ENHANCING SKILLS ACQUISITION IN ELECTRICAL INFRASTRUCTURE CONSTRUCTION STUDIES

By

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DECLARATION

I declare that the dissertation, *Enhancing Skills Acquisition in Electrical Infrastructure Construction Studies,* hereby handed in for the qualification of Magister of Education (Curriculum Studies) at the University of the Free State, is my own sovereign work and that I have not previously submitted the same work for a qualification at/in another university/faculty.

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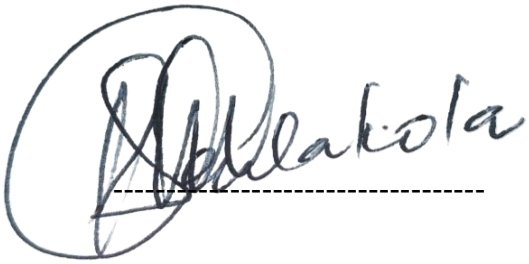

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This dissertation is dedicated to:

My wife, Dinah Lehlakola

My late father, Tjotjo G. Mokoena

My late mother and grandmother,

Makhala and Neo Lehlakola

My children,

Mamohapi, Pontsho, Thabo and Kgauhelo

LIST OF ACRONYMS

CAD	Computer-aided design
CDA	Critical discourse analysis
CER	Critical emancipatory research
CMT	Campus management team
DHET	Department of Higher Education and Training
EIC	Electrical infrastructure construction
ERD	Engineering and related design
ES	Education specialist
FAI	Free attitude interview
HOD	Head of department
ICASS	Internal continuous assessment
ISAT	Integrated summative assessment task
NCV	National Certificate Vocational
NDTS	National dual training system
OHS	Occupational Health and Safety Act 85 of 1993
PGCE	Postgraduate certificate in education
PLC	Programmable logic controller
PPE	Personal protective equipment
RET	Renewable energy technology
SES	Senior education specialist
SWOT	Strengths, weaknesses, opportunities and threats
TVET	Technical and Vocational Education and Training

WBE	Work-based experience
WIL	Work-integrated learning
YPAR	Youth participatory action research

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

This study was a qualitative study with the aim to contribute towards the enhancement of skills acquisition in electrical infrastructure construction (EIC) among youth with the purpose of providing them competences that have the potential of heightening chances of their employability. The study achieved the identified aim by responding to the research question: How can youths' acquisition of skills in EIC be strengthened to empower them to be self-employed and employable?

The problem in this study was that a significant percentage of the South African workforce, which includes technical and vocational education and training (TVET) students who are accessing higher education, lack specific technical skills and this results in poor employability prospects. The delivery of quality TVET courses and content is dependent on the competences of the lecturers for enhancing skills acquisition in EIC studies. The framework guiding this study was critical emancipatory research for it is transformative and emancipatory. Youth participatory action research was used as method of data collection with critical discourse analysis to analyse the data according to discursive, textual and social settings. The findings of the study may empower TVET colleges to prepare students with skills for the EIC industry and contribute to socio-economic development of the economy of South Africa. The workforce needed comprises engineers, technicians and the tradesmen from South African universities and TVET colleges.

Key words: Electrical infrastructure construction, enhancing, skills acquisition

CHAPTER 1: ENHANCING SKILLS ACQUISTION IN ELECTRICAL INFRASTRUCTURE CONSTRUCION STUDIES

1.1 Introduction

This study aimed to enhance skills acquisition in electrical infrastructure construction (EIC) to empower youth at technical and vocational education and training (TVET) colleges. South Africa faces a serious employment crisis. Youth between 15 and 24 years of age remain vulnerable in the labour market and youth unemployment stands at 56% of the total eligible workforce, with a labour absorption of only 12%, according to Statistics South Africa (2018). Among the 56% of the unemployed eligible workforce are EIC graduates from TVET colleges, who, despite their training in vocational programmes, are unable to find befitting employment. As a result, these graduates are forced to do menial jobs to combat unemployment, poverty, and inequality. Ansah and Ernest (2013:172) corroborate that the purpose of TVET colleges is to equip people with the technical and professional skills needed for socio-economic and industrial development of the country and to train people for self-employment. The White Paper on Post-School Education and Training (South Africa. Department of Higher Education and Training [DHET], 2014a:99) advocates for access to higher education institutions and colleges as a strategy to mitigate skills shortages and advance economic transformation. Colleges cater mainly for individuals who have left school – whether having completed secondary school or not – and who wish to do vocational training or complete their schooling.

1.2 Research Problem, Question, Aim and Objectives

The rising rate in youth unemployment in South Africa is worrisome. Various challenges exist which require vocational strategy in Electrical Infrastructure Construction (EIC) to enhance TVET college graduates' skills acquisition to make them employable. This identified problem, as also observed by Samuel (2010:4), Kanengani (2016:54), Musariwa and Tinonetsana (2023:1) calls for an urgent emancipatory solution to prevent graduates from facing an almost unavoidable unemployment situation.

This study is guided by one research question, one aim and five objectives. The research question is:

- How can youths' acquisition of skills in EIC be enhanced to empower them to be self-employed and employable?

The research aim of the study is:

- To enhance skills acquisition in EIC among youth with the purpose of providing them competences that have the potential of heightening chances of their employability.

The objectives derived from and directed towards attaining the aim of the study are:

- To justify the need for enhancing skills acquisition in EIC among youth for empowerment purposes.
- To explore possible means that can be considered for enhancement of skills acquisition in EIC among youth for purposes of ensuring their potential employability.
- To analyse the conditions potentially conducive for the successful operationalisation of the envisioned enhancement measures towards the anticipated empowerment of youth in EIC skills acquisition.
- To assess mitigating factors to counteract the effects of inherent risks and threats that are likely to hinder the successful implementation of the suggested youth-skills-acquisition empowering measures in EIC.
- To highlight evidence of outcomes of the envisioned EIC skills acquisition enhancement measures towards youth empowerment.

1.3 Theoretical Framework for the Study

In qualitative research, the theoretical framework provides the lens through which the researcher can make sense of what to do in the research design and how to conduct the study (Anfara & Mertz, 2015:1). The study used critical emancipatory research (CER) as theoretical framework because it is transformative and emancipatory. CER allows multiple realities that are shaped by social, political, cultural, economic, ethnic, gender and disability values (Tsotesi, 2013:27). CER explains what is wrong with current social reality, practically identifies the actors to change it, and provides both

clear norms for criticism and achievable practical goals for social transformation. Critical knowledge is conceptualised as knowledge that enables human beings to emancipate themselves from forms of domination through self-reflection (Gilani-Williams, 2014:17). Adshead and Dabula (2016:95) state that CER generates knowledge that can be used to address practical concerns of local communities, organisations and groups, and incorporates local understandings of specific practices and issues into projects that usually promote some type of change. Nkoane (2012:98) agrees that social justice in research depends on interactions between the participants and researcher and further argues for the need to engage with the methodological expectations of CER, using the power of language and communication. CER was therefore adopted for this study, because it allows the voice of the youth to be heard as they are given the opportunity to take charge of their learning.

1.4 Literature Review

Ogbuanya and Onyenwe (2015:61) define vocational training in EIC as a form of education with the primary purpose to prepare persons for employment in recognised occupations. Empowerment is the process by which people, organisations or groups who are powerless become aware of the power dynamics at work in their life context, develop the skills in EIC and capacity for gaining some reasonable control over their lives, exercise this control without infringing upon the rights of others, and support the empowerment of others in their community (Cattaneo & Chapman, 2010:648). Empowerment is thus the creation of an enabling environment for individuals to realise their embedded potential to be productive participants in building the economy of a country.

The unemployment problem in South Africa is structural, in the sense that poorly educated workers, who constitute the vast majority of the labour supply, are unable to find employment due to an insufficient demand for low-skilled human resources, and this contributes to the high rate of unemployment (Oluwajodu et al., 2015:1). In addition, EIC graduates are often unsuccessful in the recruitment phase because they lack some of the required vocational skills. Vocational skills are a type of practical skill that helps students gain knowledge and aptitudes to excel in a trade. Students are exposed to working with their hands and applying practical thinking for the completion of projects. Electricians work on different projects that include: maintaining the power

supply and repairing appliances, trouble shooting, Electrical installations (Wiring), fault findings, phasing out of motors. Electricians also install electrical supply systems for homes and businesses. Working in this field requires extensive mentoring and on-the-job training with qualified electricians (Burayk & C Kaur: 2023:1). The DHET's (South Africa, 2014b) 2013 annual survey of public TVET colleges shows that only 15% of the 5712 lecturers studied were deemed academically and professionally qualified for the TVET sector. The remaining 85% were either underqualified or unqualified. It is practically not easy to quantify the number of qualified electrical artisans since the problem is exacerbated by the fact that currently only 56% of apprentices inclusive of lecturers in training qualify as artisans (DHET,2015C). This demonstrates lecturers' inadequate instructional skills, which impacts negatively on the teaching and learning of EIC at TVET colleges. Lecturers' inadequate instructional skills pose a threat to conducive learning, because EIC students need to learn how to draw, design and analyse electrical circuits in the workshop and this requires lecturers to have a high degree of expertise to impart such knowledge to students. The delivery of quality TVET courses and content is dependent on the competence of the lecturers. Another challenge that TVET colleges faces is the struggle to retain talented lecturers who can offer vocational training in EIC due to a lack of compensation and unconducive working conditions (Ramapriya & Sudhamathi, 2020:112). According to Mabaso and Moloi (2016:6), competition for scarce skills, with the attraction and retention of quality employees, is the biggest challenge in human capital management and competitive wages and benefits have, time and again, been listed as a means of attracting and retaining employees who are abreast with technologies in the workplace.

Other countries have also suffered due to inadequate training. Ghana and Zimbabwe faced the same challenges of oversupply of graduates, misalignment of the educational system output, inadequate practical training and inelastic labour absorptive capacity in both the private and public sectors as causal factors of graduate unemployment (Oppong, 2013; Woyo, 2013:182). In addition, the inadequate supply of instructional materials, large class sizes, inadequate training facilities and weak linkages with local industries for hands-on experience for both instructors and trainees lead to ineffective and inefficient training of students, while emphasis is placed on passing final examination (Dasmani, 2013:67). Ireland, Spain and Greece have experienced an unemployment rate of around 50% due to a lack of decent job scopes,

discouraging individuals and forcing them to migrate within the European Union (Subrahmanyan and Ananiadou, 2013). Therefore, the challenges faced by TVET colleges to produce a skilled and employable labour force are not unique to South Africa but universal.

To overcome their challenges, Zimbabwe established the Standards Development and Quality Assurance Directorate (SDERU) to synergise industry with TVET colleges so that colleges work closely with experts from industry to promote vocational training (Woyo, 2013:182). Germany and Austria successfully implemented a “dual system” for recording low unemployment rates among youth, where TVET programmes are embedded with programmes to promote self-employment and apprenticeships (Subrahmanyan and Ananiadou, 2013).

South Africa introduced outcomes-based education (OBE) in 2004 and the implementation created an imbalance in the education system. In 2004, the Department of Education (DoE) invited all retired and experienced teachers to assist with implementation, and the strategy worked. Similarly, TVET colleges can also invite retired and experienced artisans who have left the industry to come and restore the system and mentor newly qualified artisans and lecturers to gain experience and expertise to enable the system to produce skilled graduates.

Monitoring and evaluation of practical training for quality assurance systems can be intensified in conjunction with appointing workplace mentors to ensure quality vocational training. To synergise industry with TVET colleges will make colleges work closely with experts from industry to promote vocational training (Woyo, 2013:182). Hence, there is a need to review and realign the National Certificate Vocational (NCV) programmes to meet the expectations and needs of industry, students, communities and the country.

The German-established dual vocational training system and the Malaysian National Dual Training System (NDTS) have proved that college-industry synergy provides effective opportunities to combine theory and practice, which allows trainees to learn in real-life situations and become part of a company and working culture (Euler, 2013:8; Igarashi & Acosta, 2018:2; Adam, Rasul & Yassin, 2017:34). Hence, a dual vocational training system will help young people develop vocational skills in EIC that are relevant to the labour market but not limited to a certain company. Therefore, college-industry

partnerships will also assist in enhancing the successful implementation of work-integrated learning (WIL) and work-based experience (WBE) for EIC students and lecturers.

1.5 Definition of Operational Concepts

This section explicates the operational concepts used in the study to guide the readers. This is done to enhance the readers' understanding of how these concepts are viewed and utilised in the context of this study.

1.5.1 Enhancing

Enhancing in this study means increasing or improving the value or quality of skills in EIC studies. Merriam Webster Online Dictionary (2012) defines *enhance* as to improve or increase in value, quality, desirability or attractiveness. Researchers Kaplan, Cruit, Endsley, Beers, Sawyer and Hankok, (2021:1) posit enhancing is simulation-based training meant to increase training efficiency.

1.5.2 Skills acquisition

Merriam Webster Online Dictionary (2020) defines *skill* as the ability to use one's knowledge effectively and readily in execution or performance. Olusola (2019:34) defines skill as the ability to carry out a skilled task competently. For skills acquisition to take place, an action is taken which will result in motion or triggering of a particular process. Skills acquisition is applied competence and understanding required for employment (DHET,2007).

1.5.3 Electrical Infrastructure Construction

EIC studies refer to a curriculum in the NCV Programme offered at TVET colleges in South Africa (DHET, 2006). These concepts and their definitions will be explained in more detail in Chapter 2 as they are the main pillars that anchored this study.

1.6 Research Design and Methodology

The research design was qualitative due to the nature of the data to be generated and the scope of the study. According to Carter and Little (2007:1), qualitative research means social research in which the researcher relies on textual data with the aim of

understanding human actions. Therefore, the qualitative method considers the affected persons' attitudes, emotions and cultural background, while delving deeper into the meanings of their views etc. Hence, the study adopted youth participatory action research (YPAR) as research methodology to determine how youths' acquisition of skills in EIC can be strengthened to empower them to be self-employed and employable. YPAR or participatory action research (PAR) with youth has its origins in critical pedagogy and informs its role as a pedagogical approach based on a conception of teaching and learning through collaborative and transformative inquiry (Caraballo et al., 2017:315). Kornbluh, Ozer, Carrie, Allen and Kirshner (2015:871) agree that YPAR emphasises the promotion of power and the socio-political voice of marginalised groups via an iterative process of inquiry and action, while also democratising research to include the expertise of youth affected by it. YPAR includes the youth who directly experience the educational contexts that scholars endeavour to understand and who deserve meaningful participation in the construction of knowledge that guides policies and practices important to their empowerment (Rodríguez & Brown, 2009:25). YPAR involves a number of stages of implementation, namely problem identification, data collection, data analysis and planning (Kornbluh et al., 2015:870). In this way, EIC students formed an integral part of the study and were granted the opportunity to narrate their views on practical challenges they experience on a daily basis. According to Malebese (2016:113), YPAR is suitable for use with CER to advance the transformational agenda that will bring hope towards the enhancement of skills acquisition in EIC among youth with the purpose of providing them competences that have the potential of heightening chances of their employability. The collaborative and transformative nature of YPAR and CER assisted in providing insights into unemployment issues faced by young people and EIC students in particular, as well as the resources that matter in helping solve those issues.

The study consisted of me as the researcher and the following co-researchers:

- Six level 4 EIC students, made up of three male and three female students. The students came from local high schools in Lejweleputswa district and were selected because of their appropriate experience spanning three years in EIC studies, and all underwent WBE training.
- Two post-level 1 lecturers/facilitators in EIC studies placed in the workshop (Five and seven years' experience, respectively).

- One post-level 2 EIC education specialist (ES) responsible for supervision of all workshops (10 years' experience).
- One post-level 3 senior education specialist (SES) responsible for divisional management (12 years' experience).
- Two EIC managers from two local industries to provide invaluable professional guidance during this study.

The selected participants were chosen because they had different background knowledge and experience, so they assisted the study to best inform the research question and find solutions to enhance skills in EIC studies among youth for purposes of ensuring their potential employability.

The research team met over a period of two weeks to discuss ideas that would help in the process of enhancing skills acquisition in EIC studies and to discuss progress made with regard to the attainment of the study objectives. The meeting proceedings were conducted in Sesotho and English. Minutes were electronically recorded for transcription and analysis at a later stage. The critical discourse analysis (CDA) technique was used to make sense of the generated data. Bloor and Bloor (2007:2) explain CDA as a cross-discipline that comprises the analysis of text and talk in almost all fields of humanities and social sciences. For this study, data were generated through a series of reflection meetings (Kornbluh et al., 2015:870). The study explored common methods of data collection in qualitative research, namely focus group discussions (FGD) and free attitude interviews (FAI).

The preparatory meeting agenda focused on team establishment, conceptualisation of the study, analysis of the situation in respect of the research site and development of the study action plan. The preferred technique during the situational analysis included brainstorming as well as assessment of the teaching and learning environments (observations). Brainstorming was developed as a way of quickly generating multiple creative ideas (Baruah and Paulus, 2008; Paulus, 2000). Subsequent meetings reflected on the progress made in respect of implementation of the initial plan and to review and update the plan accordingly. Each reflective session was adapted and used the principles of FAI, through which people are free to talk as in a normal conversation. Through this technique, a deeper meaning of the participants' sentiments is

interrogated (Buskens, 2011). A focus group is a dynamic group discussion on a particular topic organised for research purposes.

1.7 Value of the Study

The findings of the study has invoked and heighten discussions and challenge TVET colleges and respective industries/businesses to work closely towards combatting unemployment, poverty and inequalities. The study may give a voice to TVET colleges in the fray of such discussions and may possibly contribute meaningfully and positively. EIC students may receive improved industry placement for WBE and lecturers may benefit by understanding the role they have to play in making the enhancement of skills acquisition beneficial for EIC students. Lastly, policymakers may also learn more about the enhancement of skills acquisition in EIC studies and advise curriculum accordingly, (Brothen, & Wambach, 2012:1)

Ethics are generally considered to deal with beliefs regarding what is morally good or bad, right or wrong, and proper or improper (Tsotetsi, 2013:22). I sought a letter of permission from the DHET to conduct the research at a TVET college in the Lejweleputswa district of the Free State province. Subsequently, the Faculty of Education at the University of the Free State issued ethical clearance confirming approval to conduct the study (Appendix A). Interested participants were asked to participate voluntarily and to that end sign a consent form for participation in the study (Appendix B). Ethics imperatives pertinent to the study were discussed openly with the participants. For instance, participants were notified that they may withdraw at any time during the course of the study if the situation were no longer suitable for their continued participation, that the data will be used for research purposes only and that their identity will not be disclosed, to mention but a few considerations. Consent forms were made available in Sesotho and English.

1.8 Limitations of the Study

The study was limited due to the fact that it was conducted at only one TVET college in the Free State province. Generalisation of the results is thus not encouraged, as conditions may differ from one college to another. However, other and urban colleges

experiencing similar challenges under similar conditions to those of the one in the study could benefit from using the proposed framework.

