturers' skills through work-integrated learning programme

During the individual interview and focus-group discussion with the senior lecturers, the senior lecturers placed strong emphasis on the lack of WIL programme at the college.

SLM 2 stated that:

The college needs to make funding a priority by partnering with stakeholders; the college also needs to improve the standard of lecturers training through work-integrated learning in order to raise the quality of practical training these students acquire in the workshop.

SLF 4 also added that:

Exposing lecturers to work-integrated learning programmes will provide them with relevant practical skills.

The HoD reaffirmed:

The lack of Implementation of the work-integrated learning for lecturers in the college has been a challenge in improving the technical skills of lecturers to industry-standard.

SLF 5 corroborated what the HoD said by stating that:

The college has been unable to secure the WIL programme that will assist in equipping and improving our current technical knowledge.

It is evident from the interviews and discussions that lecturers require the WIL programme.

The TVET college workplace component is specifically industry-based WIL. Industrial-based WIL according to the DHET (2013a and 2013b) is described as learning in and from workplaces through industry visits or placements, particularly for TVET lecturers.

According to Batholmeus and Pop (2019), integrating the WIL programme for TVET lecturers, will assist in enabling TVET lecturers to train and equip students with current knowledge and application of relevant practical skills in demand in the industry. As a result, it will make the students employable in the labour market. The WIL programme will also ensure that TVET lecturers develop expertise in both teaching their subjects and preparing their students for the demands of the workplace. Furthermore, in an attempt to make TVET lecturers industry experts in their respective fields of discipline through the WIL programme, lecturers are expected to be equipped with current knowledge and experience of their subject's application in relevant industries, and they need practical skills expertise (cf. section 2.6). It is, however, crucial to ensure that TVET lecturers have the industry knowledge and expertise to make them exemplary in their field of study. This would help bridge the gap between the college curriculum and industry requirements for TVET graduates which will invariably improve the employability rate of TVET graduates.

4.5.4.2 Formation of TVET college and engineering industry partnership

The synergy between the college and industries is one aspect that needs to be exploited by the college. During the interviews and focus-group discussion, the researcher conducted with the senior lecturers, HoD and final-year engineering students, the participants' emphasised the need for the college to endeavour and engage industries so that industrial experience placement for students can be secured by the college on their behalf.

SLM 2 pointed out that:

The college can also help our final-year students in securing the 18-months internship work placement once they complete their respective programme with the college.

The narrative of SLM 2 was substantiated by the HoD who added that:

The college can also assist in securing internship placement for our final-year students in the industries situated around the college.

Likewise, the responses of the students were similar to what was provided by both the senior lecturer and HoD.

FYFS A revealed that:

Our college does not have a partnership with some of the companies situated around the campus.

FYFS B reiterated what FYFS A highlighted and added that:

The industries around our campuses cannot assist the students since the college does not have any relationship with them. Once partnerships can be established with industries, they can assist with equipping the new workshop with the latest equipment and machines when they are effectively engaged.

The TVET partnerships with industries have great potential to improve the work-readiness (employability) of graduates (Makgato & Moila, 2019). In the TVET educational sector in most developed countries, like Germany and China, partnerships with the industry increasingly have become part of the pedagogical approach to knowledge and skills acquisition. The German TVET educational system employs the dual system whereby TVET institutions in Germany partner with industries in order to expose the TVET graduates to workplace-based training which in turn assists in positively influencing the employability of TVET graduates in Germany.

Contrary to the dual system of TVET education in Germany, TVET graduates in South Africa do not enjoy this form of the dual system. This has adversely impacted the employability of TVET graduates and industrial growth in South Africa. Establishing an effective TVET partnership with industries and with the cooperation of stakeholders would assist in designing and structuring the TVET practical skill training system. This approach would assist in the development of employment-linked competencies amongst TVET graduates (Geda, 2021). The researcher echoes that a visible cohesive and effective partnership between TVET colleges and industries is a crucial factor in producing a skilled labour force in South Africa. However, TVET graduates

were suffering from the ineffective partnership between the TVET colleges and industries. Due to the lack of industry partnerships, there was a mismatch of practical skills the students were equipped with, which were not aligned to skills required in the labour market.

4.6 CHAPTER SUMMARY

In this chapter, data was presented with emphasis on the rich, detailed information provided by the participants from the interviews and focus-group interviews. The participants gave relevant information based on their respective experiences during their practical skills training. The next chapter presents a detailed discussion of the findings of the study, recommendations and conclusions drawn.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This study falls under the field of didactics and focuses on the science and practice of teaching engineering. The chapter highlights the findings of the study. This is followed by recommendations on lecturers' perspectives on the context and content causing challenges for final-year engineering students at a TVET college. The last part of the chapter makes concluding remarks on the lecturers' perspectives on challenges facing final-year engineering students at a TVET college in the South African context.

The findings of the study reveal that lecturers' interpretation of curriculum policy was influenced by, among other factors, lecturers' teaching experience, the availability of resources and how they understood the relevant policies in their respective contexts. All the lecturers had a similar understanding of curriculum policy implementation. This was because they were exposed to the same challenges. The availability of resources played a significant role in influencing how lecturers reacted to curriculum policy implementation in TVET colleges. The findings show that lecturers were not implementing the curriculum policy as expected because of a lack of the necessary resources. The findings further revealed that lecturers' experiences influenced how and why they responded to the curriculum policy. Lecturers indicated that, because what the policy expected them to do was not always possible, they resorted to focusing on the theoretical part of engineering and not the practice because of a lack of limited resources. It suffices to note that the study has laid the foundation for how to deal with the challenges that influence lecturers' interpretation of the challenges they encounter and encourage or discourage their response to the implementation of teaching.

For this study, the researcher used the results of the empirical study in the previous chapter and the literature review to address the research questions. The preceding sections provide a final summary of the main research findings and offer suggestions to readers on how lecturers' perspectives on the challenges facing final-year engineering students at a TVET college in Nongoma, KZN, were constructed and presented.

5.2 SUMMARY OF MAJOR FINDINGS

In shaping this study, the researcher adopted the three basic assumptions of the social constructivism theory (cf. 2.3) which was the theoretical framework that was used as the lens for this study. The theory underscores that lecturers' individual approaches are established through knowledge of social and cultural factors that can help students learn. In addition, learning for the final-year engineering students was achieved through individual participation during practical activities. The third assumption, namely, reality, assisted lecturers and students to establish individual pursuits through collaborative interaction and engagement in the workshop.

This study was carried out to explore and examine lecturers' perspectives on the challenges facing final-year engineering students of a TVET college, in Nongoma, KZN.

Furthermore, the findings of this study from numerous literature reviews revealed some notable problems that had contributed to the challenges TVET graduates were facing. These challenges included limited or inadequate resources to train and equip TVET graduates. Findings revealed that TVET graduates were not employable in the labour market because they lacked basic foundational practical skills. The evidence of some literature (cf. 2.6) shows that TVET lecturers employed to train and equip students are often unqualified or underqualified. Similarly, TVET lecturers lacked work-related qualifications (cf. 2.7) and industry-based WIL which is required to professionally equip and develop them. The challenge of having no WIL programme is a status quo that makes it extremely difficult for TVET colleges to align their programmes with industry standards and requirements for TVET graduates. In addition, the problem of unqualified TVET lecturers due to an acute shortage of lecturers in some disciplines, led to the recruitment of retired lecturers or teachers in certain fields of study, particularly in engineering. Terblanche (2017) asserts that the challenge facing TVET college lecturers is the lack of practical skill knowledge and industrial experience. The literature indicated that challenges were highlighted by various scholars which were similar to some of the challenges as perceived from lecturers' viewpoints facing final-year engineering students at a TVET college in Nongoma, KZN.