1.9 Conclusion

This chapter provided an introduction and background to the study, highlighting and clarifying the enhancement of skills acquisition in EIC studies and its positive impact on employability. The challenges pertaining to the implementation of enhancing skills acquisition were also highlighted, with possible solutions briefly touched upon. The conditions that make the solutions work were also outlined, together with the threats that could impede the implementation of enhancing skills acquisition in EIC studies. The chapter also presented the research problem and introduced the research question and aim for the study, together with the objectives derived and directed towards the attainment of the aim of the study. The theoretical framework used as lens to look at the study phenomenon was looked at and definitions of the operational concepts provided. The research design and methodology were described in brief. Lastly, the value of the study was highlighted together with the ethical considerations and study limitations.

CHAPTER 2: THEORETICAL FRAMEWORK AND LITERATURE REVIEW FOR ENHANCING SKILLS ACQUISITION IN ELECTRICAL INFRASTRUCTURE CONSTRUCTION STUDIES

2.1 Introduction

The study aimed to develop a strategy for enhancing skills acquisition in EIC studies at TVET colleges in the district of Thabo Mofutsanyane by bringing change to the way the programme is currently being implemented. Skills acquisition in EIC brings about change to empower youth for employability. The South African Government took responsibility with the Skills Development Act to ensure that the skills of its citizens are developed so that every person can be empowered to participate in the building of the economy (NSDS, 2011-16). Furthermore, the act wants to ensure that citizens exercise the right and freedom to choose a trade, occupation or profession as a career. According to Olusula (2019:37), industry and commerce need a skilled workforce, as each specific role at the workplace requires skills for discharging duties. It is therefore imperative to ensure that the training of EIC students in the South African milieu is aligned to the structure and skills needs of the industry and individuals concerned.

Furthermore, investigating and determining this enhancement of skills will assist to achieve the aim of the study. This chapter further presents Critical Emancipatory Research (CER) as the framework guiding the study, and expatiates its origin, objectives, formats, epistemology and ontology. The chapter also discusses the role of the researcher, the relationship between researcher and co-researchers, rhetoric, and the reason why it was chosen for this study. The principles of CER are also discussed in conjunction with the objectives of the study. The chapter also reviews the literature on the topic for the purpose of providing both the contextual and conceptual bases for the study. The operational concepts which serve as the nexus of this study are clearly and succinctly outlined so that they are understood within the context of this study. The chapter presents an extensive review of relevant literature to align this study with the best practices internationally, continentally and locally to support the enhancement of skills acquisition in EIC studies.

2.2 Theoretical Framework

This section discusses the theoretical framework underpinning the study, which is Critical Emancipatory Research (CER). According to Moleko (2014:13), the role of the theoretical framework is to connect the researcher to existing knowledge, hence demonstrating how the research fits into what is already known (the relationship between existing knowledge and new research). For instance, if the purpose of a study is to bring about emancipation and empowerment, it is important that a theoretical framework that advocates such values underpins the study.

In this study, together with co-researchers we wanted to demonstrate the need for formulating a strategy for transforming skills acquisition in EIC studies. The goal was to create a sustainable learning environment for enhancing transfer of skills in a classroom or workshop embedded in the principle of emancipation in order to empower youth for employability. According to Tsotetsi (2013:27), CER offers a multidisciplinary approach in addressing issues of oppressive and unsatisfactory conditions of unemployment due to the lack of appropriate skills needed for employment and empowerment. Xolisile and Bekithemba (2021:54) concur that CER promotes equality and equity; advocates for social justice, freedom and peace; and changes people's hearts and minds, hence ensuring that participants are equal in their contribution towards enhancing skills acquisition in EIC studies. In this study, CER helped to overcome the one-sided view of addressing issues of skills acquisition in EIC studies. This was done by involving youth who directly experienced the educational context under study and who deserve meaningful participation in the construction of knowledge that guides policies and practices important to their empowerment (Rodríguez & Brown, 2009:25).

According to Thomas et al. (2014:55), individuals construct and apply knowledge in socially mediated contexts, as knowledge is a human construction and the learner an active participant in the learning process. Therefore, CER was used to involve the co-researchers in all study activities pertaining to enhancing skills acquisition in EIC studies. The study attempted to bring fundamental change ensuring that vulnerable youth in EIC studies are offered an opportunity to learn and master their crafts in order to better their lives. Principles of CER are that it is emancipating, transformative, socially oriented and democratic. CER was adopted to enable the co-researchers to

freely discuss their ideas and to come up with solutions without fear of power since they were to be treated equally throughout the study.

2.3 Definition of Operational Concepts

This section explicates the operational concepts used in the study to guide the readers. This is done in an effort to enhance the readers' understanding of how these concepts are viewed and utilised in the context of this study.

2.3.1 Enhancing

Enhancing in this study means increasing or improving the value or quality of skills in EIC studies. Merriam Webster Online Dictionary (2012) defines *enhance* as to improve or increase in value, quality, desirability or attractiveness. According to Ercan, Sale and Kristian (2016:3), by introducing EIC students to the electrical design process, by getting them involved in problem-solving through real work projects, using electrical tools and devices, their learning is made more active and experiential from the very beginning of their study. Early exposure to electrical design will facilitate the thinking processes of EIC students, so that they can model what engineers do in solving electrical engineering problems. Furthermore, this will reinforce collaborative hands-on activities in an integrated curriculum structure that builds the acquisition of personal and interpersonal skills (e.g., decision-making, self-directed learning, teamwork and communication) across a variety of disciplines, linking theory and practice. In terms of the pedagogic context, the concern is with the holistic development of an individual together with their engineering skills. Eze (2015:91) concurs that to achieve this, technical-skill lecturers should competently operate teaching facilities such as projectors, videos, Edu-boards, electrical wiring boards (panels), electrical motors and other relevant demonstration models needed in the electrical workshop to foster skill comprehension by EIC students. Underpinning EIC curriculum studies is a strong emphasis on robust curriculum alignment, whereby the range of learning activities and subsequent assessment methods are specifically focused on facilitating enhancement of skills acquisition and the desired learning outcomes.

Countries such as Germany, Australia and Malaysia introduced vocational dual systems that have proved that college-industry synergy provides effective opportunities to enhance skills acquisition in EIC (Adam, Rasul & Yassin, 2017:34;

Euler, 2013:8; Igarashi and Acosta, 2018:2). According to Ansah and Ernest (2013:173) and Rowe and Zegwaard (2017:90), many universities in Australia, New Zealand and the United Kingdom include WIL programmes as part of a dual system in their degrees with the aim of enhancing graduate employment prospects by making learning more active and experiential from the very beginning of their study. The dual system, as part of strategy, combines theory and practice, which allows trainees to learn in real-life situations and become part of a company and working culture. This system has the undisputable ability to respond quickly to the challenges of globalisation and transformation in the world of professions. As such, it will be advantageous to adopt and adapt how skills acquisition is practised in EIC studies (Pleshakova, 2019:130). Furthermore, graduates are encouraged to take as many WIL programmes as possible to increase their employment opportunities. Hence, this practice, when adopted, will contribute immensely to enhancement of skills acquisition in EIC studies (Rowe & Zegwaard, 2017:90).

Zimbabwe established SDERU to synergise industry with TVET colleges so that colleges work closely with experts from industry to promote vocational training in EIC studies (Woyo, 2013:182). The partnership assisted with the placement of TVET graduates and development of relevant training materials for the enhancement of skills acquisition. Ishaya and Halliru (2016:31) posited that for students to acquire skills in EIC studies, the lecturer must use activity-based strategies such as WIL and fieldtrip methods that will enhance students' acquisition and maintenance of knowledge, values and attitudes.

2.3.2 Skills acquisition

Merriam Webster Online Dictionary (2020) defines *skill* as the ability to use one's knowledge effectively and readily in execution or performance. Olusola (2019:34) defines skill as the ability to carry out a skilled task competently. For skills acquisition to take place, an action is taken which will result in motion or triggering of a particular process.

Zimbabwe established SDERU to synergise industry with TVET colleges so that colleges work closely with experts from industry to fulfil the needs of industry and the development of competitive and skilled human capital in EIC studies (Woyo, 2013:182).

The Government of Ghana recognises the strengthening of TVET as a vehicle for developing the technical and skilled human resource base which the nation and EIC graduates need urgently as a key strategy for achieving its industrial development. To achieve this objective, competency-based training (CBT) was introduced in the TVET curriculum design and delivery at all levels of TVET institutions to help promote skills acquisition and industrial development (Ansah and Ernest, 2013:171).

The Malaysian Government introduced the National Dual Training System (NDTS) model to develop human capital in Malaysia who are highly skilled and knowledgeable in EIC. As part of the strategy, they proposed the framework for industry involvement and collaboration of the NDTS programme; hence, the 10th Malaysian Plan 2015 developed targeting industries to engage in the (National Dual Training System NDTS) programme. The implementation of NDTS for skills training has changed the landscape in terms of fulfilling the needs of industry and the development of competitive, skilled human capital (Adam, Rasul & Yassin, 2017:17; Igarashi and Acosta, 2018). Germany used the same NDTS model (dual system) and managed to successfully achieve reduction of unemployment of youth in critical EIC.

However, the strategy adopted by the Malaysian Government to attract 6300 industries to participate in the initiative was not successful, as data from National Dual Training System (NDTS)Q-Fact showed that until the end of 2010, only 1028 industries were involved. The broad objective of vocational training is to achieve economic, social and individual goals, with the main objective of producing skilled workers with flexible qualifications who are mobile and capable of working in their chosen fields (Euler, 2013:23).

The dual system has various potential benefits. First, training is designed to meet the practical needs of the labour market. Second, occupational skills enable individuals to work in their chosen fields. Third, skills are applicable to a wide range of settings within the field, which allows individuals to be flexibly employed in a variety of businesses. Next, skill profile makes trained workers more mobile. Lastly, skills enhance workers' flexibility and mobility, reduce the danger of social marginalisation, and raise educational levels in a non-academic context.

For skills acquisition to happen, there needs to be a transfer action leading to theory being translated into practical action. Transfer is promoted when learners are shown

similarities between problems; also, if expected to solve problems themselves, they are aware of how to apply skills in different contexts (Billing, 2007:483).

In the South African context, the Skills Development Act aims to expand the knowledge and competencies of the labour force and short supply of skilled personnel is a serious obstacle to the competitiveness of the South African economy. Since there is need to improve productivity and employment, Aggarwal and Darzi (2006) caution that in the future, expertise rather than experience will underlie competency-based practice and certification.

The definition of skills acquisition in this study is further informed by the theoretical lens couching this study, CER, which confirms that people need to work together in order to enhance skills acquisition in EIC studies.

2.3.3 EIC studies

Electrical Infrastructure Construction (EIC) studies refers to a curriculum in the National Curriculum Vocational (NCV) Programme offered at TVET colleges in South Africa. The NCV Programme was introduced in 2007 by the DHET in South Africa as part of the strategy to facilitate skills acquisition and enhance employability opportunities and grow the economy as part of post-school education and training (South Africa. DHET, 2013:363). The NCV Programme comprises both theoretical and practical components, which can be used as leverage for enhancing skills acquisition in EIC for employability. The EIC subject forms part of the NCV Programme and is comprised of three elective subjects, Workshop Practice (WP), electrical principle and practice (EPP) and Electrical System and Construction (ESC) from levels 2 to 4, with each one consisting of theory and a practical component. Furthermore, the National Development Plan 2030 addresses the need to enhance the capabilities of all people, the poor and youth in particular, to enable them to live the lives they desire; and to develop the capabilities of the workface so that the country can grow faster, attract more people into work and raise living standards for all.

The NCV and NDP programmes are supported by Palmer (2007:79), who notes that different countries view learning differently. Hence, learning demands solitude not only in the sense that the student needs time alone to reflect and absorb but also in the deeper sense that the integrity of the student's inner self must be respected. Learning also demands community-dialogical exchange in which one's ignorance can be

addressed, ideas tested, and knowledge expanded. posit, experiential learning captures the multifaceted nature of human experience and its concomitant interaction with learning as a means to gain greater knowledge (Schweizer, Wang, Koscher & B Michaelis, 2020:1)

The role of the researcher within the context of CER is to provide guidance to the study and manage the research programme. Within the CER context, the researcher must engage the participants in the research project with the aim of empowering them and transforming and liberating them from oppressive practices and tendencies during EIC training. Consequently, the needs of the real-life situation are met to enhance the skills acquisition for EIC students (Moleko, 2014:20). The researcher must always be humble by depowering themselves to make the co-researchers feel equal, thus accommodating the diversity of all participants irrespective of their background (Qholosa, 2016:38). Moleko (2014:22) mentions that CER is participative and collaborative. Therefore, the role of the researcher becomes one of creating platforms for discussions on the strategies to be employed and the roles to be assigned to participants in these studies and to ensure active participation by all stakeholders. In the context of this study, I had to ensure that all the participants collectively took part in the process of designing strategies to address the challenges of enhancing skills acquisition in EIC studies.

2.3.4 The relationship between researcher and co-researchers

The researcher in the CER study works with co-researchers, which includes people who are marginalised, without labelling their knowledge and experiences towards the attainment of a common goal for better change (Dlamini, 2016:20). Dobai (2012) advocates for the de-objectification of the researcher as an invisible voice of authority. In addition, the researcher should avoid exploiting and treating the co-researchers as a mere target group for the research. Furthermore, the produced knowledge should have an emancipatory value and should contribute to eradicating oppression as a final goal for better change. Qhosola (2016:37) concurs that the researcher and participants interact to establish a relationship built on trust, humility, and mutual respect, achieved through openness in communication. Therefore, the interaction between the researcher and the co-researchers in the form of dialogue is important, since it will provide an opportunity to try to empower the stakeholders involved as a way of paving

the path to be able to work with the primary researched subject. According to Qholosa (2016:37), the participants' diverse experiences, knowledge, cultures, belief systems, socio-political variations and economic status in CER are viewed as complementary and hence will assist the study to achieve the study goals. The collaborative nature of CER theory allows for both researcher and participants to participate in a process of change, therefore eminently creating much-needed training opportunities for skills acquisition in EIC for youth empowerment, employability or entrepreneurship.

2.4 Literature Review

According to Du Toit et al. (2018:122), unemployment has both an individual status and a social status ascription. Unemployment for an individual may result in the ensuing psychological distress associated with a decline in life satisfaction. Furthermore, it may contribute to the risks of mood disorder and substance abuse. Unemployment as part of the social ascription is associated with stigmatisation, classification, unfair treatment, and marginalisation (De Lannoy, Graham, Patel & Leibbrand 2018:5; Du Toit, De Witte, Rothmann & Van den Broeck., 2018:122).

Nonyana and Njuho (2018:1) indicate certain factors that contribute to unemployment. One of these is slow economic growth, which slows the demand for labour. The slow growth is responsible for serious unemployment rates, and contrary levels of employment improve with an improvement in economic conditions. The distinguished characteristic of enhancing skills acquisition in EIC is an integration of knowledge with practical and workplace learning components (South Africa. DHET, 2012, 2014a, 2018). Ansah and Ernest (2013:172) corroborate that the purpose of TVET colleges is to equip people with the technical and professional skills needed for the socio-economic and industrial development of the country and to train people for self-employment. The unemployment problem in South Africa is structural, in the sense that poorly skilled workers, who constitute the vast majority of the labour supply, are unable to find employment due to insufficient demand for low-skilled resources, and this contributes to the high rate of unemployment (Oluwajodu et al., 2015:1). In addition, EIC graduates are often unsuccessful in the recruitment phase because they lack some of the required vocational skills.

Similar challenges of unemployment are also experienced in countries such as Ghana. Despite the various interventions, the country has not attracted the youth to move into technical and vocational training at all. This is because most technical graduates and EIC students have not been able to enter into employment in their respective fields of training (Dasmani, 2011:68). Ansah and Ernest (2013:173) concur that many polytechnics are unable to combine theoretical training with practical exposure in order to produce qualified graduates for direct absorption into industry. As a result, the majority of graduates, and EIC graduates have to move to the southern part of the country for menial jobs.

In Zimbabwe, public TVET institutions due to lack of synergy between industry and college have attracted a great deal of criticism. They are not able to train skilled workers with competencies that effectively meet the occupational requirements of industry and are at times unaware of the need for continuing education. Hence, graduates of these institutions are part of the unemployed youth (Woyo, 2011:68).

Spain and Greece in the European Union have experienced similar challenges of youth unemployment, albeit at a scale lower than many African countries. Youth unemployment is attributed to casualisation of “poorly integrated new entrants”, who, although qualified, experience persistent difficulties in accessing stable employment. This group accounts for about 20% to 30% on average of all youth in Organisation for Economic Co-operation and Development (OECD) countries (O’Reilly et al., 2015:2). In addition, the transitions between education and employment are increasingly blurred and diversified, which is illustrative of the experiences of poorly integrated youth for employability.

Therefore, the issue of unemployment due to lack of requisite skills is not unique to South Africa, but other countries experience the same challenges.

2.5 Challenges Pertaining to Skills Acquisition in EIC

This section discusses the challenges encountered in enhancing skills acquisition in EIC as the first objective of the study. Challenges of youth unemployment are also experienced in countries such as Ghana, Zimbabwe, Spain and Greece in the European Union.

2.5.1 Lack of employment opportunities

According to Eze (2015:91), lack of professionally qualified lecturers in EIC poses a challenge for skills acquisition in EIC. Lecturers must be well equipped with the requisite practical skills and competence to competently utilise teaching facilities available in the workshop to make the lesson content understandable, concrete, practical, real and interesting to students. Furthermore, lack of a skilled workforce hinders effective implementation. This is because drafting a functional timetable requires a skilled workforce and students are not exposed to practical implementation in the workshop Ernest (2013:172). According to Pardede (2020:77) 21st century globalisation and digitilization challenges have been growingly changing the way we live, learn and work, hence EIC classrooms should not merely focus on students' basic skills development but also integrate competences that differentiates students who are prepared for complex life and work environments.

2.5.2 Lack of strategic partnerships

To improve and strengthen NCV students' experience in real work while studying, they must be presented with opportunities to enrich their learning by linking theory to practice and to apply learning to real work. Dasmani (2013:67) lists several factors that lead to ineffective and inefficient training of students. These are inadequate supply of instructional materials, large class sizes, inadequate training facilities, and weak linkages with local industries for hands-on experience for both lecturers and students, while emphasis is placed on passing final examination. Selepe (2017:31) cites a weak relationship between industry and colleges as a reason why students are struggling to find placement for WIL and in some instance also to get their diplomas. Therefore, lack of strategic partnerships with industry deprives the students of opportunities for placement needed for experiential training needed for enhancing skills acquisition in EIC studies.