5.2.1 Summary of Major Findings from the Individual Interviews

During the individual interviews with the students what was notably emphasised was the training and equipping of practical skills with obsolete machines, equipment and work tools. Similarly, these findings (cf. 4.4.3) corroborate that the challenge of obsolete machinery and the decline in the standard of training machines, equipment and work tools in the workshops considerably hindered the development of practical skills of engineering students.

Furthermore, some of the senior lecturers expressed concern about the challenge the TVET college was having in providing resources for skills training, such as outdated and broken-down equipment, tools and machines and the late supply or delivery of training materials to final-year engineering students. As a result, the senior lecturers at the TVET college had been training and equipping their final-year engineering students in a group to combat the problem of limited resources and broken-down machines in the workshops.

Similarly, the findings from the individual interviews conducted with the final-year engineering students at the TVET college substantiated the concerns of the senior lecturers. The students cited obsolete equipment, late arrival of training materials and work tools as a major problem hindering them from effective participation in the acquisition of basic foundational practical skills in the workshop.

The inability of senior lecturers to effectively equip final-year engineering students with the basic foundational practical skills was a major concern. This concern is based on the challenge of limited resources in the workshop with the result that resources were shared during practical skills training. Thus, the findings of this study validate the observations of Buthelezi (2018) and Dasmani (2011), who argued that a major obstacle to making TVET graduates employable was the lack of or delayed arrival of practical resources needed by lecturers to train and equip students with the necessary practical and technical skills in the workshop.

5.2.2 Summary of Major Findings from the Focus-Group Interviews

In the focus-group interview held with senior lecturers and the HoD of the electrical and civil engineering programmes, one vital challenge that was raised and which was common across the board among all the senior lecturers was the need for WIL. This study confirmed Batholmeus and Pop's (2019) findings that incorporating a WIL

programme would assist TVET college lecturers in training and preparing final-year engineering students with current knowledge and application of pertinent practical skills in demand in the industry (cf. 4.4.4). Subsequently, the researcher agrees with and upholds the views of the senior lecturers that WIL programmes for lecturers in the TVET college would assist in advancing their theoretical and practical knowledge. This would help them in boosting the employment prospects of their students in the labour market. In addition, the inability of TVET college to effectively form a partnership with engineering industries in the vicinity of the campus was another notable challenge posed by senior lecturers. If the TVET college could establish an effective synergy with surrounding industries, this would inevitably help the final-year engineering students in enhancing their practical and technical skills that are in demand in the industry. Therefore, a working and effective partnership (cf. 2.4) between the TVET college and the engineering industries would enhance the chances of students' job placement in terms of the mandatory internship programme for TVET graduates.

5.2.3 Summary of Major Findings from Non-Participant Observation

Based on the researcher's observations and the observation tool (Appendix G), several factors contributed to the effectiveness of the findings from the non-participant observation. The findings of this study reaffirm that the time allotted for holding practical training sessions for students in the workshop was usually insufficient (cf. 4.4.1 and 4.4.2). While the TVET curricula (cf. 2.7) indicate that the acquisition of practical skills should focus on the outcomes in terms of the skills, knowledge and technical ability required for the industry, the findings from the observation confirmed and validated that the time allocated for equipping final-year engineering students with desired practical and technical skills was insufficient. Therefore, the researcher concluded that these final-year engineering students of this TVET college did not possess the required employable practical and technical skills required in the industry.

5.3 LIMITATIONS OF THE STUDY

A number of factors limited the study and the researcher has no control over them. Those factors are considered a limitation of the study. Here are some of the limitations of this study.

- Limited or lack of knowledge among certain participants was a hindering factor in this study.

- One notable limitation of this study is that the study was conducted at one TVET college in KwaZulu-Natal out of the nine TVET colleges in the province and 50 TVET colleges nationwide.
- Another limiting factor was the lack of confidence among some of the participants, particularly the final-year engineering students and two female senior lecturers. The lack of confidence among participants regarding WIL for TVET lecturers was a significant contributor to the limitation of this study.
- The sudden emergence of the Covid-19 pandemic and the stringent restrictions that followed to prevent the spread of the virus had a serious impact on this study. Time was quite limited while data need to be collected from some participants as the emergence of Covid-19 restricted the pace of the collection of data. This had a negative impact on the outcomes/ findings of the study.
- Since the researcher is an electrical engineering lecturer at the TVET college, and the research study focused on lecturers' perspectives on key challenges facing the final-year engineering students of the college, the outcome of the study might be subjective.
- The reluctant attitude of the college and the campus to agree to the study in the initial stages was due to the fact that the study was the first of its kind at TVET college.

5.4 CONCLUSIONS

For South Africa to prosper economically and remain competitive on the world stage, the TVET college system must function well. Due to the TVET sector's ongoing evolution in South Africa, it is challenging to research it and tough to bring about the changes that have been anticipated in legislation and policy since 1994.

In this study, the researcher strived to proffer solutions that might improve the challenges TVET graduates are facing in making them employable in the labour market after the completion of their respective programmes. The findings of this study were surprising to the senior lecturers, HoD and final-year engineering students of the TVET college when they found out about how the extent of the challenges facing the

institution had affected not only the students but the lecturers and the senior management of the campus.

In providing detail research conclusions for this study, the researcher referred to the main research question: What are lecturers' perspectives on challenges facing final-year engineering students at a TVET college in Nongoma, KZN?

The sub-questions that emerged from the main research question that was posed to the participants during the individual and focus-group interview assisted the researcher in drawing conclusions for this study.

5.4.1 Conclusions on Research Question 1

How are final-year engineering students at a TVET college in Nongoma, KZN, dealing with these challenges?

In order to deal with the challenges of limited resources in the workshop which is a result of broken-down or damaged machines and work tools (cf. 2.4.4 and cf. 4.4). The final-year engineering students at a TVET college in Nongoma, KZN decided to attend practical skills training classes during weekends and public holidays. This not only helped in dealing with problems of limited resources and broken-down machines and work tools, it also assisted these final-year engineering students in the acquisition of foundational basic practical skills during these extra hours of practical classes in the workshop. Furthermore, attending additional practical classes assisted the final-year engineering students in dealing with the challenge of limited time allocated for practical classes (cf. 4.4.1). During the observatory tour, the researcher observed that final engineering students were allocated three-hours weekly; one-hour per day, for a maximum of three months. As a result, the time allocated for practical skills acquisition was insufficient.

5.4.2 Conclusions on Research Question 2

How have these challenges facing final-year engineering students at the TVET college in Nongoma, KZN influenced their industrial placement for the internship programme?

The lack of industrial placement for the internship programme for the final-year engineering students at the TVET college in Nongoma, KZN was another notable challenge these students experienced. The inability of senior lecturers to integrate

theory with practice in the workshop (cf. 4.4.2) influenced the industrial placement of these students for possible internship programmes. The acquisition of practical skills in the workshop at the TVET college was not aligned with the skills required in the labour market. Therefore, the inability to effectively integrate the learning of theory in the classroom with workplace practice or practical skills acquired in the workshop adversely influenced industrial placement for these final-year engineering students.

5.4.3 Conclusions on Research Question 3

How do lecturers at a TVET college in Nongoma, KZN, create an enabling learning environment for final-year engineering students?

During the individual and focus-group interviews, the senior lecturers mentioned that in dealing with the challenges of limited resources and in an attempt to create an enabling environment for the final-year engineering students at TVET college they decided to group the students into groups of 5 or 6 during practical classes (cf. 4.4). However, equipping these students with foundational practical skills should be carried out in an individual, one-on-one practical training class. This was not possible because of the limited resources resulting from broken machines or work tools. Hands-on practical training classes by senior lecturers were done in groups to accommodate students which only went a little way in creating an enabling environment for the acquisition of practical skills.