2.5.3 Professionally unqualified lecturers

TVET colleges offer a wide range of subjects/fields at different NQF levels and lecturers must be able to teach across the different levels within the subjects or fields. Furthermore, lecturers who teach TVET courses must be competent in both the

theoretical and practical aspects of the courses that they teach, according to the Policy on professional development for lecturers in TVET (South Africa. DHET, 2013).

The delivery of quality TVET courses is dependent on the competence of the lecturer. This competence is measured in terms of theoretical knowledge; technical, pedagogical, and andragogic skills; as well as being abreast with new technologies in the workplace (African Union, 2007:03). The DHET's (South Africa, 2014b) annual Survey of public TVET colleges shows that only 15% of the 5712 lecturers studied were deemed academically and professionally qualified for the TVET sector. The remaining 85% of lecturers were either underqualified or unqualified. This demonstrates that lecturers' inadequate instructional skills may be negatively affecting the teaching and learning of EIC at TVET colleges. Hooks (1994:11), Christian and Sayed (2023:1), Tsotetsi, Mile (2021:2) regards teaching as a service and a way of ploughing back, and, as such, encourages lecturers to generate strategies for teaching students effectively. Furthermore, lecturers' inadequate instructional skills pose a threat to conducive learning, since EIC students need to learn how to design, draw and analyse electrical circuits in the workshop and this requires lecturers to have a high degree of expertise to impart such knowledge to students.

2.5.4 Retention of a professionally qualified workforce

TVET colleges face the struggle to retain talented lecturers who can offer vocational training in EIC studies, for several reasons. Owing to the competition for scarce skills, the attraction and retention of quality employees has emerged as the biggest challenge in human capital management, and this phenomenon has also arisen in TVET colleges (Mabaso & Moloi, 2016:6). (Siwela & van der Bank 2021:2; Mabaso & Moloi, 2016:6). posit attract and retain employees, organisations need novel reward systems that satisfy employees and, furthermore, artisans, technicians and engineers are better remunerated outside the TVET sector Therefore, lack of retention of professionally qualified lecturers impacts acquisition of EIC skills.

2.6 Solutions to the Challenges in Enhancing Skills Acquisition in EIC Studies

This section outlines the various skills acquisition plans, revealed in the literature, that have been used to address the abovementioned challenges. Some of these strategies

were applied in a number of countries with best practices in terms of skills acquisition in EIC studies.

2.6.1 Employment opportunities

According to Rowe and Zegwaard (2017:90), many universities in Australia, New Zealand and the United Kingdom include WIL programmes in their degrees, with the aim of enhancing graduate employment prospects. Often, this perspective is based on the premise that colleges can (and should) produce “work-ready” or “employable” graduates.

The development trajectory followed by the Southeast Asian Tigers provides some lessons on possible strategies for creating decent and productive employment. The important lessons to learn from the Tigers is that they prioritised an industrial policy that targets growth in sectors that have employment potential. Thus, once an industrial policy is in place, it is easier for governments to ensure that a match is achieved between the demand and supply of skills (Martinez-Fernandez & Powell, 2010:4).

2.6.2 Availability of strategic partnerships

According to Ansah and Ernest (2013:173), there is a need for strong industry-college collaboration for improved practical training in industry. There is also a need for the creation of a platform for secondment of staff in the TVET colleges to gain valuable practical experience in industry needed for improved teaching and learning in EIC. Hence, many universities in Australia, New Zealand, and the United Kingdom are now including WIL programmes in their degrees with the aim of enhancing graduate employment prospects (Rowe & Zegwaard, 2017:90). Employment status after degree completion is increasingly used as the primary graduate employment performance indicator.

The most common reason advanced for industry-college partnerships is the need to ensure successful labour market outcomes by ensuring quick absorption of graduates into the workplace. Other reasons cited include upgrading machinery and equipment, improving supply of middle-level skills, lecturer placements, reducing skills shortages and mismatches, adopting business principles in college management, and improving TVET college responsiveness (HRDC, South Africa, 2014:6).

2.6.3 Professional qualifications

Professionally qualified lecturers in EIC are well equipped with the requisite practical skills and competence to competently utilise teaching facilities available in the workshop to make the lesson content understandable, concrete, practical, real and interesting to students (Eze, 2015:91). The Japan International Cooperation Agency (JICA) adopted a competency-based teaching approach that would improve quality skills acquisition in EIC and relevance of TVET (Ansah & Ernest, 2013:178). Proficiency in EIC would also help to meet the diverse needs of students and industry.

2.6.4 Successful retention of a professionally qualified workforce

To attract and retain employees, organisations need novel reward systems that satisfy employees and rewards are one of the important elements in motivating employees to contribute their best efforts to generating innovative ideas that lead to productivity within an organisation (Mabaso & Moloi, 2016:6). Aktar, Sachu and Ali (2012, cited in Mabaso and Moloi, 2016:9) classify these rewards into internal and external rewards. External rewards include salary, incentives, bonuses, promotions and job security, while intrinsic rewards are intangible or psychological rewards such as appreciation, meeting new challenges, a positive and caring attitude from the employer and job rotation after attaining set goals, (Chala, 2023:1). Hence, the retention of highly skilled employees is critical, particularly because of the need to contribute to economic growth, innovation and poverty eradication. This can be done through acquisition of skills in EIC.

2.7 Threats and Risks Related to Enhancing Skills Acquisition in EIC Studies

2.7.1 Lack of skilled workforce

In the South African context, the Skills Development Act aims to expand the knowledge and competencies of the labour force and short supply of skilled personnel is a serious obstacle to the competitiveness of the South African economy. Since there is need to improve productivity and employment, Aggarwal and Darzi (2006) caution that in the future, expertise rather than experience will underlie competency-based practice and certification. The rapid change in technology and need to stay abreast of the ever-changing trends in EIC technologies is an issue of great concern for many

technologists in the 21st century. Technology changes every 18 months and hence EIC practitioners need to keep up with the pace in order to remain relevant in their specific field of speciality (Edwin Obwoge, 2016). The TVET sector is often most affected, since it trains technologists for the industrial sector in most developed and developing economies. These rapid changes render training in EIC skills acquisition obsolete, hence contributing to unemployment of EIC graduates.

2.7.2 Lack of professional qualifications

Application skills such as electrical wiring and maintenance are difficult to learn without individualised teaching or expert supervision (Sirakaya & Cakmak, 2018:2). Therefore, lack of professionally qualified lecturers in EIC who are well equipped with the requisite practical skills and competence to competently utilise teaching facilities available in the workshop to make the lesson content understandable, concrete, practical, real and interesting to students poses a challenge for skills acquisition in EIC (Eze, 2015:91). There is a dearth of people with requisite scientific and technological education and technical skills who can create wealth and help their country to attain economic prosperity and industrial development (Ansah & Ernest, 2013:2178). Therefore, the challenges of unqualified and under-qualified lecturers impact acquisition of skills in EIC since it takes competent professional lecturers to impart knowledge and transfer skills.

2.7.3 Insufficient strategic partnerships

Numerous challenges make it difficult for college-industry collaborations to exist. These include the absence of a visionary leadership and supportive environment, an unwillingness to share, and lack of time for collaborations (Liu & Tsai, 2017:160). Lack of strategic partnerships with industry deprives students of opportunities for placement for experiential training needed for enhancing skills acquisition for empowerment. Due to technological developments, lecturers also miss the opportunity for the retraining or reskilling needed for their professional development. Pragmatically, for the curriculum to be responsive to the needs of industry and communities, strong collaborations with industry are needed that will promote skills acquisition in EIC studies.

2.7.4 Lack of retention of professionally qualified lecturers in EIC

Inadequate retention of a professionally qualified workforce that is competent to offer vocational training in EIC studies hampers effective and efficient curriculum implementation. This is because of a number of reasons. Owing to the competition for scarce skills, the attraction and retention of quality employees has emerged as the biggest challenge in human capital management and this phenomenon has also arisen in TVET colleges (Mabaso & Moloi, 2016:6).

2.8 Evidence of Success for Skills Acquisition in EIC

2.8.1 Sustainable employment opportunities

Germany and Austria successfully implemented a dual system for recording low unemployment rates among youth, where TVET programmes are embedded with programmes to promote self-employment and apprenticeships (Subrahmanyan & Ananiadou, 2013). Furthermore, Germany's established dual vocational training system and the Malaysian National Dual Training System (NDTS) have proved that college-industry synergy provides effective opportunities to combine theory and practice, allowing trainees to learn in real-life situations and become part of a company and working culture (Adam, Rasul & Yassin, 2017:34; Euler, 2013:8; Igarashi & Acosta, 2018:2). Properly adopted and adapted to suit our situation within the South African context, this dual system approach will assist to expose EIC students to much-needed blending of theory and practice for enhancing skills acquisition in EIC studies.

Asian countries (with the exception of Singapore) have dual economies and, accordingly, dual labour markets and skill requirements. The modern sector focuses on enhancing its competitiveness on global markets, while the traditional, mostly sector depends on anti-poverty programmes focused on job creation and the development of skills that can support livelihoods (Martinez-Fernandez & Powell, 2010:5). To support and sustain job-creation initiatives within the ecologies, the dual system will be suitable to enhance skills acquisition in EIC for sustainable development.

Study programmes that include internships or Workplace Integrated Learning (WIL) can significantly enhance graduate employment, particularly when students undertake multiple shorter internships throughout their studies (Martinez-Fernandez & Powell,

2010:5). Therefore, colleges can utilise a WIL programme or vocational dual system to develop and enhance skills acquisition in EIC for graduate employability prospects.

2.8.2 Adequate professionally qualified workforce

JICA adopted a competency-based teaching approach that would improve quality skills acquisition in EIC and relevance of TVET (Ansah & Ernest, 2013:2178). Lecturer proficiency in EIC would also help to meet the diverse needs of students and industry and therefore increase prospects of producing employable employees or entrepreneurs capable of creating jobs.

2.8.3 Adequate strategic partnerships

Australia University established an industry-university collaboration attachment scheme (WIL) to introduce graduates to workplaces, enabling them to apply what they have learnt in the lecture room and thereby relate theory to practice. This collaboration provides students with an opportunity to bridge the gap between classroom education and real-world experience (Ankrah & Al-Tabbaa, 2015; Burns et al., 2018:27). Arfo (2015:63) concurs that industry-college collaborations form a mechanism for developing and improving student practical skills. Rowe and Zegwaard (2017:90) emphasise that evidence shows that WIL can improve employability outcomes for students in a number of ways. First, this is done through opportunities to build students' confidence in professional practice and for students to gain a greater appreciation of the importance of employability skills. Markowski, Bower and Essex (2021:2) and Hill, Woodward and Arthur (2020:1) emphasise that collaborations are also helpful for placement of students in industries to acquire workplace experience under an industrial attachment schemes. Therefore, these practices will assist to expose EIC students to the operations and use of industrial machinery, develop work-based skills, contribute to industry development, and instil good work habits. Hence, industry-college collaborations are vital to the successful contribution to employment opportunities for undergraduate students with engineering and technology majors and EIC students in particular.

2.8.4 Successful retention of professional workforce

According to Mabaso and Moloi (2016:3), the aim of the rewards system is to attract, enhance and retain relevant expertise through interventions such as employment

equity, rewards, succession planning and skills development opportunities. In England, to incentivise lecturers to stay in the system, there is a long history of providing tax-free bursaries and maintenance grants/loans for those entering training, and additional "early career" payments for those continuing in the role after completing their newly qualified teachers (NQT) year (See, Morris, Gorard & Kokotsaki 2020:1) . The United State of America introduced variable salaries for those working in certain geographical areas, or in schools with higher proportions of disadvantaged pupils, as well as some initiatives which seek to reward teachers financially based upon their performance (See et al., 2020:2).

2.9 Historical Background of CER

Critical Emancipatory Research (CER) stems from critical theory (CT) developed by the Frankfurt scholars. Thus, critical theory consists of the works of the Frankfurt School and its Institute for Social Research in Germany, namely Walter Benjamin, Max Horkheimer, Theodor W. Adorno, Hebert Marcuse, Erich Fromm, Jürgen Habermas, and Axel allud (Honneth Garlitz & Zompeti 2021:1). CT was opposed to certain aspects of positivism, the most profound lens used by researchers in the 19th century (Moleko, 2014:18). According to critical theory relies on the assumption that all theories and comprehensive doctrines are obliged to the same absolute ideas of truth, justice, whether it is known or not whilst, positivism espouses science as being the only way of obtaining the truth. The Frankfurt School, which is neo-Marxist, is deeply opposed to the ideology of science being the only way of establishing the truth (Blayney, Lostutter & Kilmer 2023:3). These scholars argued that knowledge is created by human beings through their experiences, which science does not take into account, insisting that the search for knowledge must be based on a desire to refine the quality of human life (Moleko, 2014:16). According to Habermas (1987), knowledge is produced by people, for people and is about people and their social and physical environment.

According to Steinberg and Kincheloe (2010:140), knowledge that is constructed by human beings (within the context of CT) serves to decrease human anguish in the world. Gilani-Williams (2014:17) concurs that critical knowledge is conceptualised as knowledge that enables human beings to emancipate themselves from forms of domination through self-reflection. Grant and Humphries (2006:406) define CT as a

process that seeks to produce a particular kind of knowledge that seeks to realise an emancipatory interest, embedded specifically through a critique of consciousness and ideology.

Therefore, realisation of critical knowledge for emancipatory interest will assist in enhancing skills acquisition in EIC studies for youth empowerment, for employability through a concerted and collaborative facilitation process of skills transfer between lecturer-student training networks. My personal experience is that the assumption that many EIC students struggle to find employment remains an illusion for as long as we perceive the contracting economy as the reason for such high youth unemployment (Veillard 2021:1) Conversely, the argument stands that skills knowledge created by human beings through their experiences liberates and transforms and brings hope and empowerment for successful employability or entrepreneurship (Kwon 2021:2) . In the following sections, the principles of CER are outlined in detail and how they address the aim of the study.

2.9.1 CER is emancipatory

Critical Emancipatory Research (CER) is empowering. It changes people's lives and stations in life, liberates them from less useful practices and thoughts, and meets the needs of the real-life situation by enhancing skills acquisition in EIC studies for youth empowerment (Golac 2023:11). People wo are emancipated become independent and free as a result of intervention (Moleko, 2014:17). Dube and Hlalele (2018:77) concur that CER is critical in the academic space because it enables dialogue among lecturers and students on difficult electrical concepts. Therefore, if dialogue is underpinned by CER principles such as social justice, education and the learning environment become user-friendly and benefit all educational stakeholders and students, as co-researchers become active participants on matters aimed to change their lives (Pudelko &Tenzer 2023:2). Effectively, this conducive environment can be utilised for enhancing skills acquisition in EIC studies and emancipate youth for employability and entrepreneurship.

According to Michel, Cater and Varela (2009:398), active learning is a broadly inclusive term used to describe several models of instruction that hold students responsible for their learning. These researchers further avow that CER allows students to be active participants in the construction of knowledge through a range of classroom and

workshop activities that engages them with the learning material as they relate what they learn to their experiences. Hence, this strategy assists with knowledge transfer, which will ultimately promote application of theory to practice in the EIC workshop and accelerate enhancing of skills acquisition for empowerment. The discussion in this study will focus on each of the five objectives and criteria formulated. These constructs are used in Chapter 4 when making sense of the empirical data.

2.9.2 CER is transformative

CER is transformative research that came from the disability community, a political action that aimed to move the control of the research into the hands of the community being researched (Mertens, 2015:15). This is supported by Moleko (2014:18), who states that CER is founded upon anti-oppressive philosophy and is a lens through which to identify and change the root sources of oppression. Moleko (2014:22) further notes that the practice of more rigorous research that overtly intends to be liberating simply calls for a critical gaze that views current practice within a wider perspective, building theory in action and acting on theory to transform the life of previously disadvantaged EIC students. Hence, the transformative nature of CER will be used as a vehicle to enhance skills acquisition in EIC for youth empowerment through collaborative skills transfer training activities in the electrical workshops. In this study, CER empowered the co-researchers throughout the strategic action from the dictates of compulsion, tradition, precedent, habit, coercion and deception.

2.9.3 CER social orientation

Positivist research is often separated from its participants, whereas CER is a form of participatory action research that recognises the power imbalance in research and seeks to empower the participants of social inquiry (Noel, 2016:2). This statement is retorted by Moleko (2014:18), who indicates that CER is undeniably socially oriented and may be useful for exposing current socially oppressive structurers and tendencies and challenges. CER useful for creating knowledge structures that promote enhancing skills acquisition in EIC studies when deployed on the ground. Therefore, the study used the collaborative lecturer-student relationship as a building block to impact skills development as currently practised and endeavoured to address the needs of poor and marginalised youth in EIC studies, and to transform the marginalised community to contribute to improving the change programme.

2.9.4 Democratic character of CER

CER accommodates different views and ideas to a problem in a study and hence encourages the voices of co-researchers to be heard. As such, it is easy to obtain as many solutions as possible during the research (Dlamini, 2016:15). In line with the above statement, Caraballo, Lozenski, Lyiscott, and Morrell (2017:315) indicate that CER emphasises the promotion of power and the socio-political voice of marginalised groups via an iterative process of inquiry and action, while also democratising research to include the expertise of youth affected by it. (Kornbluh, Ozer, Carrie, Allen & Kirshner (2015:871) also concur that CER promotes collaboration among co-researchers without power relations that could not exist if it is not implemented. I adopted CER to free the co-researchers in discussing their ideas and to come up with solutions without fear of power, as they would be treated equally throughout the study. The collaboration between lecturer and student assisted the study to achieve its aim of enhancing skills acquisition in EIC studies.

2.10 Rhetoric

The acquisition of skills in EIC is considered important within CER since it forms a fundamental basis for building the relationship of mutual trust, humility and care (Qholosa, 2016:38). It is from this relationship that opportunities for skills transfer are nurtured between lecturer and student through a differentiated skills transfer approach. In EIC, this is where the student is introduced, for example, to the basic concept of operation of *electrical circuit,* which forms the foundation for effective learning, therefore enhancing training opportunities for skills acquisition in EIC for empowerment. Therefore, CER recognises indigenous people, their culture and their language in research, since it promotes the participants and co-researchers to take ownership of their problems and together work towards finding solutions as equal partners (Rathmell, Brown & Kilburg 2019:2)) . The purpose of equal treatment emanates from the human and humane natures of CT towards people, the speaking beings (Qholosa, 2016:38).

2.11 Relevance of CER to this Study

According to Moleko (2014:18), CER is founded upon anti-oppressive philosophy and is a lens through which to identify and change the root sources of inequality. Dlamini (2018:15) concurs that CER creates an enabling space for interaction among co-researchers to work on equal basis. Therefore, CER is transformative in nature and hence it will inspire and bring hope for enhancing skills acquisition in EIC studies for employability. Moleko (2014:22) notes that one of the objectives of CER as part of critical andragogy is to foster modes of enquiry that convert information into actions that address the social problems. Hence, CER can empower EIC students to be self-sufficient and employable through enhancement of skills acquisition.

2.12 Conclusion

This chapter discussed CER as the theoretical framework that underpins the study. As justification for its adoption, the chapter also discussed the origins and evolvement of CER as well as its objectives, the nature of reality, the role of the researcher, and the relationship between the researcher and the researched. I defined and discoursed the important operational concepts in the context of the study, namely enhancing skills acquisition in EIC studies. The next chapter will look at the methodology employed in the study.

CHAPTER 3: DATA GENERATION ON ENHANCING SKILLS ACQUISITION IN ELECTRICAL INFRASTRUCTURE CONSTRUCTION STUDIES

3.1 Introduction

In formulating a framework to enhance skills acquisition in EIC studies at institutions of higher education, the research design and methodology included Youth Participatory Action Research (YPAR) and its relevance to Critical Emancipatory Research (CER) as a paradigm to buttress the arguments of this study. The purpose of describing the research design and methodology used is for the reader to locate the study within the existing body of knowledge. This chapter explains how YPAR was used as the research method to generate data for the study. This chapter further outlines reasons behind the selection of YPAR as a methodology for generating data and how it was used to form the structure, identify priorities and come up with the plan of action to generate data. The chapter describes how the research team was formed and engagements done for brainstorming sessions. Discourses around strengths, weaknesses, opportunities and threats (SWOT) analysis are outlined in the chapter, the co-researchers identified, and their role defined in the context of the study. Methods of data analysis are briefly outlined as used in the next chapter. The following sections elucidate a description of the methodology used to generate data in this study.

3.2 Youth Participatory Action Research

The research design is qualitative due to the nature of data that were to be generated and the scope of the study. According to Carter and Little (2007:1), qualitative research means social research in which the researcher relies on textual data to analyse the data in its textual form with the aim of understanding human action. Therefore, the qualitative method considers the affected persons' attitudes, emotions and cultural background, while delving deeper into the meanings of their views (Dlamini:2015). Hence, the study adopted YPAR as the study methodology.

3.3 Historical Background of YPAR

British psychologist Kurt Lewin (1946, cited in Mirra & Rogers, 2016:3) first coined the phrase “action research” in the 1940s. It was later enhanced by current Participative Action Research PAR literature (with or without the youth component) and draws upon Latin American research traditions emerging in the 1970s that explicitly linked inquiry and knowledge production to social justice and action (Lenette 2022:26). YPAR is a youth-centred version of community-based participatory research (CBPR). Kornbluh, Ozer, Allen and Kirshner (2015:869) allude that YPAR emphasises promotion of the power and socio-political voice of marginalised groups through an iterative process of inquiry and action, while also democratising research to include the expertise of youth affected by it.

According to King (2013:17) YPAR as methodology is a transformative, goal-driven, structured and applied means of obtaining information and looks at participants not as passive providers of information but as active participants in the research process. Kornbluh et al. (2015:871) allude that YPAR emphasises the promotion of power and the socio-political voice of marginalised groups via an iterative process of inquiry and action, while also democratising research to include the expertise of youth affected by it. YPAR involves four stages of implementation, namely problem identification, data collection,

data analysis and planning (Kornbluh et al., 2015:870). YPAR promotes a discourse for power sharing between adults and youth who directly experience the educational contexts that scholars endeavour to understand and who deserve meaningful participation in the construction of knowledge. In the study context, such knowledge can guide policies and practices important to acquisition of skills in EIC for empowerment (Rodríguez & Brown, 2009:25). In this way, EIC students formed an integral part of the study and were given the opportunity to narrate their views on practical challenges they experience on a daily basis. Furthermore, YPAR assists to bridge the socio-cultural gap which projects the youth as the recipient of change without them being given opportunity to have a say on what actual change should entail and how it will be achieved (Cook & Krueger-Henney 2017:176) . EIC students, in particular, know and understand the pain of being jobless or unemployed, while the lecturer understands the dynamics of impact of technology on job creation and

sustainability. Therefore, YPAR seeks to bridge the gap between the knowledge provider and the knowledge recipient and to bring about social change by creating shared spaces where participating youth co-create research agendas and processes that are guided by their lived experiences.

Anyon, Bender, KennedY and Dechants (2018:1) define the YPAR approach according to three principles. First, YPAR is inquiry-based; topics of investigation are grounded in youths' lived experiences and concerns of unemployment, with the rationale that by voicing their perspectives they are going to better their own situation. Although they do not have a high status, their inclusion is significant, since youth will report experiences that they could share, and which are considered potentially useful for research. In YPAR, youth will be most successful when they feel a sense of engagement, which will impact responsiveness in their training and development.

Second, YPAR is participatory; youth are collaborators in the methodological and pedagogical process. YPAR allows for students to work with lecturers or other adult allies to critically reflect upon the socio-political forces influencing their lives, identify challenges and then develop an action plan to raise awareness or change a policy (Kornbluh et al., 2015:870). Hence, issues of oppression and marginalisation will be clearly raised and articulated, creating a discursive space for critically discussing matters without fear. This gave power to all EIC participants in the study. EIC students assisted the study by providing much-needed information pertaining to challenges faced by students for enhancing skills acquisition in EIC.

Finally, YPAR is transformative. The purpose of YPAR is to actively intervene in order to change knowledge and practices to improve the lives of EIC youth and their communities .

3.4 Relevance of YPAR to this Study

YPAR offers a curricular approach that addresses academic objectives while also supporting democratic education and the socio-political development of students (Kornbluh et al., 2015:868). YPAR brings young people together with adult researchers to identify, study and act on relevant social problems (Cammarota & Fine, 2008). Hence, YPAR forges cooperation, understanding and unity between young and old

and therefore creates a platform for youth to be active participants in solving social challenges.

The study was also couched by the CER framework, which aims at fostering emancipation and providing a platform on which to transform one's situation, by overcoming perceived dissatisfaction, alienation, ideological distortion and injustices of oppression and domination (Kemmis, 2001:97). PAR, in line with CER, also seeks to emancipate people by promoting engagement within the research project and allowing voices to be heard and respected (Dold 2011:512).

3.5 Use of YPAR in this Study

YPAR creates a discursive space for collaborative youth-adult partnership, such as lecturers "scaffolding" the work of the group in which power is shared. In this study, this allowed the EIC students (the youth) to exercise power in making choices while receiving the training and support for enhancing skills acquisition in EIC studies (Mirra & Rogers, 2016:3). Furthermore, YPAR challenges neoliberal common sense, as its proponents aim to enact a radical democratic vision that advances educational equity and social justice. YPAR invites youth to participate as united civic agents to deliberate about their experiences, concerns and insights to foster a more informed, intellectually engaged and inclusive public. YPAR involves a number of stages of implementation, namely problem identification, data collection, data analysis and planning (Figure 3.1) (Kornbluh et al., 2015:870). The co-researchers in this study worked together in each stage until the outcomes were achieved.

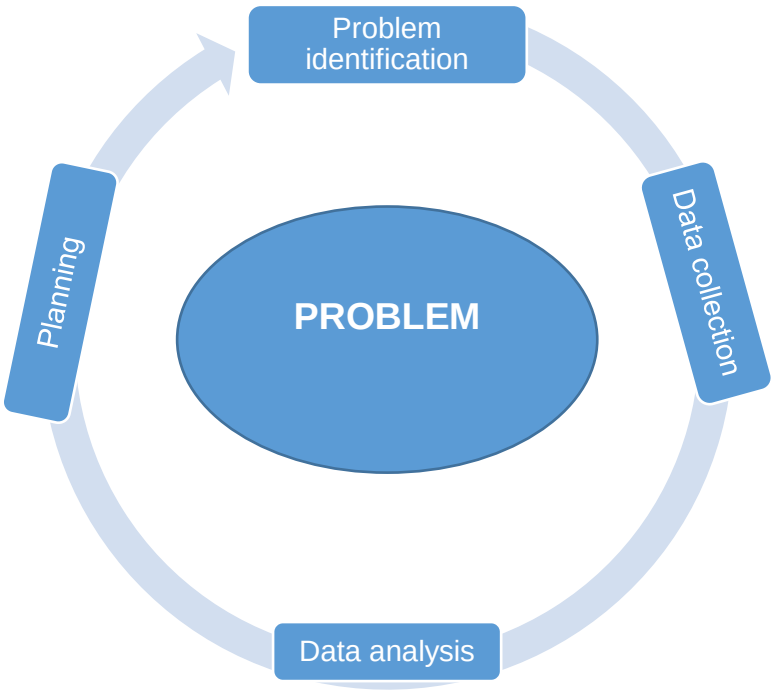


Figure 3.1: Stages of YPAR implementation

YPAR includes the youth, who directly experience the educational contexts that scholars endeavour to understand and deserve meaningful participation in the construction of knowledge that guides policies and practices important to their empowerment (Rodríguez & Brown, 2009:25).

Explicitly, the purpose of using YPAR in this study was to strengthen EIC youth self-efficacy and to inspire active youth engagement to inform social change. Kornbluh et al. (2015:870) averred that "*YPAR teaches young people that conditions of injustice are produced, not natural and are designed to privilege and oppress but are ultimately challengeable and thus changeable*". As such, the implementation of YPAR assisted the study to facilitate the acceleration of youth training and enhancement of skills acquisition for empowerment.

3.6 Unfolding of the Intervention

The following sections examine how the intervention unfolded, beginning with the conditions prior to the commencement of the intervention.

3.7 Conditions before the Commencement of the Intervention

Goldfields TVET College is a tertiary institution in Matjhabeng region in the northern Free State and specialises in engineering studies, including EIC, engineering and related design (ERD) and civil engineering. According to Selepe (2017:20), the TVET system was designed to create job opportunities for young people and adults to acquire skills, knowledge and values in EIC studies for employability. The challenge is that many of the factories in the area have closed down, depriving many EIC students of the opportunity for placement and absorption with industry. Ageing infrastructure at the college poses a serious challenge for training and skills development in the area. Other challenges include inadequate supply of instructional materials, and large class sizes, which poses accommodation problems for practical training in the workshops. Also included are inadequate training facilities and weak linkages with local industries for hands-on experience and WIL for students and WBE for lecturers for effective and efficient training purposes (Woyo, 2014). Final year EIC students who have the opportunity for placement to augment practically acquired skills are struggling to add industrial learning experience and adopt an employment culture due to lack of partnerships and college-industry relationships.

NCV students for EIC studies performed only college internally arranged assessment tasks, namely internal continuous assessment (ICASS) (theory) and integrated summative assessment task (ISAT) (practical) due to lack of placement with industry for practical work in accordance with the *National Policy on the Conduct, Administration and Management of the Assessment of the National Certificate (Vocational), 2007.* Interestingly, the policy places emphasis on the practical assessments vis-à-vis access to the workplace to integrate these two practical assessment tasks and establish a uniform standard across institutions.

Therefore, lack of WIL for industrial exposure poses a practical training gap that compromises holistic development of EIC graduates for employability. The Malaysian NDTS has proved that college-industry synergy provides effective opportunities to combine theory and practice, which allows trainees to learn in real-life situations and become part of a company and working culture (Adam, Rasul & Yassin, 2017:34; Euler, 2013:8; Igarashi & Acosta, 2018:2). These EIC training shortcomings coupled with low

employment of EIC graduates motivated me to realise the need to conduct this research.

3.8 Role of the Researcher

Ethics are generally considered to deal with beliefs regarding what is morally good or bad, right, or wrong, proper, or improper (Tsotetsi, 2013:22). Hence, as the researcher, I openly shared and discussed my role as the researcher and ethics imperatives pertinent to the study with the participants. For instance, participants were notified that the data would be used for research purposes only and that their identity would not be disclosed, they would remain anonymous, and that they were participating voluntarily in the study (Appendix B). Participants were informed that they may withdraw at any time during the course of the study if the situation was no longer suitable for their continued participation. Consent forms were made available to co-researchers in different languages spoken or known by the people residing around the selected TVET college, that is in Sesotho and English. Importantly, the team adopted both English and Sesotho for our discussions, but forms were made available in English only, since everyone contended with the suggestion. Consent letters and forms were signed by the co-researchers who participated in the study.

Qholosha (2016:111) emphasised the importance of study ownership by all participants irrespective of their social standing for participants to bring a different dimension and perspectives that would foster a sense of ownership of the project among the participants. Kornbluh et al. (2015:871) explained that YPAR emphasises the promotion of power and socio-political voice of marginalised groups via an iterative process of inquiry and action, while also democratising research to include the expertise of youth affected by it. Hence, collective inquiry buttressed on the relationship of trust assisted in acknowledging and demystifying the research process, and encouraged youth involvement while also acquiring knowledge of CER adopted in YPAR. As mentioned earlier, YPAR involves a number of stages of implementation, namely problem identification, data collection, data analysis and planning (Kornbluh et al., 2015:870).

3.9 Discussions with the Coordinating Team

I made preliminary visits to the research site, where I interacted closely with the head of department (HOD), lecturers and students identified to participate in the research project and with the two managers from the private sector. According to Kornbluh et al. (2015:870), YPAR involves a number of stages of implementation: planning, problem identification, data collection and data analysis.

In line with the YPAR stages of implementation, I held the first meeting for this research project at the engineering campus of Goldfields TVET College to establish a research team as part of planning. I coordinated the activities of the research team and one lecturer was appointed in the position of scribe. I also informed the team that our meetings would be recorded, while the scribe would be taking notes. The agenda was proposed and seconded as the only tool that would direct our meetings and the frequency thereof. (The agenda can be seen in Appendix C.) I humbly shared my experience, competence and expertise of having taught ESC, both theory and practice, at the college. All participants were present, but some appeared a little bit confused since it was the first time that the research team met.

During the meeting, one of the students asked if they were free to express their views, since they were not used to having meetings with such "*highly esteemed educated people*". He further indicated that he was overwhelmed by their presence. The student was indirectly supported by one EIC lecturer who raised concern that they were not relevant to the study since they were part of the EIC Programme but were not teaching practical classes in the workshops. She further indicated that such interventions were supposed to focus only on workshop lecturers and students and not them. Monitoring of students' practical knowledge took place only on campus, as students could not be placed in industry because of lack of partnerships and collaboration between the two entities. Recruitment of appropriately qualified EIC lecturers remains a stumbling block which also renders effective implementation of the Electrical Infrastructure Construction (EIC) Programme impossible. The timetable for practical work was available, but lack of properly qualified lecturers to implement the practical work was part of the challenges. The timetable was designed for students to have practical work for EIC for the whole week, which on its own impacted other subjects, since these will have to wait for three weeks to have their practical work while waiting for ESC to

complete their work. Practical subjects such as ECDE and WP also had to await their turn for practical classes to be conducted with the same students in the workshop.

Late supply of practical materials also contributed negatively to enhancing skills acquisition in EIC. Despite the efforts of recruitment of appropriately qualified EIC lecturers, placement of orders for materials to be delivered on time and the non-responsive practical timetable, all these challenges were exacerbated by the issue of Covid-19. The pandemic rendered many students unable to receive placement with industry due to stringent measures put in place by many companies or industry to try avoid the detrimental effect of the disease on their productivity and workforce alike.

The programme manager (HOD) who was part of the participants for the research project was conversant with research principles and YPAR in particular. She presented a brief lesson on YPAR to the team and explicitly elucidated the principles of YPAR relevant to what the team would be expected to do.

Campus Organogram

Figure 3.2 illustrates organogram of campus with titles of personnel-chain of command

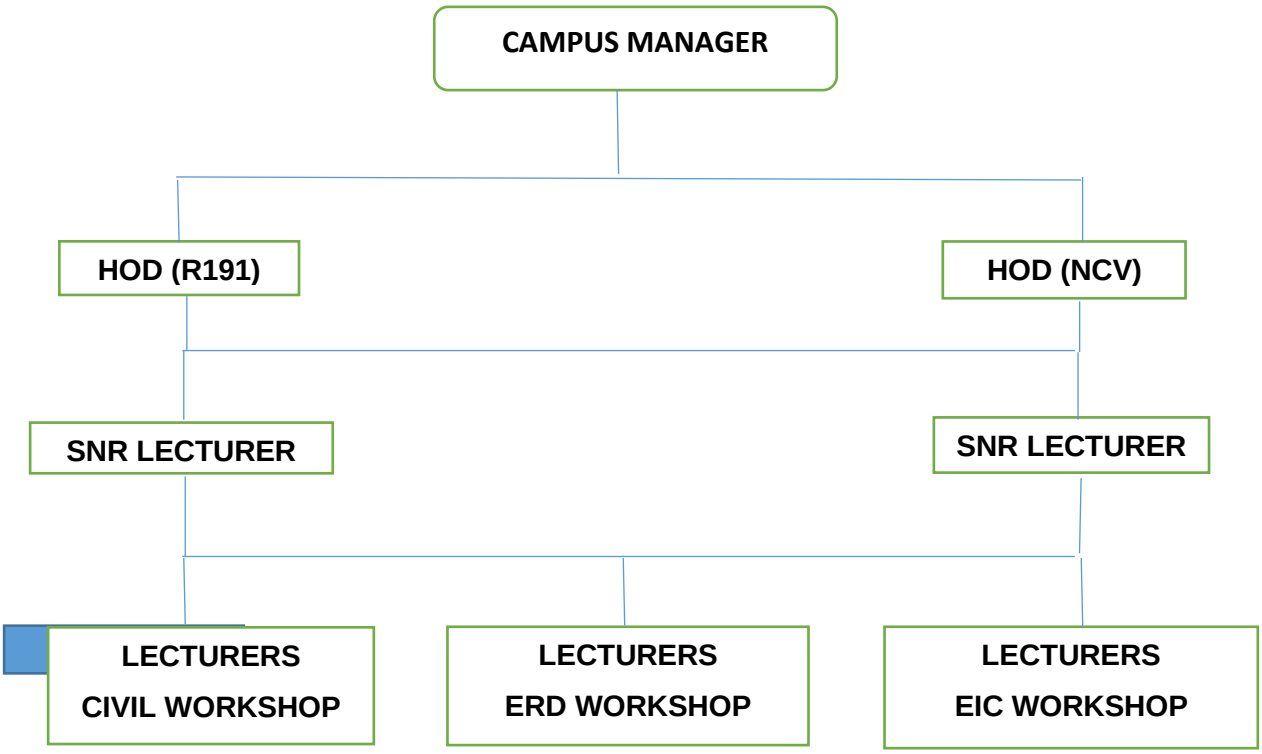


Figure 3.2: CAMPUS ORGANOGRAM

Structural form of unemployment for EIC studies. Figures 3.3–3.5 show the different levels of unemployment among 2019 TVET graduates in electrical, civil and mechanical engineering, respectively.