5.4.4 Conclusions on Research Question 4

How can lecturers improve existing procedures and resources to assist final-year engineering students of TVET college to overcome these challenges?

During the focus-group interviews with senior lecturers, all of them were quick to highlight the importance of the WIL programme. These senior lecturers expressed their dissatisfaction about the TVET college's inability to organise the WIL programme for them since they were employed as lecturers. The WIL programme is one notable platform that could assist in enhancing and equipping lecturers with the latest practical and technical skills that are relevant and up-to-date with industry standards. Equipping the senior lecturers with the latest relevant skills that are required in the labour market, would assist in resolving the problem of aligning theory to practice. The senior lecturers would understand what is missing and what is expected from their students in the labour market during practical skills acquisition classes.

5.4.5 Research Question 5

How can the college management form partnerships to assist final-year students with job placement?

The interviews with senior lecturers and the HoD (cf. 4.4.4) and the literature review (cf. 2.6) revealed that partnership by the college management with industries was crucial in alleviating the problems faced by the final-year engineering students. The aggressive synergy of college management with industries would have benefits in two ways.

The first benefit is that partnering with industries would help solve the problem of the WIL programme which the senior lecturers and HoD had been clamouring for. These industries could assist in facilitating an effective and efficient WIL programme for the lecturers in the TVET college. If these lecturers were trained and equipped with the latest and relevant practical skills that are required in the labour market, the lecturers would be able to transfer these skills to their students during practical classes. The second benefit of partnering with industries would assist in solving the problem of industrial placement on the required internship programme for the TVET graduates of the college. A carefully coordinated synergy between the college management and the industries would allow for easily absorption of students into an internship programme. This would invariably help in equipping these students with the required employable skills required for the labour market.

5.5 RECOMMENDATIONS FOR FURTHER STUDIES

In South Africa, TVET colleges were designed and established to play an important role in providing a competent workforce that can contribute to the economic development of any nation. To develop a competent and employable workforce through TVET colleges, the researcher suggests an efficient partnership between the college and industry. Future research studies should, thus, focus on the industry-oriented evaluation of the TVET curriculum which will particularly help in forging sustainable partnerships between industry and colleges. The industry has the potential to contribute to the curriculum development of TVET college in the design and implementation phases. Research into the industries on the possibility of an effective partnership with TVET colleges could be conducted through a large-scale survey to identify the most important employment sectors for TVET graduates in the future. For

this study, the researcher makes the following recommendations that will help improve the quality of TVET graduates released into the labour market by TVET colleges.

5.5.1 The Training of the Lecturers through the WIL Programme

In the empirical investigation, the participants suggested that TVET college lecturers should be exposed to WIL programmes. This programme offers lecturers the chance to integrate and apply their knowledge, theories and understanding of the application of theory during practical classes. Furthermore, the WIL programme would help to re-energise lecturers which would enhance their enthusiasm and increase motivation, as they would be able to integrate industry examples learned from the workplace and make theory and practical lesson preparation more interesting. In addition, lecturers would be able to train and inform students about what to expect after graduation when they started work in the industries. Field et al. (2014) affirmed that the professional preparation of TVET college lecturers through the WIL programme would enhance the goal of achieving a balance between practical skills and work experience through appropriate training. One vital factor that had adversely influenced the effectiveness of the WIL programme was the lack of policy supporting the programme. It is, however, crucial for TVET college management to organise, facilitate and implement WIL programmes for lecturers to enhance the quality of teaching and learning. To address the lack of lecturers' workplace, experience the researcher recommends a collaborative effort driven by college management in conjunction with the DHET, which would help facilitate the WIL programme that would be sustainable and viable for college. An established collaborative effort on WIL would expose lecturers to professional and industry workers on the job and assist them in discovering their strengths and weaknesses (Fleming et al., 2009). The lecturers with adequate work experience would know the attitudes and values expected from employees in the industry and have a rich source of experience from which to draw examples to link theory with practice during practical classes.

5.5.2 TVET Partnership with the Stakeholders

Partnering between the TVET college and the stakeholders is a vital platform that the college has not successfully harnessed. Effective and efficient TVET partnerships with industries in their community have great potential to improve the work-readiness of TVET graduates in the labour market with the necessary practical skills required in the industries. A working partnership between TVET colleges and stakeholders,

particularly industries is necessary to make TVET colleges responsive to the needs of stakeholders. Such a partnership would not only help in the industrial placement of students for the compulsory 18-month internship programme but would also assist in producing TVET graduates that have relevant marketable and practical skills required by industry and employers. In addition, the partnership between the TVET college and stakeholders would enhance the effective implementation of the WIL programme for TVET lecturers. This would improve the quality of TVET graduates that are released into the labour market and this would have a positive effect on the rate of unemployment in the community. According to Dr Nzimande (2022), the synergy between TVET college and stakeholders should be a central component of the college programmes and the extent to which students can get industrial placement in the workplace should be a significant indicator for assessing the performances of TVET college management. Therefore, this study recommends that college management places a priority on their college's effective partnering with stakeholders with industries around the community where the college is established. The synergy between TVET colleges and industries would assist in facilitating an effective and reliable WIL programme for senior lecturers and industrial placement for internship programmes for the students.

5.5.3 Effective Maintenance of TVET College Infrastructure

Findings have revealed the challenge of limited resources can be attributed to broken machines, equipment and work tools in the workshop. It is, therefore, important for college management to combat this problem by putting in place a reliable and effective maintenance culture for the college. Furthermore, at the campus level, TVET colleges do not have a clear understanding of their role in managing infrastructure and resources in their custody. Apart from the challenge of delays in procurement and delivery of basic resources required for practical skills training by students in the workshop, challenges include the inadequate supply of equipment and breakdowns of work tools and machines in the workshop. This study further recommends that for the campus to be able to mitigate these challenges, the campus manager needs to make effective follow-ups on all requisitions for resources, ensure proper and reliable routine maintenance procedures for the machines and equipment and put in place an efficient inventory control system for all work tools and other resources that are newly procured for the workshops on the campus. In addition, adequate funds should be made

available and college management should mobilise more funds for the college to have sufficient resources and should be accountable for the shortage of practical resources in the workshop.

5.6 CHAPTER SUMMARY

The purpose of this study was to identify the difficulties faced by engineering students in their final year as well as alternatives to these challenges at TVET College. According to the study's findings, TVET Colleges continue to have serious concerns about the challenges facing final-year engineering students. Goal 4 of the Sustainable Development Goals – to achieve inclusive and equitable quality education to encourage opportunities for lifelong learning for all – is therefore not fully met. For this reason, it is essential that all stakeholders participate in the application of effective policies, processes, and procedures in order to realise the University of South Africa's vision of an African university shaping futures in the service of humanity as a global institution of excellence that surpasses community needs. Community involvement, industry-aligned retraining for all lecturers and students, retraining of college administration and increased commitment and interest from the DHET are required for the aforementioned recommendations to be successful. It is hoped that this study will help the college management and other important stakeholders in the higher education sector, particularly the TVET sector, by bringing about change toward accomplishing the defined strategic objectives.

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APPENDICES

APPENDIX A: PROOF OF REGISTRATION



0945 MIRST

JOSEPH O B MR
MTHASHANA FET COLLEGE
MAIN ROAD NONGOMA
PRIVATE BAG X5060
NONGOMA
3950

STUDENT NUMBER : 5490-989-9
ENQUIRIES NAME : M&D ADMIN SUPPORT
ENQUIRIES TEL : (012) 441-5702

DATE : 2022-04-13

Dear Student

I wish to inform you that your registration has been accepted for the academic year indicated below. Kindly activate your Unisa mylife (<https://myunisa.ac.za/portal>) account for future communication purposes and access to research resources.