Employment descriptors:

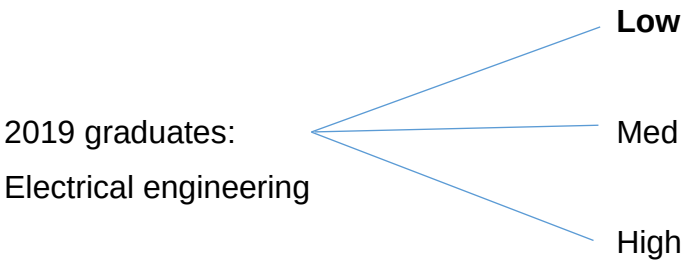


Figure 3.3: Unemployment among 2019 NCV graduates: Electrical engineering

As seen in Figure 3.3, unemployment is rife for 2019 EIC graduates compared to other engineering programmes and there is a need for skilled EIC graduates to drive development and build a viable economy. Skilled EIC graduates should contribute to creating much-needed jobs for a sustainable economy. The infrastructure of this area is ageing and needs to be revamped. In addition, most areas need electrification, which requires specialised EIC skills for, for example, installation of high mast lights for lighting at night and surveillance cameras for security.

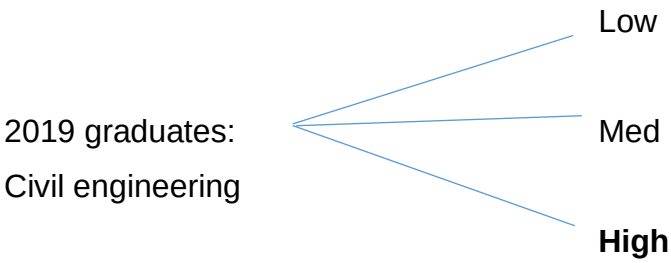
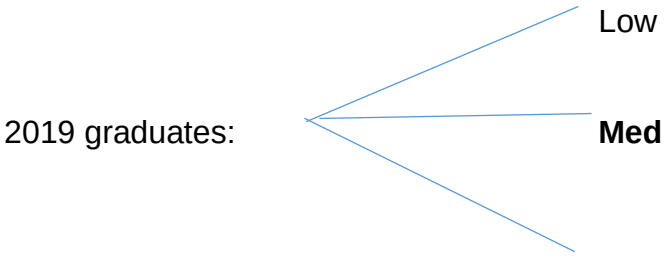


Figure 3.4: Unemployment among 2019 NCV graduates: Civil engineering

Unemployment among 2019 civil engineering graduates is very low. The majority of these graduates find employment after qualification, since new projects are developed in the area, for example, building of malls, construction of new roads etc.



Mechanical or ERD

High

Figure 3.5: Unemployment for 2019 NCV graduates: Mechanical engineering

Employment for 2019 ERD graduates is moderate, considering most ERD graduates are recruited to weld structurers and beams needed for new buildings erected in the area.

3.10 Research Site

The research site of this study is a TVET college in the Matjhabeng region in Lejweleputswa education district. Matjhabeng is a Sesotho name meaning “where all nations come together”. The place or area is predominantly Sesotho/English speaking and other local languages are also accommodated. ity is juxtaposition to urbanisation in that differentiating of to urban is directly characterised by lack of amenities for places which impinge on the provision of and access to quality education (Westlund 2019:3). The TVET college is a college and is situated in an enclave designed of past oppressive apartheid colonialism that directly advocated colonial policies of dispossession, resettlement and a systematic exclusion from opportunities (Hlalele, 2009:564). Key features include poverty, long distances to towns, poor conditions of roads to schools, and a lack of or limited access to information and communication technologies (ICTs).

The college is well known in Matjhabeng and neighbouring towns because it has served the mining community for different academic and practical programmes in engineering studies. The college offers two engineering programmes. The first is the Nated Programme (Report 191), a ten-week programme in engineering studies meant for individuals who are already employed but need an average N2 certificate to undergo a trade test to qualify as artisans. The second programme is the NCV Programme, also in engineering, a specialised and vocationally oriented training programme established to cater for youth who are *neither in employment nor in education or training* (NEET) and are at risk of becoming socially excluded.

3.11 Participant Profiling

According to Sargeant (2012), qualitative research participants are selected purposefully. I identified appropriate participants who would be best able to inform the research questions and enhance understanding of the phenomenon under study. Secondly, the number of participants depend on the number required to fully inform all-important elements of the phenomenon studied. This is supported by Kvale (1994): "*Interview so many subjects that you find out what you need to know*." For the study purposes, I thus selected 11 participants comprised of the following: six level 4 EIC students, one EIC workshop lecturer, one senior lecturer, one HOD, and two managers from industry and the district municipality. Participant profiling is important, since it assists in making a research project a success and produces the desirable research results.

In line with this idea, Kornbluh et al. (2015:871) explain that YPAR as an approach emphasises the promotion of power and socio-political voice of marginalised groups via an iterative process of inquiry and action, while also democratising research to include the expertise of youth affected by it. In this way, it makes it possible for the expert to extract information from a community and use it for purposes which will directly benefit that community (Moleko, 2014:66). Table 3.1 illustrates the profile of participants, including their contribution and experience.

Table 3.1: Profile of participants

Participants	Pseudonyms	Contribution	Experience
Six level 4 EIC students comprised of three males and three females	Zoro, Lerato, Phala,	The students are the people for whom the intervention is designed. The participating students were from the local Matjhabeng region and were enrolled in level 4 in EIC studies at the research site at the time of study. These students know the challenges faced by students in class and in the workshops. They were able to assist the study since they were placed for WBE training with industry.	Three to four years of experience in the NCV Programme.

One post level 1 lecturer/facilitator in EIC studies placed in the workshop		He met with students daily. He also knew the challenges that EIC students face in workshops.	Qualified electrical artisan with ten years' field experience.
One post level 2 EIC senior lecturer		Responsible for EIC department and supervisor of all practical workshops.	Twelve years' experience in management
One post level 3 HOD		Can motivate students and lecturers for EIC practical work in the workshop. Responsible for day-to-day divisional management at the college.	Extensive lecturing experience (10−20 years in the college sector).
One EIC manager from the local municipality		She was once a lecturer at the college but is now a manager at Matjhabeng Municipality. She can address the problems that EIC students face in the industry setup. Her knowledge and experience in EIC were crucial for the research project.	Ten years' lecturing experience and fifteen years' managerial experience.
One EIC manager from a local private EIC company		Has vast experience and specialises in computer-aided design (CAD) and unmanned aerial vehicles (UAVs) used for natural-disaster monitoring, border surveillance, emergency assistance, search and rescue missions and delivery of goods.	More than 20 years' experience in CAD and UAV projects.

3.12 Data Generation Procedures

In this section, I discuss the technique employed for analysis of the generated data, using Critical Discourse Analysis (CDA) and its linkage to CER as the theoretical framework couching this study. The nature of the study necessitated that I as the lead researcher actively interact with different stakeholders and co-researchers (lecturers, students, campus management and managers from municipality and industry) in order to source relevant data for the study. Qhosola (2004:133) emphasises the importance of gathering data that are relevant to the research study as raw as possible and to then use it to substantiate or nullify statements made in the continuum of the research. For

this purpose, data needed to be generated through deliberations and engagements that involved participants.

I believe that since conversations are regarded as conduit or means for understanding how human beings make sense of their own world, similarly, it is significant to note that such understanding can be reached provided that participation in matters that affect them is encouraged and tolerated. The meetings and brainstorming sessions of the research team were held in a common venue (study centre at the campus) allocated by the college. A common venue plays an important role to make all participants comfortable to participate fully.

The preparatory meeting agenda focused on team establishment, conceptualisation of the study, analysis of the situation in respect of the research site and development of the study action plan. The research team actively participated in the research and took ownership of the study and were motivated to identify and address issues of concern to the college community. I started by doing the SWOT analysis with the team to determine the strengths, weaknesses, opportunities and threats of the study to acquire an understanding of how best the study would succeed (Lohrke & Mazzei 2020:3). Hence, the strength of the research team depends on the ability of the lead researcher in collaboration with co-researchers to study the external and internal factors, analyse them and properly apply them is what differentiates them from other organisations. The research team must pursue aims and objectives of the study vigorously with a high sense of commitment and passion in order to achieve research outcomes.

3.13 SWOT Analysis

This section discusses the SWOT analysis of the research site as agreed with the team. The research team meeting was held on 15 April 2022 (agenda attached as Appendix C). I started by doing the SWOT analysis with the team to determine the strengths, weaknesses, opportunities, and threats of the study to acquire an understanding of how best the study were to succeed. The minutes of the previous meeting were read by the scribe of the team to reflect on the dialogues. The minutes were adopted as a true reflection of what transpired in our brainstorming session. Before we could start with our SWOT analysis, I was highly impressed by the team spirit exhibited by the research participants. One of the students mentioned the

importance of the involvement of students and lecturers in the same team to engage in the process of exchanging knowledge towards changing the situation. The HOD enthusiastically supported the research project and went further to say that she would like to adopt YPAR to address poor skills acquisition for EIC students that fell under her department. The active participation by all co-researchers, the prevalent team spirit, and the willingness to assist the study indicate the distinctive value of YPAR. The interaction espoused that YPAR emphasises the promotion of power and socio-political voice of marginalised groups via an iterative process of inquiry and action, while also democratising research to include the expertise of youth affected by it (Kornbluh et al., 2015:871).

According to Osita, Onyebuchi, and Justina (2014:1) the SWOT analysis is one of the numerous strategic planning tools that are used by organisations to ensure that there is a clear objective defined for the research project, and that all factors related to the effort, both positive and negative, are identified and addressed.The rationale for SWOT analysis was to set ourselves attainable goals, to identify priorities in order of significance, and to guide the activities of the participants. The SWOT analysis was also used to develop awareness among the team members pertaining to potential challenges that may arise and the needs to be addressed, which might have had a bearing on the study (Leigh 2010:115). Each of the SWOT components and its relevance to the study is discussed below.

3.13.1 Strengths

The research had several strengths. First, the team was comprised of lecturers with a vast knowledge of the TVET sector and some with industrial experience in EIC studies and students who were introduced to the NCV Programme starting from level 2 to level 4, which represents exit level. The experience of both the teachers and students assisted in providing insights into unemployment issues faced by young people and EIC students, in particular, as well as the relevant resources in helping to solve those issues. YPAR creates a discursive space for collaborative youth-adult partnership, such as lecturers “scaffolding” the work of the group in which power is shared, YPAR weakness is lack of formalized agreements between youth and researchers with regard to project and data management, YPAR emphasises the promotion of power and socio-political voice of marginalised groups via an iterative process of inquiry and

action, while also democratising research to include the expertise of youth affected by it , YPAR creates instability to adults since youth had to work collaboratively with adults to find the solution to societal challenges, and this is a threat to lecturers/adults.

Second, the principal of the research site where the lecturers and students were based gave permission for the use of the college premises or resources for the research team meetings. In addition, the HOD team member had a B.Ed. honours degree and was studying for her master's degree. As such, she was knowledgeable about research techniques and knew CER and was interested in YPAR.

Furthermore, EIC workshops for practical observation of students conducting their practical tasks were readily accessible. In addition, lecturers and students accepting invites to participate in the study was a success.

3.13.2 Weaknesses

The research also had several weaknesses. First, time available to conduct the study was limited and contributed as a weakness. The students had to attend to the project after school or classes in the afternoon. Administration and other academic activities also posed a challenge for both lecturers and students alike since they were also competing for time and attention, during the study co-researchers were not available after hours because of transport logistics. Planning, coordination, strategy implementation and progress review for collaborative problem-solving demand proper attention and time for effective implementation.

3.13.3 Opportunities

The team viewed this research initiative collaboration as an opportunity for empowerment. The lecturers and students were grateful to have a collaborative effort to make a change and enhance skills acquisition in EIC studies. The students were very happy to be involved in a transformational agenda meant to bring about perceived change in how teaching and learning is conducted for the provisioning of practical task processes in EIC workshops for enhancing skills acquisition in EIC studies. The lecturers cherished the opportunity to be part of a transitional process for meaningful change towards a shared vision on how knowledge and skills are transferred for empowerment of EIC students. The lecturers also indicated how effective curriculum implementation for practical tasks in EIC studies could be jointly achieved (theory and

practice) through a collaborative and transformative process of inclusivity outside the use of prescribed textbooks as the only means of knowledge transfer.

The opportunity for empowerment through YPAR projects is noteworthy. It involves the youth, who directly experience the educational contexts that scholars endeavour to understand and deserve meaningful participation in the construction of knowledge that guides policies and practices important to their empowerment (Rodríguez and Brown, 2009:25). The interaction between the lecturers and students as equal partners for the study indicates that YPAR is collaborative and transformative.

Furthermore, the participants also viewed the collaboration as having the potential to facilitate change, improve training practices and remedy other challenges generally encountered in enhancing skills acquisition in EIC studies.

3.13.4 Threats

A threat or challenge that all research participants and I experienced is that we had to cover personal expenses, such as travelling to the meetings. Communication costs, such as for phone calls and email, also contributed to uncovered expenses since the project was not funded.

Another threat was that I as the lead researcher might have wittingly or unwittingly been persuaded to play the role of an expert and dominate the team discussions and processes, which may relegate fellow co-researchers to assistant status. The primary researcher needs to be conscious of issues relating to unequal power relations and avoid the possibility of suppressing other voices in the group. Difficulty in maintaining a balance between the knowledge brought by the lead researcher and that brought by co-researchers poses a potential threat that may derail the study (Sekwena, 2016:61).

3.14 Instrumentation

The research instrument used in this study was brainstorming sessions with the co-researchers. Moleko (2014:72) cites Niemann and Brynard (2008), who emphasise the importance of listening to the participants' narratives and records during the team discussion process. They caution the researcher to obtain the permission or consent of participants before starting recordings, for ethical purposes. I requested permission of the participants before recording the sessions. For this purpose, we used audio

recorders to keep records of the proceedings. The recordings of meetings assisted me to revert to the recorded conversations where clarity was needed on the exact words or statements uttered by the co-researchers during conversations. This assisted in making it easier to collect data and to inform the study.

During the brainstorming session, for the co-researchers to engage fully in the discussions, the following question was asked: How can we enhance skills acquisition in EIC studies? This question was used as an ice breaker to make the co-researchers comfortable and to allow the process to flow unhindered.

3.15 Data Analysis

Representation of audio and visual data into written form is an interpretive process which involves making judgments and is therefore the first step in analysing data. In this section, I espouse the use of Critical Discourse Analysis (CDA) as a technique to analyse and interpret the generated data to gain a deeper understanding of data recorded during brainstorming sessions. CDA in the educational context has been used for analysing the societal and institutional context of learning and teaching and for examining the construction of knowledge in various classes.

The prime aim of CDA is to disclose the hidden ideological and power relations which are embedded in textual data (Rahimi & Sharififar, 2015:504). According to Fairclough (2013:9), critical social analysis can be understood as normative and explanatory critique concerned with both values and causes. The critical posture of CDA and its linkage to CER as the theoretical framework couching this study enabled me to achieve the study objectives. Bloor and Bloor (2007:2) explicate CDA as a cross-discipline that comprises the analysis of text and talk in almost all fields of the humanities and social sciences. Qhosola (2016:132) concurs that Critical Discourse Analysis CDA does not primarily aim to contribute to a specific discipline, paradigm, or discourse theory. Instead, it is motivated by pressing social issues, which it attempts to comprehend better through analysis of text and talk. For instance, in Sesotho, if someone says "*Ke wele*", it could mean one of the following: "I have fallen", "I am financially bankrupt" or "Do I come to see you". It is therefore important to understand what was said so that you analyse and interpret the phrase correctly in line with its intended meaning. Therefore, CDA help researchers to encode understanding and meaning in different

contexts, such as at textual, social and discursive levels (Moleko, 2014:76). CDA is also used to assist in analysing verbal exchanges and gestures captured on video camera during the process of data generation.

CDA is thus a type of discourse analysis that studies the manner in which social power abuses dominates, and the way in which inequality is permitted, reproduced and resisted by text and talk in the social and political context. Hence, this approach seeks to identify instances of discursive injustice in text and talk and indicates a form of resistance to unethical and unjust social power relations.

3.16 Ethical Considerations

Ethics are generally considered to deal with beliefs regarding what is morally good or bad, right or wrong, and proper or improper (Tsotetsi, 2013:22). Interested participants were asked to participate voluntarily and to that end signed consent forms for participation in this study (Appendix B). The co-researchers were assured that the data provided would be kept anonymous and stored safely for a period not exceeding six months and thereafter be destroyed as is normal practice in research (Moleko, 2014:75). Ethics imperatives pertinent to the study were discussed openly with the participants. For instance, participants were notified that they may withdraw at any time during the course of the study if the situation was no longer suitable for their continued participation, that the data would be used for research purposes only, and that their identity would not be disclosed, to mention but a few considerations. Consent forms were made available in Sesotho and English, as these languages are spoken or known by the people residing around the selected TVET college (Bloor & Bloor 2007:7) .

I received a letter of permission from the DHET to conduct the research at the research site (Appendix D). In addition, the study was cleared by the Ethics Committee of the University of Free State (Appendix A).

3.17 Conclusion

The chapter extensively discussed the research design and methodology used in this study with the aim to enhance skills acquisition in EIC studies. It further illustrated the relevance of YPAR for this study as well as its relevance to CER as the theoretical framework that supports the arguments. The data collection procedures and

arrangements were described as well as their applicability to CER as the theoretical framework.

CHAPTER 4: DATA PRESENTATION, ANALYSIS, INTERPRETATION, AND DISCUSSION OF FINDINGS ON ENHANCING SKILLS ACQUISITION IN EIC STUDIES

4.1 Introduction

This study sought to formulate a framework for enhancing skills acquisition in EIC studies for students at TVET colleges. This chapter presents, analyses, and interprets the data and discusses the findings. The data generated during the team meetings dictate the need for the design of the envisioned framework. Analysis of each of the categories of data was preceded by a skilled workforce, strategic partnerships, professional, timetabling, personal protective equipment (PPE), and employability, the information against which judgement will be made regarding category and/or the objectives. Secondly, it will give context before presentation of the data. Followed by three tiers of data analyses that flows from textual structure, discursive or cognitive structure and social structure. The interpretation of data follows based on the theoretical framework underpinning the conclusions as well as the findings that will be discussed before making the conclusions.

For this study, Critical Discourse Analysis (CDA) was used in line with Critical Emancipatory Research (CER) and Youth Participatory Action Research (YPAR) to interpret and analyse the data generated during the meetings. To systematise the discourse in this chapter, the five objectives of the study are used to organise the analysis in terms of the generated data.

Lastly, the indicators for the successful implementation of the strategy are discussed. This includes prioritised matching of theory with practice and adopting a competency-based teaching approach that would improve quality skills acquisition in EIC. Furthermore, the TVET sector should be responsive and relevant, and a dual system implemented for recording low unemployment rates among youth, where TVET programmes are embedded with programmes to promote employability or self-employment (see section 2.2).

4.2 Challenges Pertaining to Skills Acquisition in EIC

In this section, the various challenges highlighted during team meetings are categorised and comprehensively elucidated. These challenges emanated from the meetings, brainstorming sessions and forums held with the research team. These challenges were raised as some of the contributing factors to the high unemployment rate of EIC graduates. Therefore, the pronouncement to formulate the framework was therefore informed by these challenges.

4.2.1 Lack of a skilled workforce

The attraction and retention of a skilled workforce has emerged as the biggest challenge in human capital management and this phenomenon has also arisen in TVET colleges. TVET colleges face the struggle to retain a skilled workforce who can offer vocational training in EIC studies due to the competition for critical and scarce skills. However, the challenges experienced by TVET colleges to recruit and retain competent and talented lecturers are not unique to TVET colleges but are a global phenomenon (see section 2.2). In support, literature shows that the ability of a college to retain a skilled workforce depends on provisioning of incentives, attractive salaries, promotion, improved working conditions, employment equity rewards, succession planning, and skills development opportunities.

Empirical data collected during the deliberations support that lack of a skilled workforce hinders effective curriculum implementation. The co-researchers indicated that the majority of lecturing staff at the research site were academically qualified yet professionally not qualified for enhancing skills acquisition in EIC studies at the college.

During the first brainstorming session with the co-researchers, it was recorded that the college did not have a recruitment and retention plan for a skilled EIC workforce.

The following comments were captured from the first interactive conference with the co-researchers in May 2022:

> Mosa (frustrated): *Lecturers are given subjects that they are not good at, hence students not finishing their course due to failing.*
>
> Zoro (interjecting): *We need assistant lecturers to teach critical content.*

The utterances by these two co-researcher students collaborated to express their feelings of dissatisfaction. They felt hopeless. The students were not aware that curriculum matters or challenges are not confined to management and lecturers for solutions, but as an integral part of the stakeholders, students should also participate in the process of seeking solutions to the challenges.

In a consultation meeting with the senior education specialist (SES), Ms Dijo, and the education specialist (ES), Mr Ali, the two co-managers corroborated the challenges raised by the students when they alluded to lack of capacity by the current workforce in the EIC department. These two co-researchers commented as follows:

> Mr Ali (shrugging his shoulders and lowering his head): *Ntate X is the only qualified EIC artisan and is responsible for all the EIC practical tasks in the workshop.*
>
> Ms Dijo (supporting): *Our challenge is lecturers who do not have enough experience. Bana le field experience as artisans but ha bana le methodology and babang bana le qualifications tsa engineering from University of Technology empa habana teaching qualifications or field experience. Ha ole lecturer, you must do training. Lecturer must at least have PGCE* (postgraduate certificate in education) *and artisan qualifications.*

Based on the comments of the two co-researchers, it is clear that the issue of an academically qualified but professionally unqualified or professionally qualified but academically unqualified workforce poses a serious challenge to effective teaching and learning. Mr Ali's statement that "*Ntate X is the only qualified EIC artisan*" supports this claim. Apparently, the two co-researchers acknowledged that lecturers' qualification deficiencies have bearing on the retention of a skilled workforce that is proficient in EIC studies.

At the textual level of CDA, analysis also shows that the plight of the students is a critical point that reflects the skills deficiencies by EIC lecturers and its impact on curriculum implementation. This became clear when Mosa uttered that "*lecturers are given subjects that they are not good at, hence students not finishing their course due to failing.*" Mosa's statement is supported by Ms Dijo, who said: *"Our challenge is lecturers who do not have enough experience.*" Lecturers' lack of qualifications has a

negative impact on the students' aspirations for enhancing skills acquisition in EIC studies. The impact unfortunately creates a skills acquisition gap that will affect and disadvantage students from attaining skills needed for empowerment.

At cognitive or discursive level, it is anticipated that lecturers will improve their qualifications, since the SES knew about lecturers' qualification deficiencies. To achieve that objective, she must take an initiative and organise a developmental programme for all lecturers without professional or academic qualifications and get them to commit to the programme and thereafter monitor that they all attend such trainings.

At the social level, it surfaced that the impact of underqualified lecturers is certainly derailing teaching and learning. Students are taught more theory as opposed to exposing them to practical work, because the majority of the EIC workforce is knowledgeable in theory but not practice. This is backed by Ms Dijo's claim: "*Lecturer must at least have PGCE and artisan qualifications."* PGCE is a teaching qualification that prepares student teachers for the teaching profession (MRTEQ, 2015). Minimum requirements for teacher education qualification The college will produce graduates with skills that are not needed by industry and therefore contribute to the number of unemployable EIC graduates. Currently, many people, including college graduates, are not employable due to the kind of training they experienced at the hands of an underqualified workforce at the learning institution. These graduates have now formed a community of unemployable graduates, some of whom have resorted to doing menial work at supermarkets to make ends meet.

The use of CER and YPAR in the study opened up a platform for empowering the co-researchers and bringing about change (see section 2.2). Using CER together with YPAR exposed the practice of producing unskilled graduates. This practice promotes the continuation of imbalances, where the unskilled workforce is in the majority and the skilled workforce in the minority and will dominate and occupy senior positions. This system will not be sustainable for EIC studies, since those in senior positions will not be replaceable due to the production of an underqualified workforce.

4.2.2 Lack of strategic partnerships

Strategic partnerships or collaborations are about empowerment. It takes collaborations and a coordinated approach to respond to the needs of industry and that

of the community. Lack of college-industry partnerships or collaborations could have a detrimental effect as far as enhancing skills acquisition in EIC is concerned, for the following reasons. Placement opportunity for lecturers and students for WBE and WIL, respectively, will be lost. Provisioning of a responsive curriculum that ties industry to college to meet the needs of a developmental state will not be realised. Furthermore, technology evolves very fast; hence, upskilling and reskilling of lecturers in modern technology are very critical for enhancing skills acquisition in EIC studies and will be put on hold (see section 2.2).

The benefits of establishing a strategic partnership between college and industry will benefit college by reducing unemployment and competition for a skilled workforce. Industry experts will be seconded to college and that will make the curriculum responsive to the needs of industry, communities and the country. Furthermore, industry will supply college with the infrastructure and machinery needed for modernisation and holistic development of the college structure.

During the forum in which these challenges were discussed, the co-researchers evidently identified lack of partnerships as a challenge that could hamper successful implementation of the curriculum for enhancing skills acquisition in EIC. In the meeting, the SES and workshop lecturer, Mr X, made the following remarks:

> Mr X: *We are struggling with students and lecturers' placement since the inception of Covid-19 pandemic. Companies used to come for our students for placements and job opportunities.*
>
> Ms Dijo (supporting): *Another challenge is lack of partnerships. Ngwana ho batlahala hore a phele seo a se rutwang.*

The establishment of college-industry partnerships served as a motivation for many students enrolled for EIC studies because they hoped and expected to get opportunities for employment with companies collaborating with colleges. Analysing with CDA, at textual level, the SES averred: "*Ngwana ho batlahala hore a phele seo a se rutwang,*" which literally translates to the importance of supporting EIC students by exposing them to practical experimentation that may change the course of their lives. In that way, students are provided an opportunity to acquire skills and also demonstrate gained competencies through practical engagements.

At the cognitive or discursive level, management thought that the solution for placement or employability depends on the establishment of collaborations with industries, whereafter jobs or placements will be created. This was supported by Ms Dijo: "*Another challenge is lack of partnerships.*" However, placement or employability is not an easy task, because collaborations without following up or strengthening the college-industry relationship would not create jobs. Commitment and strong linkages with industry lead to acquisition of skills needed for employability.

At the social level, a point highlighted was exposure of the college workforce and students to modern technology for re-orientation and reskilling in the ever-changing world of technology. This was supported by Ms Dijo concurring that: "*Companies used to come for our students for placements*". In essence, the industry-college partnership contributed immensely to a responsive curriculum that contributes to the socio-economic improvement of the college community. This is supported by literature (see section 2.2). Collaboration also serves to boost the student morale and generate hope for placement or employability. In addition, it helps to revolutionise the training of students by exposing them to the new technological trends.

4.2.3 Professionally unqualified lecturers

The co-researchers were aware that lack of professionally qualified lecturers will hinder successful implementation of the curriculum for enhancing skills acquisition in EIC. Practically, it is befitting for qualified lecturers in EIC to be well equipped with the requisite practical skills and competence to professionally utilise teaching facilities available in the workshop to make the lesson content understandable, concrete, practical, real and interesting to students (see section 2.2). At the discursive level, the co-researchers during the forum raised the point of operational challenges which exposes a serious gap for curriculum implementation due to lack of professionally qualified lecturers capable of teaching theory and practical work for enhancing EIC skills acquisition. During the deliberations, the co-researchers highlighted the following:

> Zoro (frustrated): *Lecturers are teaching more theory than practical.*
>
> Phala (supporting): *There is a lack of practical; they are focusing on theory.*

These students were concerned to be taught more theory at the expense of practical work needed for their competence in their field of choice. The students had observed

that there were many students who had completed their studies but remained unemployed because of the kind of training they received at the college. Phala supported this by emphasising the lack of practical work and focus on theory. The students' concerns were corroborated by Miss Bee, the lecturer, who also raised the same concern during our separate consultation in class.

> Miss Bee (shaking her head): *Currently, we teach more theory than practical; 60% theory and 40% practical. I would love this research to make us aware, because here at college we offer more theory than practical.*

Ms Dijo, the SES, supported this by saying:

> Ms Dijo (supporting): *Our challenge is lecturers who do not have enough experience. Bana le field experience as artisans but ha bana le methodology and babang bana le qualifications tsa engineering from University of Technology empa habana teaching qualifications or field experience. Ha ole lecturer, you must do training. Lecturer must at least have PGCE and artisan qualifications.*

Analysis at the textual level shows that professional qualifications are important for teaching the EIC Programme, with the aim of imparting and enhancing critical skills acquisition in EIC studies. This assertion was supported by the SES: "*Lecturer must at least have PGCE and artisan qualifications.*" The combined knowledge of theory and practice forms the nexus for advancing skills transfer for empowering EIC students.

At discursive or cognitive level, the SES thought it safer to teach more theory due to lack of a skilled workforce. This practice is informed by her thinking that more theory will mitigate deficiencies of lecturer proficiency for practical skills, forgetting that students' competencies are demonstrated by their ability to solve EIC practical challenges.

At the social level, analysis shows that as much as theory is important, the practical knowledge supersedes theory in that the lack of competence by individual students demonstrates lack in the mastery of practical work. Therefore, lecturers' professional qualifications form a strong base from upon which students should gain their skills for employability. In that regard, the competence of the EIC graduate is dependent on the mastery of the lecturer.

Analysis at the discursive or cognitive level shows the perspective expressed by students, Miss Bee and the SES suggests turbulence nor anomaly. The students thought that if they could get someone who is professionally qualified in EIC, then they would be able to learn and be prepared for the world of work. This is supported by Phala's statement that "*there is a lack of practical; they are focusing on theory*". The students' utterances were supported by Miss Bee, who was also frustrated by the practice and uttered "*we teach more theory than practical; 60% theory and 40% practical*". However, Fairclough (1995b) avers that *"the economics of an institution is an important determinant of its practices and its texts"*. Judging by the acknowledgement of the SES, it therefore indicates that the challenge had been there for a long time. Pragmatically, it was a norm for lecturers at the college to teach more theory to mitigate lack of practical work. Furthermore, the SES' comment, "*Our challenge is lecturers who do not have enough experience,*" implicitly justifies the students' complaints that the practice to teach more theory than practical work hinders progress for empowerment. Furthermore, Ms Dijo was emotional when saying: "*Ha ole lecturer, you must do training. A lecturer must at least have PGCE and artisan qualifications.*" This statement justifies that lecturers were requested to improve their qualifications but that nothing happened.

CER promotes knowledge that enables human beings to emancipate themselves from forms of domination. In this study, CER and YPAR created a platform for co-researchers to voice their frustrations about skills acquisition in EIC studies for their empowerment, for improved employability through a concerted and collaborative facilitation process of skills transfer through lecturer-student training networks.

4.2.4 Timetabling not addressing the needs

Skills acquisition is one dedicated aspect of teaching and learning and knowledge transfer requires provisioning of enough time for practical exposure in the workshop (see section 2.2). Generally, a functional timetable should be arranged such that all lecturers' subjects are well allocated and all student groupings given enough time for theory and exposure to practical work in the workshops. The current timetable was organised along a five-day cycle and all practical work allocated to one lecturer teaching practical work for all EIC optional subjects. The NCV curriculum stipulates that students should be taught more practical work than theory (quantified at 70%

practical and 30% theory) to meet the requirements for producing a skilled workforce capable of contributing to building the economy of the country.

During the first forum for co-researchers, two students and the lecturer for electrical principle and practice raised their dissatisfaction about the timetabling. The following comments were made by the two EIC students (Zoro and Lerato) and were supported by the EPP lecturer, Miss Bee, during the discussion:

> Zoro (complaining): *Timetable is not being effective and it is unfair to us; we only go to the workshops once in a month.*
>
> Lerato (also complaining): *You know, if you have been to the workshop this week, by the time you get a second chance to attend workshop practically, you have already forgotten what you learnt the previous time, and that is why most of the students decide to stay away from workshops.*
>
> Miss Bee (shaking her head and supporting): *Currently, we teach more theory than practical; 60% theory and 40% practical due to this timetabling. I would love this research to make us aware, because here at our college we teach more theory than practical.*

Based on the utterances of the two students and supported by the lecturer, it is evident that teaching and learning is not happening systematically because of the arrangement of the timetabling Obviously, the students were frustrated and demoralised by the timetabling schedule since it affected their workshop attendance for practical training. It takes a skilled workforce to establish a fully functional timetable and those skills are lacking with the current workforce.

Subsequent to the first discussion session, a second consultation session ensued with the workshop lecturer (Mr X) and the senior education specialist (Ms Dijo). In line with FAI principles, this session assisted to clarify the stance adopted by SMT for curriculum management at the campus. The following excerpts are from the lecturer and the SES:

> Mr X (deeply concerned): *I am experiencing the problem of subject clashes at the workshops. Students come to the workshops in numbers for different subject practical at the same time. Unfortunately, I can't accommodate all students, so I had to chase most of the students away and this affects attendance in the workshops.*

Mr Ali (conceding): *We have a challenge of timetable. Our timetable is not effective since it run on five-day cycle and this makes it difficult for students to have enough practical time in the workshop, since our theory is separated from practical. For instance: Day 1 – EPP, Day 2 – ECDE, Day 3 – Practical and Day 4 – Practical. If we can change our timetable to run on six-day cycle, as this will assist with students getting more time for practical on a 70% practical and 30% theory terms. However, our challenge is that we do not have skilled manpower to take charge of the EIC practical in workshops. Majority of our EIC lecturing staff is academically qualified, when we need professionally qualified artisan to take responsibility in the EIC workshops.*

Ms Dijo (supporting): *We resorted to a 60% theory and 40% practical, because we do not have enough skilled workforce to take charge of practical in the workshops. If we can change our timetable to run on six-day cycle, as this will assist with students getting more time for practical on a 70% practical and 30% theory terms.*

SES (supporting): *If a six-day cycle is adopted, it will assist to give students more time for practical and will also assist with retention and dropouts, for students are demotivated to attend classes; they already know what will happen in that fundamental classroom (theory).*

Judging by the co-researchers' utterances, the SES corroborated the students and the ES. Such assertions make it obvious that the timetabling in its current form did not assist curriculum implementation. Mr X's statement supports this: "*I am experiencing subject clashes at the workshops. Students come to the workshops in numbers for different practical subjects at the same time.*" As a result, the management, lecturing staff and students are frustrated by subject clashes experienced during teaching and learning periods at the college. Hence, a skilled workforce will be able to organise a functional timetable. Based on the utterances of the co-researchers and applying discursive or cognitive discourse analysis, it is important to note the premise of the SES that most of the lecturers do not have the capacity or expertise to organise a functional timetable. This is further exacerbated by the SES's decision to effect a compromised 60% theory–40% practical approach for fear that most of her lecturers were not affluent in the practical component of the subjects, thus her prioritisation of

lecturers' safety and that of students. Therefore, her thinking influenced her actions in the adoption of a 60%–40% timetabling approach. However, the SES was still aware of her workforce shortfalls and instead of arranging a developmental plan to train the lecturers, she opted for a six-day cycle that would not solve her challenges of enhancing skills acquisition. Skills acquisition is at the epicentre of socio-economic empowerment of marginalised youth and EIC graduates, in particular.

At social level, -extrapolated to say what kind of graduates the college is going to produce, graduates who are more theory inclined who will pose a challenge for employability since such graduates would not be able to do practical tasks.

The SMT has the obligation to train lecturers to do practical courses that will expose them to practical skills needed for enhancing skills acquisition in EIC studies. Therefore, in the absence of a fully functional or effective timetable, teaching and learning and, most importantly, practical work will be compromised and that causes frustration for management, lecturers and students. As a result of bad timetabling, the students are also frustrated and have started bunking classes under the pretext of a clashing timetable. From an academic perspective, the timetable represents a master plan that assists with the coordination of all academic activities on the campus.

At textual level, FAI was utilised seek better clarity. The co-researchers and SES were aware that most lecturers did not have the proper qualifications needed for effective implementation of the EIC curriculum. In addition, the workshop lecturer was overloaded as a result of too many groups scheduled for practical at the same time.

If it was not for the transformative nature of CER, it would not have been possible for management, lecturers and students to come together in the same room and discuss issues of curriculum importance as equals free from intimidation. YPAR includes the youth, who directly experience the educational contexts that scholars endeavour to understand and deserve meaningful participation in the construction of solutions that guide policies and practices important to their empowerment. The absence of a skilled workforce capable of organising a clear working timetable will perpetuate a system that produces graduates with questionable qualifications or unemployable qualified graduates.

4.2.5 Lack of personal protective equipment

The training of EIC students for practical knowledge in the workshop requires that the workshop should comply with the Occupational Health and Safety Act 85 of 1993 (OHS) (South Africa. 1993), which intends to provide:

- *for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery;*
- *the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work.* (See section 2.2)

PPE is protective gear which includes the overalls, safety boots, gloves and hardhats that individuals entering the workshop need to wear at all times.

The following data were generated by co-researchers in a forum during our first meeting. Two students registered their plight as follows:

> Phala (boldly, shaking her head): *There is lack of PPE for students.*
>
> Lerato (supporting): *Lack of workshop tools and materials.*

The two students felt neglected and powerless. Their expectations were that they would be provided with the safety apparel and tools needed for practising in the workshops. The OHS (South Africa. 1993) stipulates that every person entering the workshop for work should be provided safety apparel and that tools should also be available for training purposes. The workshop lecturer and SES also engaged, albeit separately, on the issues pertaining to availability and provisioning of PPE for workshop access, workshop tools and equipment for students. They responded as follows:

> Mr X: *Students are provided with new overalls (two pieces) and new pair of quality boots for safety. The students are expected to keep the provided items for a minimum period of two years. However, the students abuse the safety apparels, hence they end up not having access for teaching and learning in the workshop due to no availability of PPE.*
>
> Mr X. (On tools and workshop equipment): *College provides quality tools and other workshop equipment like EIC measuring instruments for students to be*

able to practise. I issue PPE at the beginning of the year and tools are made available before the start of the practical tasks in the workshop and students are expected to sign for equipment issued. However, some students do not return the stock. As a result, we lose a lot of tools to students, who remove them from the workshop.