DEGREE : MED (CURRICULUM STUDIES) (98434)
TITLE : Lecturers' perspectives on challenges facing final year engineering students of Mthashana Technical Vocational Education and Training College
SUPERVISOR : Dr GK MOKWENA (mokwegk@unisa.ac.za)
ACADEMIC YEAR : 2022
TYPE: DISSERTATION
SUBJECTS REGISTERED: DFDID95 MED - Didactics

A statement of account will be sent to you shortly.

You must re-register online and pay every academic year until such time that you can submit your dissertation/thesis for examination.

If you intend submitting your dissertation/thesis for examination you have to submit an Intention to submit form (available on the website www.unisa.ac.za) at least two months before the date of submission. If submission takes place after 15 November, but before the end of January of the following year, you do need not to re-register and pay registration fees for the next academic year. Should you submit after the end of January, you must formally reregister online and pay the full fees.

Please access the information with regard to your personal librarian on the following link:
<https://bit.ly/3hxNqVr>

Yours faithfully,

Prof M S Mothata
Registrar



University of South Africa
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APPENDIX B: ETHICAL CLEARANCE



UNISA COLLEGE OF EDUCATION ETHICS REVIEW COMMITTEE

Date: 2021/06/09

Ref: **2021/06/09/54909899/20/AM**

Dear Mr OB Joseph

Name: Mr OB Joseph

Student No.:54909899

Decision: Ethics Approval from
2021/06/09 to 2024/06/09

Researcher(s): Name: Mr OB Joseph
E-mail address: 54909899@mylife.unisa.ac.za
Telephone: 0844954149

Supervisor(s): Name: Dr GK Mokwena
E-mail address: mokwegk@unisa.ac.za
Telephone: 0729552974

Title of research:

**Lecturers` perspectives on the challenges facing final year engineering students
at a TVET College in Nongoma, KwaZulu-Natal**

Qualification: MEd Didactics

Thank you for the application for research ethics clearance by the UNISA College of Education Ethics Review Committee for the above mentioned research. Ethics approval is granted for the period 2021/06/09 to 2024/06/09.

*The **low risk** application was reviewed by the Ethics Review Committee on 2021/06/09 in compliance with the UNISA Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.*

The proposed research may now commence with the provisions that:

1. The researcher will ensure that the research project adheres to the relevant guidelines set out in the Unisa Covid-19 position statement on research ethics attached.
2. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.



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3. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the UNISA College of Education Ethics Review Committee.
4. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
5. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing.
6. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
7. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
8. No field work activities may continue after the expiry date **2024/06/09**. Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

*The reference number **2021/06/09/54909899/20/AM** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Kind regards,



Prof AT Motlhabane
CHAIRPERSON: CEDU RERC
 motlhat@unisa.ac.za



Prof PM Sebate
EXECUTIVE DEAN
 Sebatpm@unisa.ac.za

Approved - decision template – updated 16 Feb 2017

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APPENDIX C: INFORMATION SHEET

Appendix C: PARTICIPANT INFORMATION SHEET

Date: 31st March 2021.



Title: **“Lecturers’ perspectives on challenges facing final year engineering students at a TVET college in Nongoma, Kwa-Zulu Natal”**

DEAR PROSPECTIVE PARTICIPANT

My name is Olatunbosun Bartholomew Joseph I am carrying out a research under the supervision of Dr Gladys Mokwena a Senior Lecturer in the Department of Adult Education and Youth Development towards a Masters Degree in Education at the University of South. We are inviting you to participate in a study entitled **“Lecturers’ perspectives on challenges facing final year engineering students of Mthashana Technical Vocational Education and Training College”**

WHAT IS THE PURPOSE OF THE STUDY?

This study is expected to collect important information that could establish the effect of some key challenges facing final year engineering students of Mthashana TVET College so as to identify and suggest the procedures that the college management need to establish to assist lecturers and final year engineering students of Mthashana TVET College to overcome these challenges.

WHY AM I BEING INVITED TO PARTICIPATE?

You are invited because you an experienced engineering lecturer (senior lecturers and head of departments) of Mthashana TVET College in Kwa-Zulu Natal (KZN) province with a minimum teaching and learning experience of at least 5-years

I obtained your contact details from the college’s database. This researcher will comprise of 1-head of department; 2-senior lecturers, 2-current final year engineering students and 2-graduates of the college who are either employed or unemployed

WHAT IS THE NATURE OF MY PARTICIPATION IN THIS STUDY?

Describe the participant’s actual role in the study.

The study involves focus group discussion and semi-structured interview. Apart from the a set of well-constructed questions that lecturers and students will be asked in-form of a semi-structured interview that will be recorded either physically or via the Microsoft Teams application; Lecturers and students will also directed and persuaded to participate a focus group discussion section of about 1 to 2 hours where the umpire of the section will be researcher.



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The topic of discussion will be “What the problem facing final year students of TVET Colleges that is hindering them from gaining good employment after leaving the college”

Some of the likely questions to be pose to the lecturers are listed below and the expected duration of participation in the structured interview section will be between 1- 2 hours. The time allocation for the lecturers to provides answers to each question will be between 5-10 minute. This will allow the researcher ample time to hear the lecturers bear their respective thoughts, opinions and beliefs to each question posed to them.

- What are the challenges you are facing as a lecturer in teaching practical and technical hands-on skills?
- Are you able to effectively pass-on essential practical and technical skill to your students?
- With the emergence of covid-19 pandemic, how have you been able to effectively teach and pass-on practical technical skills to your students.
- What do you think are likely possibilities why graduate of TVET Colleges in South Africa does internship program or employed in the industries after the successful completion of their respective programmes
- In your own opinion, do you think engineering lecturers in TVET Colleges have the required qualifications and they are also exposed or equipped with adequate industrial-based experience to teach their students the latest practical and technical skills.
- In your own opinion, can you explain or give reasons why graduate of engineering students from your college are finding it difficult to secure employment immediately after leaving school

CAN I WITHDRAW FROM THIS STUDY EVEN AFTER HAVING AGREED TO PARTICIPATE?

Participating in this study is voluntary and you are under no obligation to consent to participation. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a written consent adult form. You are free to withdraw at any time and without giving a reason.

WHAT ARE THE POTENTIAL BENEFITS OF TAKING PART IN THIS STUDY?

Your presence and possible participation in this study will assist the research in the following ways:

- It will assist in Improving the quality and standard of the final year engineering students that are produced in the TVET Colleges
- It will help in the gathering and collection of reliable data and will assist in making the research study of a quality standard.

ARE THERE ANY NEGATIVE CONSEQUENCES FOR ME IF I PARTICIPATE IN THE RESEARCH PROJECT?

There are no possible potential risks or negative consequences that any of the participants might be exposed to except for that of contacting the latest coronavirus. However, the researcher will ensure that there is social distancing of 2-meters spacing among the participants during the focus group discussion no when a open-venue based arrangement is preferred to that of Microsoft Teams where all participant will be required to join the discussion online.

Another negative consequence might be that of time constraint and availability of all participants at the same time.

WILL THE INFORMATION THAT I CONVEY TO THE RESEARCHER AND MY IDENTITY BE KEPT CONFIDENTIAL?

You have the right to insist that your name will not be recorded anywhere and that no one, apart from the researcher and identified members of the research team, will know about your involvement in this research (*this measure refers to confidentiality*) **OR** Your name will not be recorded anywhere and no one will be able to connect you to the answers you give (*this measure refers to anonymity*). Your answers will be given a code number or a pseudonym and you will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings (*this measure refers to confidentiality*).

If relevant, identify who will have access to the data [transcriber/external coder] and how these individuals will maintain confidentiality (*e.g. by signing a confidentiality agreement*). *Please note that confidentiality agreements should be submitted to the Research Ethics Review Committee for consideration*. Your answers may be reviewed by people responsible for making sure that research is done properly, including the transcriber, external coder, and members of the Research Ethics Review Committee. Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records.