SES (supporting): *Safety apparels and tools are very costly and students are not aware of the replacement cost implications of the items and college do not have budget. Students are expected to keep PPE safe at all times. Some students are very negligent and do not look after their PPE and in so doing abuse these items. Procurement is a serious hindrance as well; you place requisitions but they are not fulfilled. Lack of support from upstairs.*

Phala shaking his head reflected a strong dissatisfaction and frustration of not being supplied with PPE as anticipated. Furthermore, the students felt aggrieved due to lack of workshop tools. Students lacked understanding of the economics of budgeting. Some of the missing items are actually taken or removed by students from the workshop, forgetting that it will deprive other students access to tools of trade meant for their practical training.

At textual level, analysis shows that the students were helpless in that they are deliberately denied safety apparel for no apparent reasons. Students did not understand the cost of procuring PPE. This statement is supported by the SES: "*Safety apparels and tools are very costly and students are not aware of the replacement cost".* It is clear that PPE is issued for use during practical training in the workshop, but students could be using it for other reasons outside the workshop. The lack of workshop tools and material could be referring to ageing and obsolete infrastructure or machinery in the workshop. Also, evident from the comments of the SES is that the campus management team (CMT) faces procurement challenges from senior management, who, according to her, do not provide support for procurement. Equally, the students were not aware of why they could not get PPE and workshop tools. That perception thus creates the wrong impression that PPE can be easily replaced or reissued once worn out or lost since there is a budget for such at the college.

At cognitive or discursive level, the students did not think about the cost implications for procuring PPE and replacing workshop tools and equipment. As a result, their

actions are influenced by their thinking. If the reason for non-provision of these items is explained clearly to students, that may assist to change their perceptions and attitudes towards management and the demand for PPE may decrease as well.

At social level, provisioning of PPE is meant to protect students from being exposed to harm while working in the workshop. Equally, the expectation is that students should take care of the PPE and not abuse it. PPE should be used aesthetically to motivate other students to have pride in their uniform. Students should also realise that the expected lifespan of PPE is at least two years. This is in line with the utterances of Mr X: *"Some students are very negligent and do not look after their PPE and in so doing abuse these items."* Issuing of PPE to third year students remains the prerogative of senior management to make budget available for such and to ensure that students are treated equally. Contrarily, denying students PPE and access to workshop tools and materials is tantamount to denying them free access to teaching and learning.

CER is democratic; hence, the students were consulted as equal partners to share valuable information of why they are not provided with PPE and the financial impact of replacing workshop tools. Following democratic processes will always ensure that issues of conflict or misunderstanding are resolved amicably.

4.2.6 Unemployment

South Africa has a high rate of unemployment, affecting the majority of people, including adults and youth and EIC graduates from the college (see section 1.1). Although the purpose of TVET colleges is to equip students with the technical and professional skills needed for socio-economic emancipation, the majority of TVET graduates are still without employment. Therefore, these cohorts of students end up doing manual jobs for survival (see section 2.2). The need for competent EIC graduates with exceptional EIC skills for the economic development of the country is very critical. Hence, the integration of theoretical and practical knowledge and infused workplace learning by a skilled workforce is significant for producing competent EIC graduates capable of creating work or who are employees of choice.

Narrowly defined for this study, unemployment refers either to a community's aggregate unemployment rate or an individual's personal unemployment experience (see section 2.2). Normally, unemployment deprives individual EIC graduates from opportunities to secure and retain fulfilling work within a specified period. Various

factors contribute to unemployment. This includes slow economic growth, which slows the demand for labour and contributes towards unemployment rates; and employers considering skills attributes that they believe will be necessary for the effective future functioning of their organisation. The research site utilises lecturing staff without professional EIC qualifications for training of EIC students. This practice contributes to the production of unemployable graduates or graduates without adequate skills for employability. In contrast, the levels of employment improve with improvement in economic conditions.

The effect of unemployment can be noticed in the annual unemployment statistical figures released by the Auditor-General of South Africa. Unemployment exists when individuals are subjected to psychological distress associated with a decline in life satisfaction, contributing to the risks for mood disorder and substance abuse. Socially, unemployment leads to stigmatisation, classification, unfair treatment and social marginalisation. The socio-economic implications of unemployment normally result in social exclusion, protests, increased crime rates and morbidity (see section 2.2).

The above evidence of the impact of unemployment was collected during the interactive sessions with co-researchers. The following three students alluded to the following:

> Sefako (frustrated): *We are not getting jobs after finishing with the courses.*
>
> Phala (interjecting): *Management must help us to get jobs after completion of our courses.*
>
> Zoro (cautioning): *Consider the option of PLC (programmable logic controller) and RET (renewable energy technology) Programme.*

Based on the comments of the three students, it makes sense to note that while the students are still studying at the college, they are also worried about whether they will be able to get employment after they finish their studies. Phala confirmed this: "*Management must help us to get jobs after completion of our courses*." Without assistance from management, the students feel helpless and that promotes a dependency condition.

In a different engagement session, the workshop lecturer and SES also responded to the distressing issue of students' placement for employment after finishing their studies. Below are their responses:

> Mr X (responding): *We are aware of students' placement challenges and we are trying our best to assist students with placement at companies.*
>
> Ms Dijo (clarifying concerns): *College through our placement office have since re-established our collaborations and linkages with Eskom company and they are willing to take our students for WIL.*

The co-researchers' reports above emphasise that unemployment of youth from TVET is a cumbersome matter. Zoro, though interjecting, also cautioned for alternative empowerment solutions, mentioning that there was still an option for students to consider the PLC and RET Programme. The students considering alternative training programmes demonstrates visionary leadership. It supports the notion that these intervention proposals by students are in line with the transformative nature of YPAR.

At textual level, analysis suggests that students face challenges of unemployment, though management has the authority and power to make a difference in the students' lives. This is supported by Phala's statement that management must help them get better jobs after completion of their courses. It is clear that in times of need, students look up to management for intervention and assistance.

At the cognitive or discursive level, college management depends on partnerships with industry as the only solution to employability challenges. Management forgets that it takes hard work, commitment and effort to strengthen partnerships and convince industry to stay in the relationship. This is supported by Mr X: "*We are aware of students' placement challenges and we are trying our best to assist students with placement at companies.*"

At social level, analysis clearly depicts that students depend more on management whenever they face challenges for assistance. This is supported by Sefako's statement that they do not get jobs after finishing with the courses. Students do not want to struggle; they attend the college to obtain qualifications that will enable them to be employable or to create their own employment. Students do not want to experience

unemployment, stigmatisation and all forms of discrimination because of their socio-economic status.

Therefore, CER and YPAR assisted in providing insights into unemployment issues faced by youth and EIC students in particular and how their lives can be transformed. For transformation to take place, lecturers and students should work together to find a common solution for their challenges as the tenants of CER.

4.3 Solutions to the Challenges Pertaining to Skills Acquisition in ECI Studies

This section focuses on the efforts needed to address the identified challenges. The section discusses the mechanisms that were used in an endeavour to address the challenges.

4.3.1 Availability of a skilled workforce

The attraction and retention of a skilled workforce forms the biggest solution in human capital management towards enhancing skills acquisition in EIC studies (see section 2.2). Professionally qualified lecturers in EIC were recruited from the skills campus of the college as part of the strategy to retain a skilled workforce. The SES was very happy to acquire the services of the new staff members since the college had struggled to recruit qualified and experienced lecturers proficient in EIC studies. The SES introduced the lecturers to the general lecturing staff. The mood of all staff members was very positive now that they had new members to alleviate their challenges.

The SES was very happy to introduce the new members and had this to say:

> *Ms Dijo: One of the colleges in our province when they were struggling to get competent mathematics lecturers decided to recruit last year's mathematics students from the university and it worked. Today, I am happy to share with you our new members who will lecture EIC together with [Mr X]. If we were not successful with this recruitment, we must be assisted with funding from SETAs (sector education and training authority) in order for upskilling of lecturers.*

Below are the responses of some of the co-researchers in response to Ms Dijo's news.

Mr Ali (supporting): *I am also happy we managed to recruit two former students qualified as electrical artisans from our skills campus; they join us in EIC. They seem to know what they do.*

Miss Bee (happy): *We are excited to have lecturers like these ones lecturing in our college; they are keen to lecture our students. We pray that they do not leave our college like others who left without notice.*

The weakness of having only one qualified EIC lecturer changed to a strength, since the college will now be able to implement the curriculum as planned. This development came as a relief for Mr X, who was overloaded with practical work. The relief comes as a solution to the challenges experienced by EIC students.

At textual level, CDA shows that it is possible to create a culture of teaching and learning for skills transfer by employing talented professionals who are able to take responsibility for programme implementation and practical in the workshops.

At the discursive or cognitive level, the SES had thought of an alternative plan for the retraining and reskilling of the current lecturers who are academically qualified but professionally unqualified in the quest to plug the skills gap. These new appointees will also assist with the quality delivery of the practical component of the programme. This is supported by the SES, who uttered: "*We must be assisted with funding from SETAs in order for upskilling of lecturers."* This plan is good as a medium- to long-term solution, since it will assist to bring about stability in the department.

At social level, a well-led organisation will ensure that professionally qualified lecturers are recruited, retained and tasked to ensure the transfer of much-needed skills in a well-coordinated plan towards enhancing skills acquisition in EIC studies. Lecturer proficiency in EIC will also help to meet the diverse needs of students and industry and therefore increase the prospects of producing employable employees or entrepreneurs capable of creating jobs (see section 2.2).

The issue of collaboration between students and management as highlighted by the co-researchers demonstrates that both YPAR and CER promote social justice in generating knowledge that can be used to address the practical concerns of local communities.

4.3.2 Availability of strategic partnerships

The establishment of college-industry partnerships or collaborations is an effective solution to the need of EIC students for placement while preparing them for employability. There are various benefits of industry-college partnerships. EIC students will be afforded workplace experiential opportunities by introducing them to the electrical design process, getting them involved in problem-solving through real work projects, and letting them use electrical tools and devices. Through these, their learning is made more active and experiential from the very beginning of their study (see section 2.2). Second, placement opportunities for lecturers and students with industry for WBE and WIL, respectively, has helped with the provisioning of a responsive curriculum that ties industry to college to meet the needs of a developmental (South Africa. DHET, 2012).

In the first meeting with co-researchers, Zoro posited that the college should consider introduction of Programmable Logic Control (PLC) and RET as a means to improve employability.

> Zoro: *Consider the option of PLC and RET Programme.*

In the follow-up meeting with the two managers, this proposal was supported by Mr Koos, a manager at Computer Aided Design (CAD) Institute of Technology in the Free State province:

> Mr Koos: *One of the critical skills needed for enhancing skills acquisition for electricians in the field is knowledge of PLC Programme for electrical design. There is a special programme for electrical design and this programme will assist with simulation of the electrical installation or project before actual job is done and that will assist to eliminate problems before installation and also save time. PLC or CAD will also assist with design, automated-manufacturing, electrical installations, though it needs an intensive training and it may also be expensive to procure. I am willing to assist with the training of your lecturers in PLC and this will require that we should sign a MOU with the college so that we can start. MOU was signed and training of EIC lecturing staff conducted for PLC and that initiative assisted with strengthening of relations with industry.*

The introduction of PLC as corroborated by the student and the manager signifies an effective solution for empowering lecturers with critical skills needed for enhancing skills acquisition.

Ms Diepollo (Manager 2, area manager at ESKOM for electrical distribution) was impressed by the objective of the study and committed herself to support the college with placement of EIC students for WIL. She could not stop smiling and her face radiated inner satisfaction and happiness. During the engagement session, she said:

> Ms Dijo (smiling): *We are happy to accept students for WIL in order to enhance students' knowledge and increase their chances for employment in the electrical field. The students need to have knowledge of electrical protective devices since we are dealing with electrical distribution. They also need to have critical skills for programming, since distribution is about protection and programming. The college must intensify integration of theory and practical as this will assist with holistic development of students. It is important for students to be exposed to industry so that students must have first-hand experience of the real world of work, as that will build their self-confidence and expose them to different EIC tools and testing machines like ones that may not be available at the colleges* (see section 2.2)*. Lastly, college need to improve on monitoring of students' knowledge of practical work whilst at the college and follow up at companies, as this may assist with review of students' progress and put intervention processes on time.*

Ms Dijo, a seasoned manager, offered the solution to what looked like a challenge: "*college need to improve on monitoring of students' knowledge of practical work whilst at the college and follow up at companies*." This forms part of the solution for quality assurance of the college training to ensure accountability. Furthermore, allowing students placement at her company is an effective solution that contributed immensely as a strategy to ensure that all deserving EIC students receive opportunities to enhance their employability and improve the productivity of enterprise.

Through use of CER and YPAR in the study, industry realised the importance of their contribution to teaching and learning for skills acquisition. CER created the space for empowerment of both students and lecturers through social interactions.

4.3.3 Professionally qualified lecturers

Two professionally qualified lecturers were successfully recruited for enhancing skills acquisition in EIC. The two EIC lecturers were introduced to staff members and have already started with their work. The presence of these lecturers contributed to the retention of a skilled workforce needed for enhancing skills acquisition in EIC studies.

In the meeting for the introduction of the newly recruited lecturers, the SES could not hide her happiness and said the following:

> SES (proudly): *"Now we have a pool of skilled professionals in EIC and this will help us to deliver quality training for our students in the workshops.*

Other co-researchers responded thus:

> Phala (supporting): *The struggle is over now; every student will get an opportunity for practical in the workshops.*
>
> Mr Ali (cautious): *It is always good to work together whenever we have challenges. Look, today we are proud to announce the arrival of these highly skilled lecturers.*

The introduction of the skilled employees culminated in the announcement of the staff reward system that aims at retention of professionally gifted lecturers in EIC. The system entails employment equity rewards, succession planning and skills development opportunities, which will help in keeping a skilled workforce at the college (see section 2.2).

In the same meeting where the new lecturers were introduced, the SES said the following, with the ES supporting:

> Ms Dijo: *The college has introduced a reward system for top performing lecturers who will be given 'tokens of appreciation' at an opening ceremony that will be held annually at the beginning of the academic year. This initiative is for motivating and acknowledging our best performing lecturers across the college.*
>
> ES (supporting): *That is wonderful, Mam! It will assist with retention of best qualified lecturers from leaving the college.*

Judging by the utterances of the CMT, it was clear that management had also realised that public colleges are losing professional and talented EIC lecturers to their competitors due to rigid public remuneration structures.

Hence, judging from analysis at the social level of CDA, the co-researchers were very happy to learn that management had implemented a plan for the recognition of best performing lecturers at the college. This initiative for rewarding best performing lecturers is an effective solution for motivating lecturers to perform better, knowing that there is a reward for good performance. This initiative will also benefit the students in terms of them receiving effective training and learning.

In this study, CER was able to empower the lecturers. The lecturers' understanding of what was required for EIC learning to be effective contributed to the success of the intervention.

4.3.4 Effective timetabling

Timetabling at the college was organised effectively in a way that all lecturers were allocated subjects adequately and all student groupings organised properly and given enough time for theory and exposure to practical in the workshops. It took a skilled workforce to organise an effective timetable capable of avoiding unnecessary subject clashes. The timetable brought relief and joy to both lecturers and students. Lecturers were allocated subjects according to their strengths, skills and expertise and that improved their performance. The co-researchers planned to work on the project until the end when the envisaged change is observed. The SES and Miss Bee commented thus during the forum:

> Ms Dijo: *We have changed our timetable to run on six-day cycle to accommodate subjects with practical and this benefited student for receiving more time for practical on a 70% practical and 30% theory terms. All lecturers are properly allocated and there are no subject clashes.*
>
> Miss Bee (supporting): *Students will enjoy practical exposure in the workshops.*

The co-researchers welcomed the SES's new initiative for establishing a functional timetable premised on a six-day cycle that accommodates all the groups for practical training in the workshop. The changing of the timetabling to 70% practical and 30% theory has benefitted students and they are now getting more practical time as

anticipated. The new timetabling allowed all students from level 2 to 4 to be accommodated in the workshops for all optional subjects. The social practice at the campus will be fair to all EIC lecturers, including workshop lecturers, since the workload will be equitably distributed among all lecturers for EIC studies. Furthermore, a good timetable is imperative, since it assists with the coordination of all curricular activities on campus for the sustainable teaching and learning needed for enhancing graduates' chances for employability.

By employing CER and YPAR in the study, the co-researchers realised the importance of collaborations towards finding sustainable solutions for teaching and learning.

4.3.5 Availability of protective personal equipment

The provisioning of PPE was an effective solution to the successful implementation of the EIC Programme, especially in the workshops, and helped to address students' concerns. The students' attendance of workshops for practical tasks improved drastically and the seamless flow of activities in the workshop was very impressive. The OHS (South Africa. 1993) stipulates that all people entering workshops for work should put on their safety apparel. The college complied with these requirements to a high degree.

In this regard, co-researchers made the following comments during the forum:

> Mr Ali: *All students are now free to attend workshops for practical, since they were provided PPE. They will work safely knowing that they are protected.*
>
> Zoro (happy): *We are grateful to management for giving students PPE. Now all students will be able to attend their practical periods in the workshops.*

The students were very happy to be provided with PPE as it represented an effective solution to their challenges. The students were motivated to attend their practical in the workshops, as is evident in the excerpt by Zoro above.

At textual level, analysis shows that students were appreciative of the positive gesture by management to provide PPE for safety purposes. Analysis at the discursive or cognitive level of CDA shows that management were pro-active in their thinking to mitigate risks with the provisioning of safety equipment before any incident could occur. At the social level, it was only fair that students be supplied with PPE, since that

assisted to facilitate movement of students back to classes and also for students to start working in the workshop. The PPE also served to distinguish students from others, which has the potential for motivating EIC students to be committed in their training for enhancing skills acquisition in EIC studies.

4.3.6 Employability

The SES ensured that all EIC students received opportunities for placement as part of the preparations for employability at companies. The goal with the placement is to enhance their employability and to improve the productivity of industry. This was the effective solution for employability of EIC students. Employability results from several factors. Access to education, a foundation of core skills, availability of training opportunities, motivation, and recognition of acquired skills are critical for enabling workers to attain decent work (see section 2.2). Regarding placement opportunities at the college, the SES said:

> SES: *We have placed the first group of level 4 EIC students with our partners for WIL. We hope to place the second group once the first group complete their training.*

The interaction between the management of the two institutions had already started and the first joint meeting held to discuss matters of common interest for enhancing skills acquisition among EIC students. These kinds of meetings will assist to identify challenges and plan a coordinated approach on how to resolve challenges.