Kindly please note that what information or data you give to the researcher during the course of carrying out this study may be used for other purposes, such as a research reports, journal articles and/or conference proceedings. In addition to above, the privacy of name and your identity will be protected in any publication of the information (e.g. A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report). Please keep in mind that it is sometimes impossible to make an absolute guarantee of confidentiality or anonymity, e.g. when focus groups are used as a data collection method.

While every effort will be made by the researcher to ensure that you will not be connected to the information that you share during the focus group discussion, I cannot guarantee that other participants in the focus group discussion will treat information confidentially. I shall, however, encourage all participants to do so. For this reason, I advise you not to disclose personally sensitive information in the focus group discussion.

HOW WILL THE RESEARCHER(S) PROTECT THE SECURITY OF DATA?

Hard copies of your answers will be stored by the researcher for a period of five years in a locked cupboard/filing cabinet at the Unisa archives in Pretoria for future research or academic purposes; electronic information will be stored on a password protected computer. Future use of the stored data will be subject to further Research Ethics Review and approval if applicable. However, if stored data is no longer required for any research purpose, the hard copies will be shredded and/or electronic copies will be permanently deleted from the hard drive of the computer through the use of a relevant software programme).

WILL I RECEIVE PAYMENT OR ANY INCENTIVES FOR PARTICIPATING IN THIS STUDY?

Please be informed that you will not receive any form of payment, incentive or allowance for participating in this research. However, the research will be willing and ready to offer all the participants refreshment during the focus group discussion and structured individual interview section.

HAS THE STUDY RECEIVED ETHICS APPROVAL

This study has received written approval from the Research Ethics Review Committee of the University of South Africa (Unisa). A copy of the approval letter can be obtained from the researcher if you so wish.

HOW WILL I BE INFORMED OF THE FINDINGS/RESULTS OF THE RESEARCH?


If you would like to be informed of the final research findings, please contact Olatunbosun Bartholomew Joseph on 0844954149 or email 54909899@mylife.unisa.ac.za. The findings are accessible for you in about 3-months from the day of focus group discussion.

Should you require any further information or want to contact the researcher about any aspect of this study, please contact Olatunbosun Bartholomew Joseph with contact details 0844954149; email address: 54909899@mylife.unisa.ac.za

Should you have concerns about the way in which the research has been conducted, you may contact Dr Gladys Mokwena with contact details: 0729552974; email address: mokwegk@unisa.ac.za

Thank you for taking time to read this information sheet and for participating in this study.

Thank you.



Olatunbosun Bartholomew Joseph

APPENDIX D: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT THE CAMPUS



APPENDIX B: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT THE CAMPUS

Title of the title of your research: "Lecturers' perspectives on challenges facing final year engineering students at a TVET College in Nongoma, Kwa-Zulu Natal

Date: 21st May 2021

Mr MV Xaba
Head of Department
Mthashana TVET College
0734108444 and michael@mthashana.edu.za

Dear Mr. Xaba

I, Olatunbosun Bartholomew Joseph is carrying out a research under supervision of Dr Gladys Mokwena a senior lecturer in the Department of Adult Education and Youth Development towards a master's in education (M Ed) at the University of South Africa. We are inviting you to participate in a study entitled Lecturers' perspectives on challenges facing final year engineering students of Mthashana Technical Vocational Education and Training College"

The aim of the study is to establish the effect of some key challenges facing final year engineering students of Mthashana TVET College so as to identify and suggest the procedures that the college management need to establish to assist lecturers and final year engineering students of Mthashana TVET College to overcome these challenges.

Your college has been selected because the research is focused on challenges facing final year engineering students in the TVET College educational sector

The study will entail the significant of TVET colleges in the acquisition of technical hands-on knowledge and adequate skills that are sustainable for the economic growth and development of a nation.

The benefits of this study are is that I will assist TVET colleges particularly

There are no potential risk involved in participating in this research study except for that of time constraint to the participating lecturers and students

There will be no reimbursement or any incentives for participation in the research.

Feedback procedure will entail the outcome of the study which will be given to all participants in form a written and duly signed former letter from the researcher.

A handwritten signature in black ink, appearing to read 'Olatunbosun Bartholomew Joseph', written over a horizontal line.

Yours sincerely,
Olatunbosun Bartholomew Joseph. (Researcher).

APPENDIX E: COLLEGE AND DHET APPROVAL TO CONDUCT RESEARCH



higher education
& training
Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

DHET 004 APPENDIX 1
APPLICATION FORM FOR STUDENTS TO CONDUCT RESEARCH IN PUBLIC COLLEGES

1. APPLICANT INFORMATION

1.1.	Title (Dr./Mr./Mrs./Ms)	MR.	
1.2.	Name and surname	JOSEPH OLATUNBOSUN BARTHOLOMEW	
1.3.	Postal address	22A NONGOMA MAIN ROAD NONGOMA 3950.	
1.4.	Contact details	Tel.	0671000120
		Cell	0844954149.
		Fax	—
		Email	54909899@mylife.unisa.ac.za.
1.5.	Name of institution where enrolled	UNIVERSITY OF SOUTH AFRICA.	
1.6.	Field of study	EDUCATION	
1.7.	Qualification registered for	<i>Please tick relevant option</i>	
		Doctoral Degree (PhD)	<input type="checkbox"/>
		Master's Degree	<input checked="" type="checkbox"/>
		Other (please specify)	<input type="checkbox"/>

2. DETAILS OF THE STUDY

2.1.	Title of the study	LECTURERS' PERSPECTIVES ON CHALLENGES FACING FINAL YEAR ENGINEERING STUDENTS AT A TVET COLLEGE IN NONGOMA, KWA-ZULU-NATAL.
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2.2.	Purpose of the study	TO ESTABLISH WAYS THAT WILL ASSIST FINAL YEAR ENGINEERING STUDENTS AT THE TVET COLLEGE IN NONGOMA, KWA-ZULU-NATAL IN DEALING WITH THESE CHALLENGES.
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DHET 004: APPENDIX 1: APPLICATION FORM FOR STUDENTS TO CONDUCT RESEARCH IN PUBLIC COLLEGES

3. PARTICIPANTS AND TYPE/S OF ACTIVITIES TO BE UNDERTAKEN IN THE COLLEGE

Please indicate the types of research activities you are planning to undertake in the College, as well as the categories of persons who are expected to participate in your study (for example lecturers, students, College Principals, Deputy Principals, Campus Heads, Support Staff, Heads of Departments), including the number of participants for each activity.

		Expected participants (e.g. students, lecturers, College Principal)	Number of participants
3.1	Complete questionnaires	a)	
		b)	N/A
		c)	
		d)	
		e)	
3.2	Participate in individual interviews	Expected participants	Number of participants
		a) SENIOR LECTURER	02
		b) HEAD OF DEPARTMENT	01
		c) LEVEL 4 ELECTRICAL STUDENTS	04
		d)	
e)			
3.3	Participate in focus group discussions/ workshops	Expected participants	Number of participants
		a) SENIOR LECTURER	02
		b) HEAD OF DEPARTMENT	01
		c) LEVEL 4 ELECTRICAL STUDENTS	04
		d)	
e)			
3.4	Complete standardised tests (e.g. Psychometric Tests)	Expected participants	Number of participants
		a)	
		b)	N/A
		c)	0/0
		d)	
e)			
3.5	Undertake observations Please specify	N/A	N/A
3.6	Other Please specify	N/A	

DHET 004: APPENDIX 1: APPLICATION FORM FOR STUDENTS TO CONDUCT RESEARCH IN PUBLIC COLLEGES

4. SUPPORT NEEDED FROM THE COLLEGE

Please indicate the type of support required from the College. (Please tick relevant option/s)			
Type of support	Yes	No	
4.1	The College will be required to identify participants and provide their contact details to the researcher.	YES	
4.2	The College will be required to distribute questionnaires/instruments to participants on behalf of the researcher.		NO
4.3	The College will be required to provide official documents. <i>Please specify the documents required below</i>	NO	
	PORTFOLIO OF EVIDENCE (POE) PORTFOLIO OF ASSESSMENT (POA) STUDENT ATTENDANCE REGISTERS. STUDENT'S ENROLMENT FORMS.		
4.4	The College will be required to provide data (only if this data is not available from the DHET). <i>Please specify the data fields required, below</i>		NO
	N/A		
4.5	Other, please specify below		NO
	NO		

5. DOCUMENTS TO BE ATTACHED TO THE APPLICATION

The following 2 (two) documents must be attached as a prerequisite for approval to undertake research in the College	
5.1	Ethics Clearance Certificate issued by a University Ethics Committee (SEE ATTACHED)
5.2	Research proposal approved by a University (SEE ATTACHED)

6. DECLARATION BY THE APPLICANT

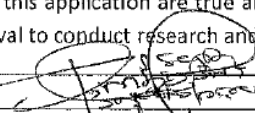
I undertake to use the information that I acquire through my research, in a balanced and a responsible manner. I furthermore take note of, and agree to adhere to the following conditions:

- a) I will schedule my research activities in consultation with the said College/s and participants in order not to interrupt the programme of the said College/s.
- b) I agree that involvement by participants in my research study is voluntary, and that participants have a right to decline to participate in my research study.
- c) I will obtain signed consent forms from participants prior to any engagement with them.
- d) I will obtain written parental consent of students under 18 years of age, if they are expected to participate in my research.
- e) I will inform participants about the use of recording devices such as tape-recorders and cameras, and participants will be free to reject them if they wish.
- f) I will honour the right of participants to privacy, anonymity, confidentiality and respect for human dignity at all times. Participants will not be identifiable in any way from the results of my research, unless written consent is obtained otherwise.
- g) I will not include the names of the said College/s or research participants in my research report, without the written consent of each of the said individuals and/or College/s.
- h) I will send the draft research report to research participants before finalisation, in order to validate the accuracy of the information in the report.
- i) I will not use the resources of the said College/s in which I am conducting research (such as stationery, photocopies, faxes, and telephones), for my research study.
- j) Should I require data for this study, I will first request data directly from the Department of Higher Education and Training. I will request data from the College/s only if the DHET does not have the required data.
- k) I will include a disclaimer in any report, publication or presentation arising from my research, that the findings and recommendations of the study do not represent the views of the said College/s or the Department of Higher Education and Training.
- l) I will provide a summary of my research report to the Head of the College/s in which I undertook my research, for information purposes.

I declare that all statements made in this application are true and accurate. I accept the conditions associated with the granting of approval to conduct research and undertake to abide by them.

SIGNATURE

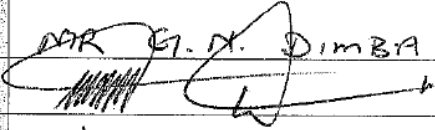
DATE


07/12/2021

DHET 004: APPENDIX 1: APPLICATION FORM FOR STUDENTS TO CONDUCT RESEARCH IN PUBLIC COLLEGES

FOR OFFICIAL USE

DECISION BY HEAD OF COLLEGE

Please tick relevant decision and provide conditions/reasons where applicable	
Decision	Please tick relevant option below
1 Application approved	<input checked="" type="checkbox"/>
2 Application approved subject to certain conditions. <i>Specify conditions below</i>	<input type="checkbox"/>
n/a	
3 Application not approved. <i>Provide reasons for non-approval below</i>	<input type="checkbox"/>
n/a	
NAME OF COLLEGE	MITAHANA TRET COLLEGE
NAME AND SURNAME OF HEAD OF COLLEGE	DAR E. N. DIMBA
SIGNATURE	
DATE	26/01/2022

APPENDIX F: CONSENT FORM



Appendix F: INFORMED CONSENT FORM AND CONFIDENTIALITY AGREEMENT

I _____ grant consent that the information I share during the focus group may be used by **Olatunbosun Bartholomew Joseph** for research purposes. I am aware that the group discussions will be digitally recorded and grant consent for these recordings, provided that my privacy will be protected. I undertake not to divulge any information that is shared in the group discussions to any person outside the group in order to maintain confidentiality.

Participant

Participant's Name (Please print): _____

Participant Signature: _____

Researcher's Name: Olatunbosun Bartholomew Joseph

Researcher's Signature: _____

Date: 31st March 2021

If you are an adult who gives permission you **consent** then delete assent

If you are a learner who gives permission you **assent** and then delete consent



University of South Africa
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APPENDIX G: OBSERVATION CHECKLIST



Appendix G: Observation checklist

S/n	Description	Comment
1	The engineering training workshop	<p>How is the environment conducive for training? The campus has two workshops. The old and new workshop. The old workshop environment where students are trained with practical and technical skills looks untidy and unkept. But the new workshop environment is neat and tidy but has no equipment or machines installed. I was told the new machines will be installed very soon.</p> <p>What ventilation measures are in place? The ventilation measures in place at old workshop includes eight-glass windows on both sides of the walls, one entrance and one exit doors. However, the newly built workshop has several glass windows on both sides of upper and lower sides the wall, four entrances and two exit doors.</p> <p>What are the security measures in place? There is a central security post at the main entrance of the college. This shows that the security measures around the workshop is quite tight and secured.</p>
2	Resources available	<p>How are the state of equipment and machines in the workshop? Almost all the equipment and machines present in the workshop are rather insufficient or obsolete and this contribute to the ineffectiveness of imparting practical and technical skills to the students</p> <p>Are there adequate training tools in the workshop? The lack of working tools and inadequate training tools makes it almost impossible for the students to receive practical training that will assist the students to meet the standard for employment in industries.</p> <p>Apart from the problem of inadequate work tools, the researcher also observed the limited and insufficient supply of Personal Protective Equipment (PPE) clothing and safety booth for all the final year engineering students</p> <p>What equipment and machines are available for training? The resources in the available are usually not sufficient and the broken down machines in the workshop are difficult to maintain or repair since they are obsolete</p>
3	Activities done	<p>What activities are done in the programme? The activities carried out in the electrical infrastructure construction in the final year programme includes training of students on the use of machines and equipment and most of training are done in groups of five or six. There is no individual training or one-on-one training between lecturer and students</p>
4	Participation in the programme:	<p>Students training done in small groups, individual or whole group? Students practical training on skills development are done in groups of five or six. This approach of training is due to inadequate supply of work tools.</p>
5	Teaching and learning method used:	<p>What are techniques and approach used in training the students? Due to limited machines and work tools, students are trained on the installation, test and commission a direct-on-line starter for electric motors</p> <p>What is the role of the senior lecturers in training?</p>

		The senior lecturer endeavour to equip the students with basic practical skills on the rudiment on how to carry out installation of starters on electric motors using the demonstrative method of teaching
6	Assessment measures	<p>Strategies in place measure the student performance There is a checklist to check the performance of students during each training section and this checklist is done by the senior lecturer who is the trainer</p> <p>Quality assurance standards The quality assurance standard fell below average since most students were still struggling to grasp the basic concept of the practical skills since training was not done one-on-one with the lecturer</p>

APPENDIX H: INDIVIDUAL INTERVIEWS – SENIOR LECTURERS



Appendix H: Individual Interviews with Senior lecturers

S/n	Discussion point	Senior lecturer (SLM 1)	Senior lecturer (SLM 2)	Senior lecturer (SLM 3)	Senior lecturer (SLF 1)	Senior lecturer (SLF 2)	HOD
1	Describe your lecturing experience in the college?	I have been lecturing in the college since 2009. My lecturing experience in the college is all about training young students with the required practical and technical skills that will make them employable.	My lecturing experience can be described as a roller-coaster one with high and low instance during my 13-years lecturing at the college Overall, the college has failed in enrolling lecturers for the WIL programme that will help improve our technical and practical skills in equipping our students	Every year is different. New groups are enrolled, but the training guideline has not changed over the years. But there the urge of outdoing your last performance is always there for me. The future is usually unpredictable and the uncertainty regarding lecturers' career prospect under this circumstance is quite sad.	I am a lecturer with almost 10-years lecturing experience. The journey has been exciting. The job has equipped me with many abilities to preparing assessment schedule. This is a necessary component in teaching and learning process, also the job has sharpened my communication skill.	Haibo...Oh ok. My lecturing experience with the college since I joined 16-years ago has not been quite fulfilling. The college has been unable to secure the WIL programme that will assist in equipping and improving our current technical knowledge	My administrative and lecturing experience at the college has been challenges and this is as a result of inadequate resources which I have to face annually. The college management takes ample time in providing training and teaching needs for both the students and lecturers. However, when these resources are provided it is either they are inadequate, or materials provided are of substandard quality. The lack of Implementation of the Work Integrated Learning (WIL) for

			in the workshop. Also, to improve the practical and technical ability of our students in the workshop, the time allocated for practical classes should be revisited				lecturers in the college has been challenge in improving the technical skills of lecturers to industry-standard. But to enhance the quality of practical skills classes offered to our student in the campus, I have proposed that time assigned for practical classes to be 60% of the entire programme
2	What motivate you what as a lecturer in the college?	The joy and excitement of seeing these students that I have trained becomes qualified artisans in their respective field has always been my motivation.	My motivation has always been my goals that have set out for myself. These goals include, giving my best at all times in anything I do, and ensuring to impart knowledge	My motivation has been my awareness that my progress and success in my lecturing job will be determined by the amount of effort and commitment I place in the daily training of my	I draw my motivation from the success and passion of students' ability to effectively perform the practical skills I have trained them on. I also see my job as a way to make the society better	The motivation is that despite the lack of resources and infrastructure in the engineering workshop, our students still manage to pass with flying colours	There has been little or no motivation both as a manager and lecturers since I have struggle for all the infrastructures in the workshops and the classroom to be provided every month and this almost a herculean task every day.

			and skills in my fields	students. But the college has not done enough to improve the quality of technical and vocational training since we lack resources to train and equip our students in the workshop			
3	What policies are in place for students in Technical Vocational Education and Training programmes?	The policies have assisted a little way in delivery quality training to the students in the college since the policy emphasises the roles of lecturers in ensuring that these students acquire the required practical skills when it comes to TVET education. The college have been unable to	The policies have assisted me in providing guidance to students by ensuring that adequate support is offered to meet students' needs in terms of the practical skills that is acquired. The policies have also assisted me in identifying	The policies presents guidance on the quality of practical training and assessment offered by the lecturers to the students by ensuring that minimum requirements for assessor are met by further training of lecturers.	The policies from the department are good but the resources and infrastructure in the workshops and learning environment are inadequate to support and enhance quality training for the students in the college	The policies in place are not effectively implemented at the college. Since there is little or no synergy between the college and industries to which can assist in equipping both lecturers and students	The policies from the department are good but there are still room for improvement particularly in the implementation of the training and learning content for technical and vocational programmes.

		form partnership with industries around to assist in improving the quality of technical and vocational training at the college	students who requires personal needs in terms practical and theoretical academic support.				
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APPENDIX I: FOCUS-GROUP INTERVIEW – SENIOR LECTURERS



Appendix I: Focus group interviews – Senior lecturers and HOD

S/n	Discussion point	Senior lecturer (SLM 1)	Senior lecturer (SLM 2)	Senior lecturer (SLM 3)	Senior lecturer (SLF 1)	Senior lecturer (SLF 2)	HOD
1	As an experienced lecturer, how do you train and create an enabling learning environment in preparing your students for the labour market?	As an experienced lecturer with over 15-years of training experience in technical and vocational training I try as much as possible by equipping my students with strong foundational basic practical skills so that they the students can upskills and reskill throughout their practical skills classes. However, the equipping of these students with the required basic practical skills is hinders by limited materials and resources in the workshop.	Since the problem and challenge of inadequate work tools, damaged and unrepaired machines and equipment in the engineering workshops is now synonymous with our college, I have learnt to cultivate the culture of teamwork among students because we have limited resources to teach them individually. In addition, I equip them with basic practical skills.	Since we have a large class, due to increase in number of students enrolled at the college and the dwindling state of infrastructure in the engineering workshops, I try to create a enabling learning environment but training my students in groups. I also encourage my students to come for extra hours classes on weekend and during vacation since the time allocated for	Training and equipping of students are expected to be done individually to ensure that hands-on practical skills are effectively transferred to the students but due to the deplorable state of our engineering workshops, training of students are done in group.	Excursion to industry	Due to limited resources in the engineering workshops, my practical skills training sessions are usually carried out in groups.

	college, what strategies can be used to enhance the quality of technical and vocational training received in your college?	TVET colleges, the stakeholder at the college must endeavour to enroll lecturers in the Work Integrated Learning (WIL) programme. This programme will help in improving the practical and technical skills of our lecturers that will train these students	with stakeholders; the college also need to improve the standard of lecturers training through Work Integrated Learning (WIL) in order to raise the quality of practical training these students acquires in the workshop. The college can also help our final year students in securing the 18-months internship work placement once they complete their respective programme with the college	equipped workshops and laboratory that can measure up to the industry standard. The workshop environment should be an open environment to pave way for the visit of industries to share knowledge of imparting the latest practical skills with lecturers and students	enhance and ensure that quality of technical and vocational training is improved. The aspect of the learning content is adequately carried out. Exposing lecturers to Work-Integrated Learning (WIL) programmes will provide them with relevant practical skills.		organise industrial training for lecturers on technical and practical skills improvement and collaborative workshop to encourage and hasten intervention. The college should also assist in securing internship placement for our final year students in the industries situated around college
4	What challenges are you experiencing in technical and vocational training programme? The major challenge we are	The major challenge we are experiencing in our TVET college program is the challenge of our students' inability to secure	The challenges include lack of focus on skills training that is required for the current job market; limited budget available to practical	The challenges are numerous. The late arrival of learning and training resources and work tools. The use of obsolete equipment and	Students experiences shortage of work tools and machines required for practical skill in their final year.		The challenges include; inadequate resources, infrastructural development, and inability to train of lecturers.

			occupational mobility.				lecturers' practical skills but also that of the students. The college should also ensure that ultra-modern workshops and classrooms are provided to further enhance the quality of technical and vocational training at the college.
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APPENDIX J: INDIVIDUAL INTERVIEWS – FINAL-YEAR ENGINEERING STUDENTS



Appendix H: Individual Interviews – Final year students

S/n	Discussion point	Final year student (FYFS 1)	Final year student (FYFS 2)	Final year student (FYFS 3)	Final year student (FYMS 4)	Final year student (FYMS 5)
1	Describe your technical and vocational training experience in the college?	I enrolled at the college in 2019 to acquire electrical artisan skill under the National Certificate Vocational (NCV) electrical programme. The course has been quite exciting with the lecturers assisting us in the workshops and classrooms in the practical and theoretical acquisition of knowledge. But sufficient time should be allocated for practical skills training classes in the workshop to	I was admitted into this college in 2018. My dream was to become a qualified electrician immediately I was admitted into college. My technical and vocational training experience has been filled with lots of fun since there a lot to learn in terms of practical training from our lecturers. However, our practical skills training classes should be prioritised over classroom learning	My learning experience has been a wonderful journey since I joined the college in 2018. I have developed a healthy and cordial relationship with my lecturers and colleagues since I was admitted, and I can say I am enjoying the journey so far since I am about to complete my programme	Eish... my technical and vocational training experience in the college comes with mixed feeling and emotion. I am a final year engineering student at this TVET college, and I have been able to acquire basic practical and theoretical skills both in the workshop and in the classrooms from some of our lecturers. But limited time is assigned for practical skills classes in workshop when compared to the	Oh ok.....I can say my training experience at the college has been a splendid experience. I have been in the college for almost 3-years and I can say I have learnt practical and technical skills from my lecturers during this period.

		improve our skills acquisition			amount of time given to classroom activities Although my inability to practice with some of the machines and equipment in the workshop on my own has been a major concern for me	
2	In your own view as a student in this college, do you think you are receiving quality technical and vocational training from your lecturers in this college?	I believe the lecturers are trying to impart the basic practical skill for the technical and vocational training programme but in most case during our workshop training, we have share work tools are in adequate. Our lecturers usually put in groups due to this reason and this has made	I want to presume that we are receiving quality technical and vocational training from our lecturers at the college because our lecturers always try to put in their best in teaching us how to acquire the basic technical skills since I joined the college.	I can say I am receiving the best of quality technical and vocational training from my lecturers since they have shown and exhibited that they have the skills and knowledge during or practical training since I joined the college.	Hmmm... I according to my own understanding, I can say that I am receiving quality technical and vocational from my lecturers since our lecturers endeavour to demonstrate practical skills to us in the workshop and they instruct us to perform these practical skills almost immediately. But	The lecturers in the college are giving their best to train us, but the state of our workshops in our college are not good. So, I can say, I am not receiving quality technical and vocational training from the college

		learning a little difficult not only for me but for everyone.			the problem is that our lecturers attends to us in groups, but I would have preferred to be trained on a one-on-one basis. This will assist me grasp easily what the lecturer is trying to demonstrate. As a result, some students schedule to visit the workshop after classes or during weekend to practice on how to use these machines and equipment in order to master the trade	
3	Describe the quality and standard of your workshops and training venues in your college?	The workshops that we used for training are very old. Some of the machines and work tools we use apart from being old, are insufficient to go round all the students and we have to share these	Our workshops are old. The machines and training tools are also old and ineffective. I do not believe we can get good quality technical and vocational skills with these old	The quality and standard of the workshop in the college has been dwindling since I enrolled at the college. Since most of our machines and equipment in the workshop are old	The quality and standard of the workshops and training venues in our college in my own opinion is below standard. This is because some of machines and equipment that we	The state of our workshops at the in terrible state. The machines and equipment that are lecturers are using to train us in the workshop are either old or damaged and waiting for repairs

		resources when we are the workshop. The workshops and its surroundings are usually unkept. The quality and standard of training we get in these workshops are not that good. Our college do not have partnership with some of the companies situated around the campus.	infrastructures in the college. The industries around our campuses cannot assist the students since the college does not have any relationship with them. Once partnership can be established with industries, they can assist with equipping the new workshop with latest equipment and machines	and malfunctioning the college should endeavour and form partnership with the industries around us so that these industries can assist in training us.	are expected be trained with are either damaged or broken down. In most cases, most of the students do not get opportunity to train on some machines since it takes a long time for the machines to be repaired.	
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APPENDIX K: FOCUS-GROUP INTERVIEWS - FINAL-YEAR ENGINEERING STUDENTS



Appendix K: Focus group Interviews – Final year students

S/n	Discussion point	Final year student (FYFS 1)	Final year student (FYFS 2)	Final year student (FYFS 3)	Final year student (FYMS 4)	Final year student (FYMS 5)
1	How are the resources accessible and available in your TVET College to prepare final year engineering students for the world of work?	The resources in the college's workshops are usually not accessible since the workshops that we have few numbers of work tools and machines that we can practice and train with due to some damaged and unrepaired work tools and machines	Despite the amount of practical skill activities our lecturers line up to train and equip final year engineering students with the basic practical skills, the unavailability of some machines and equipment when it is time to use the workshop has been a major concern for me.	The resources during our practical skill training classes provided in the workshops are not sufficient particularly with the consumable provided.	The resources provided in our workshops are few. Some of the work tools, machines and equipment we have engineering workshops are either damaged or malfunctioning. The resources and consumable provided for our practical skill training classes are usually insufficient.	The resources provided for practical skill training are always inadequate. We are always advised and encouraged by our lecturers to learn share the insufficient resources provided to us.
2	Are you satisfied with the quality and standard of training you receive at the college?	Since we have to share and learn practical activities in groups of 5 or 6 most times when we are in the workshop, we always struggle to learn. So, I can say I	I am not satisfied with the quality of training I get. This is because we are always asked to participate in the learning and training of	I am not happy and satisfied with the quality and standard training I am currently receiving at the college. We are trained with	I am not satisfied with the quality and standard of technical and vocational training I am currently receiving at the college. For this	I am really not satisfied with the quality and standard of training I am receiving as a final year engineering

				almost concluded practical classes for the year.	in also a great concern.	
4	What do you think can be done to further sustain the quality of technical and vocational training programme in the TVET College?	The college should endeavour to improve the quality of equipment and machines in our workshops.	Since most of our machines and equipment in the workshop are old and malfunctioning the college should endeavour and form partnership with the industries around us so that these industries can assist in training us.	The college should assist us by immediately equipping the new built workshop with the latest ultra-modern equipment and machines.	In my own opinion, the college should endeavour to provide each student with their own individual work tools rather than 2 or 3 students sharing a work tools in the workshop. The college should also try and overhaul the damaged machines and equipment in the workshops	The college should try to acquire new equipment and machines in all the workshops.

APPENDIX L: DOCUMENT ANALYSIS



Appendix L: Document analysis schedule for the researcher

S/n	Document	Criteria to check for	Comments
1	Portfolio of Assessment (POA)	Technical skill Practical skill	Students are assessed based on a standard checklist of technical and practical skills
2	Student academic records	Performance of student	The academic records show that performs excellently in theoretical classes when compared to that of practical classes.
3	Students attendance registers	Number theoretical classes attended Number of practical skill workshop attended	From the attendance register provided, students attended more theoretical classes when compared to practical skill classes attended
4	Students enrolment forms	Quality of matric student enrolled into TVET college	The quality of matric students enrolled into the college annually is usually below average. For students to be enrolled at the TVET college, student needs to have at least 30%
5	Timetables	The frequency of class for training of practical and technical skill every week	Practical skills classes are carried out for 3 hours weekly (one-hour day) for a maximum of two to three months

APPENDIX M: TURNITIN REPORT



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Second Final Draft Dissertation

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Declaration of professional editing

**LECTURERS' PERSPECTIVES ON CHALLENGES FACING FINAL-YEAR ENGINEERING STUDENTS AT A TVET
COLLEGE IN NONGOMA, KWAZULU-NATAL**

by

Olatunbosun Bartholomew Joseph

I declare that I have edited and proofread this thesis. My involvement was restricted to language usage and spelling, completeness and consistency and referencing style. I did no structural re-writing of the content.

I am qualified to have done such editing, being in possession of a Bachelor's degree with a major in English, having taught English to matriculation, and having a Certificate in Copy Editing from the University of Cape Town. I have edited more than 400 Masters and Doctoral theses, as well as articles, books and reports.

As the copy editor, I am not responsible for detecting, or removing, passages in the document that closely resemble other texts and could thus be viewed as plagiarism. I am not accountable for any changes made to this document by the author or any other party subsequent to the date of this declaration.

Sincerely,

Dr J Baumgardt

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