In this study, CER created a space for empowerment of EIC students through social interactions.

4.4 Conducive Conditions under which Enhancement of Skills Acquisition in EIC Studies Worked Successfully

The success of the implementation of the strategies as detailed in the previous section depended on several factors. This section therefore discusses these factors that made the strategies work.

4.4.1 Available skilled workforce

The co-researchers were happy to welcome the new EIC lecturers as part of the initiative to recruit professionally qualified lecturers for an effective skills acquisition process. The presence of these talented individuals contributed to the skilled workforce pool needed for successful implementation of the EIC curriculum at the college. In this regard, the SES and ES commented as such:

> SES: *It is so good to have skilled professionals teaching and supporting students in their specialised profession in the college. My students are so happy, their attendance and performance has increased dramatically, and the rate of absenteeism is now decreasing. I do not know whether the change is because of new faces or new lecturers do more than my lecturers. What I am really happy about is improved performance, and I wish they came earlier.*
>
> ES: *I am happy to have people who are to teach practical subjects to our students will benefit for their studies. These skilled workforces are also assisting us because we also learn new tricks from them as we observe them teaching in workshops.*

The teaching expertise of the new lecturers is not what everybody expected. They are excellent in what they do and tend to make everything look easy and students are really enjoying it.

The transformative nature of CER created a willingness among the college community to commit and work together and made it easy for social interactions to take place.

4.4.2 Strategic partnerships

The initiative for the establishment of collaborations received more appreciation as all the co-researchers and lecturers understood what it stood for and the benefits of the partnership. College-industry partnership is based on shared values and appreciation of co-existence for a common purpose. The partnership with industry was critical for exposing lecturers to new technologies to keep them abreast with the latest technological trends. The partnership promotes the shared values of the two partnering institutions, thereby promoting practical training for EIC students. Moreover, such partnerships have benefitted employees of another TVET college, as the college was struggling to train the employees in EIC. Their training was successful, since the

college managed to field those employees to introduce a new programme. The college employed this approach to train its employees for implementation of a PLC project at the college.

This initiative was made even clearer by Mr Ali during the forum:

> Mr Ali (happy): *We are grateful for the role played by the two managers for training our lecturers in critical skills and also their willingness to accommodate our students for placement. Hooray!*

At the social level of CDA, analysis shows that a common understanding among the co-researchers brought them closer to one another and made a strong team that shared the same views of making a success of the EIC programme. The pledge by the two managers, Mr Koos and Ms Diepollo, successfully contributed to the training of lecturers for PLC as part of operationalising the partnership. In addition, students who attended placements with industry for WIL needed for further exposure to practical training in EIC studies.

Through use of CER, the understanding of the collaborations strengthened the relationships between industry and the college.

4.4.3 Professional qualifications

The professionally qualified EIC lecturers recruited contributed immensely to the creation of a pool of skilled workers needed for enhancing skills acquisition for EIC students. Skilled workers form the nexus of the training programme at the college. Employing these lecturers promoted a conducive environment needed for skills acquisition in EIC studies at the college. Students' technical skills improved exponentially and their ability to combine theory and industrial practical skills displays their competencies. This process of combing theory and practical work for skills transfer was made popular in countries such as Germany and Malaysia. The research site successfully adopted and adapted this model for enhancing skills acquisition in EIC studies. The expertise of the EIC team made training easier and clearer for all students.

Participation in this research also assisted to resolve deep-rooted social challenges faced by the students in relation to the provisioning of quality skills training needed for empowerment, as corroborated by the SES.

SES: *Our lecturers underwent upskilling training in PLC for enhancing their skills and we also recruited professionals for EIC.*

Drawing from the statement by the SES, it is clear that the conducive environment was created to bring about change. The creation of a strong collaboration between the CMT and EIC lecturers made it possible for the retention plan to be successful since most lecturers felt appreciated and hence were committed to the cause of implementing quality training.

As such, CER with its transformative nature and YPAR made it possible for the co-researchers to work together to realise the importance of committing to the college.

4.4.4 Effective timetabling

A conducive environment needed for teaching and learning at the college was made possible through the implementation of responsive timetabling. Lecturers were happy that the timetable made it easy and possible to execute their tasks unhindered by any form of clashes. The spirit of working together between peers was prevalent at the college through shared activities made possible by the timetabling. Students were impressed by the flow of activities in between their periods for everything was fluid. The following utterances of one of the students and the workshop lecturer show this:

Mosa: *We never experienced the chance to attend our practical training sessions without clashes or fights for access to the workshops.*

Mr Ali (happy): *I no longer had to deal with throngs of students fighting for access to practical training in my workshop.*

The environment created by the responsive timetabling contributed to the teamwork between lecturers and students.

In this study, CER and YPAR contributed to transform how things were managed at the college in the past to the current environment of sharing knowledge to address pressing issues facing the communities.

4.4.5 Availability of personal protective equipment

The provisioning of PPE to the deserving students in EIC studies was a catalyst for bringing management and students together towards the fulfilment of the DHET

mandate of producing employees of choice. This enabled the establishment of a sound, safe and conducive environment for active student participation in the workshop. The students looked after their safety apparel, and it was evident that they understood the importance of keeping their safety apparel clean and tidy. The students' attendance of practical work in the workshop improved and their conduct during training in the workshop changed to emulate that of employees at a workplace. Students wore their overalls with pride and that motivated other groups to want to belong to the EIC group. The relationship between lecturers and students was cordial and the mood was conducive for effective teaching and learning at all times. The excerpts below show the positive impact on some of the co-researchers.

> Mr Ali (happy): *The students are motivated by the PPE and the presence of new lecturers.*
>
> Mosa (supporting): *You cannot afford to miss a lesson in the workshop.*

The students could not hide their happiness and have been complimented by being punctual for class. The timetabling made coordination of activities easy for lecturers to be able to prepare their presentations.

At discourse or cognitive level, the CMT realised the importance of issuing PPE, because it brought stability among the student populace. This was much needed for the effective teaching and learning of EIC.

Therefore, CER and YPAR with its principle of freedom and transformation allowed the co-researchers to work together towards a common goal for enhancing skills acquisition in EIC studies.

4.4.6 Employability

Conditions conducive for the creation of job opportunities for EIC students at the college was made possible by implementing the following: ensuring a skilled workforce, drawing of a proper timetable, professional qualified lecturers taking charge of workshops, and establishing strategic partnerships for placement. The introduction of a responsive timetable that delivered 70% practical and 30% theory, student placements with industry, and the training of lecturers for PLC all contributed towards skills development. According to Brewer (2013:3), skills development is essential for increasing the productivity and sustainability of initiatives and improving working

conditions and the employability of EIC graduates. The following are relevant comments made by some of the co-researchers during the forum:

> Ms Dijo (happy): *We successfully changed our timetable to run on six-day cycle and the impact of this is students getting more time for practical.*
>
> Mosa (modestly): *I am motivated to go to the workshop and so is other students in my group.*
>
> Lerato (supporting): *I am willing to join ESKOM after completion of my studies.*

By introducing EIC students to the electrical design process, getting them involved in problem-solving through real work projects at industry, and letting them use electrical tools and devices, their learning is made more active and experiential from the very beginning of their study (see section 2.2). Such initiative will significantly increase the students' opportunities for employability.

At textual level, the SES was convinced that the changes effected would definitely assist the students to gain more experience at the workshops. At the social level of CDA, analysis shows that teamwork assists in building relations towards empowering students.

CER and YPAR made it possible in this study for students to reflect on the lesson presented in their workshops and develop the desire to want to learn more and become a better person.

4.5 Possible Threats and Risks Facing Strategies to Address Challenges for Skills Acquisition in EIC

This section discusses some threats that may hamper the enhancement of skills acquisition in EIC studies for employability.

4.5.1 Deficiency of a skilled workforce

Deficiency of a skilled workforce emerged during data analysis as the biggest threat to human capital management for various reasons. These include students not being taught critical practical skills needed for their competence in EIC studies, unqualified and underqualified EIC lecturing staff, and a non-responsive timetabling consisting of subject clashes. It also includes inadequately trained EIC products, the college being

unable to retain a skilled workforce, high student absenteeism and lack of partnerships. With a deficient skilled workforce, education and training systems will not be able to develop innovative ways of delivering responsive academic curricula that will benefit EIC studies. This is reflected in the following participant quotes:

> ES: *Lack of partnerships and skilled workforce have a detrimental impact on successful curriculum implementation.*
>
> SES: *SETAs and NSF (NSF) normally takes long to respond for funding.*

The co-researchers were evidently aware of the challenges that impede effective curriculum implementation. Hence, they collaborated to source partnerships that will assist with training of students and lecturers.

4.5.2 Lack of strategic partnerships

It surfaced during the forum discussions that EIC lecturers and students will not be able to attend WIL with industry since the college did not form or revive the partnerships or any collaborations/partnerships with industry. Lack of college-industry collaborations constitutes one the risk factors that could impede successful implementation for placement of students as an integral part of training for enhancing skills acquisition in EIC studies. To circumvent that challenge, the team agreed that the college should establish collaborations with local industry for placement of students.

> Ms Dijo: *The challenge is lack of college-industry collaborations for placement of lecturers and students.*
>
> Ms Diepollo: *The other challenge is lack of monitoring of students' knowledge of practical work whilst at the companies.*

Judging by the above utterance of Ms Dijo, the lack of partnerships is worrisome, since she wanted to see her workforce trained or skilled in the latest EIC technologies. Secondly, she also anticipated to have all her students being able to attend WIL. Therefore, lack of partnerships deprives them of the opportunity for additional training needed in their field of study for empowerment.

At textual level, the students are struggling to find placement for WIL and that poses a threat to their studies. Ms Dijo's statement above about the challenge being lack of

college-industry collaborations supports this. The CMT needs to devise a plan to mitigate the challenges.

At the social level, the students produced at the college would not be of high calibre since they are lacking some of the critical skills needed for enhancing skills acquisition in EIC studies. Only one lecturer was tasked to do all practical components of all optional subjects (level 2–4). Judging by the number of students in the EIC Programme, it is highly impossible for one person to carry such a big workload for specialised subjects. This kind of arrangement is not conducive for effective teaching and learning where the practical component is a priority and therefore poses a serious threat to the successful implementation of the EIC curriculum.

At the social level, the college model is unfair towards the workshop lecturer, since the huge workload will stretch him beyond his capacity. Proper service delivery requires that all components of the curriculum should be covered for quality and developmental purposes of the students.

Empirical data collected during the forum support the notion that for students to be adequately prepared for the world of work in the EIC field, college-industry collaboration forms a critical part in the development of the students for enhancing their skills acquisition in EIC studies.

4.5.3 Shortage of professionally qualified lecturers in the field

TVET colleges face the struggle to retain talented lecturers who can offer vocational training in EIC studies for a number of reasons. Owing to the competition for scarce skills, the attraction and retention of qualified employees has emerged as the biggest challenge in human capital management. This phenomenon has also arisen in TVET colleges (see section 2.3.1.4). In this regard, the co-researchers said the following during the forum:

> Mr Ali (frustrated): *Ntate Xaba is the only lecturer responsible for all practical in the workshop.*
>
> Phala (also frustrated): *Lecturers struggling to teach subjects allocated them.*
>
> Zoro: *Lack of artisans to teach practical.*

The inherent risks and threats of using improperly qualified lecturers will result in the production of poorly trained EIC students. At discursive or cognitive level, Phala's remark above highlights *power relations* where managers allocate subjects to lecturers without due consultation and consideration of their level of expertise or qualifications. This practice depicts lecturers as helpless, as they do not have say in how they are assigned subjects but just have to comply with instructions. The practice poses a threat to the successful implementation of the curriculum for enhancing skills acquisition in EIC studies.

Deciphered at social level, lecturers are struggling to teach and hence are unproductive. In no way can an unproductive workforce produce employable students. The co-researchers were aware that inasmuch as they wanted the framework to work, lecturers' lack of appropriate skills was going to have a negative impact on the implementation of the EIC Programme. As a result, student competence in their trade was not going to be of the expected standard for EIC studies. This identified weakness poses a threat for the successful implementation of the EIC Programme for enhancing skills acquisition in EIC.

Therefore, CER, with its principle of freedom and transformation, allowed the co-researchers to work together to reach a common understanding.

4.5.4 Timetabling

The current timetable is not conducive for effective teaching and learning for skills transfer in that it is organised in such way that students are scheduled for 60% theory and 40% practical in the workshop, instead of the stipulated threshold of 70% practical and 30% theory for the NCV Programme. As a result of the current timetabling arrangements, students loose time meant for workshop practical. Timetabling if not properly organised carries the potential to hinder effective teaching and learning. Teaching and learning activities are dependent on an operational timetable capable of directing and controlling the curriculum activities for efficiency. The original timetabling used was characterised by subject clashes and did not accommodate all the subjects equally, resulting in students suffering. The rate of absenteeism by students was very high and some students did not even bother to go for practical work in the workshop because of subject clashes.

The following utterances of co-researchers at the forum support this point:

Zoro (complaining): *Timetable deprives us time for practical in the workshop. … Poor attendance in the workshops due to the wrong timetable.*

Miss Bee (supporting): *Our timetable is organised on five-day cycle; we struggle with practical time in the workshop.*

The co-researchers were very adamant in their approach of the challenges; hence, they were able to identify threats posed by the current timetable. At the social level of CDA, analysis shows that students do not have adequate practical time in the workshops due to the timetable challenges. Hence, they are denied opportunities to enhance their skills for a competitive edge in the market.

In this study, CER with its principle of freedom and transformation allowed the co-researchers to work towards a common goal.

4.5.5 Personal protective equipment

The inherent risk associated with non-provisioning of PPE will hinder successful implementation of the EIC Programme. Students are unable to access workshops and do practical tasks because they do not have PPE for safety. The OHS (South Africa. 1993) stipulates that all people entering workshops for work should put on their safety apparel.

Regarding the matter of PPE, co-researchers made the following remarks during the forum:

Phala (boldly): *Management do not provide PPE for students.*

Mosa (frowning): *Lack of tools and equipment in the workshop.*

At the social level, it is unfair for students to not be supplied with PPE, since that carries the potential risk of exposing them to physical harm while working in the workshop. Secondly, students without PPE will miss time for practical work in the workshops after being left out, while other students carry on with practical tasks. Non-provision of PPE poses the threat of denying students access to teaching and learning. Lack of tools will also disadvantage students from using tools of the trade for their training preparation towards gaining valuable experience needed to give them confidence and thus leverage for employability.

4.5.6 Employability

The absence of a framework for producing a capable EIC workforce who are capable of solving electrical challenges for sustainable development poses a serious threat for EIC studies (see section 2.2). Unemployment exists when individuals are subjected to psychological distress associated with a decline in life satisfaction, contributing to the risks for mood disorder and substance abuse. Socially, unemployment leads to stigmatisation, classification, unfair treatment and social marginalisation. The socio-economic implications of unemployment normally result in social exclusion, protests, increased crime rates and morbidity (see section 2.2). Two of the students made remarks regarding employability.

> Mosa (complaining): *We are struggling to get employment after completing our studies.*
>
> Lerato (supporting): *Companies need people with rare skills in EIC.*

The college was struggling with the integration of theoretical and practical knowledge together with workplace learning because of lack of partnerships. Mosa's statement that they as students struggle to get employment after their studies supports this. This matter is further complicated by the deficiency of a skilled workforce who are proficient in EIC practices. At textual level, analysis shows that students are dependent on management for resolving placement issues. Students are not used to struggling since they have hope that the college will assist with placement.

4.6 Evidence of Success in Enhancing Skills Acquisition in EIC Studies

This section of the chapter provides indicators of success to the envisaged framework to prepare teachers for sustainable learning ecologies.

4.6.1 Skilled workforce

Students enrolled in EIC studies were placed at two companies and taught under the supervision of experienced EIC technicians who mentored them during their WIL. In the meetings, all co-researchers approved of the partnership between the college and the two companies, as seen in the following excerpts.

SES: *We are proud to be part contributing to the preparation of students for their EIC profession. We anticipate our students learned a lot by being part of our college participating in these partnership.*

Mr X: *We are grateful for the opportunity to be exposed to new technology on the job by knowledgeable professionals. Indeed, it was an eye-opening exercise.*

Mosa: *I wish we could be taken permanent; it was so exciting to be partaking in the project.*

The SES expressed her happiness to be part of the preparation programme as a college community. She sounded happy and could not stop saying "*I am proud*" to participate in the programme. It is evident from the CMT, lecturers and students that the relationship between the two companies and the college is important and should be strengthened and continued. The workshop lecturer was singing praises for the machines he was exposed to during the placement. One of the female students mentioned that at the beginning of the process she was not sure if she could ever cope in a world dominated by male professionals. She since changed her stance and was willing to go back and learn further skills in her profession of choice. The co-researchers unanimously proposed that the college needs to build the partnerships and strengthen it for future students.

4.6.2 Partnerships

The involvement of the two companies in partnership with the college was a success. The co-researchers could not stop talking about their experiences while at the companies.

Mr X: *I wish we had this opportunity earlier. After this excursion, I am now aware that we are far behind with technology. Management must ensure we do not lose this golden opportunity to be part of these valuable partnership.*

Zoro: *I am now capable to test a circuit live without any doubt or fear because of this project.*

Miss Bee: *I am happy that finally we are able to teach practical on the high scale using knowledge accumulated from partnering companies.*

The statement by Mr X, a workshop lecturer in EIC, indicates a positive change of mind. It shows that he accepted the opportunity to participate in the project for which he was not prepared.

4.6.3 Qualifications

The recruitment of the two professionally qualified EIC lecturers was a success for the implementation of curriculum at the college. The increase in the number of EIC lecturers helped to mitigate skills shortages for EIC studies. The Technology Institute also contributed by taking college lecturers for an upskilling training in a PLC programming course. This intervention showed success in the training of students to impart much-needed skills for employability. Some co-researchers expressed their satisfaction in this regard.

> SES: *I am so excited we do not have to depend on one person to teach practical for all optional subjects. Now, all the vocational lecturers are available to teach practical subjects and it is a relief for [Mr X] and the CMT.*
>
> Mr X: *I am happy now because I have people I can share the subjects with. In the past, I was alone, and now I have colleagues for sharing my challenges whenever they arise.*

The co-researchers were very happy to realise that their efforts had finally paid off. The success of the CMT relative to the recruitment of new lecturers benefitted the students, since the qualified lecturers took charge of the EIC practical in the workshops.

4.6.4 Timetabling

Responsive timetabling was implemented at the college, which shows success in the management and control of curriculum activities. This final timetable runs on a six-day cycle to accommodate subjects with practical work and has benefited students by allocating more time for practical on a 70% practical–30% theory term. All lecturers are properly allocated and there are no subject clashes. Co-researchers were elated in this regard.

> ES (happy): *We succeeded to organise the timetabling that responds to the need of the college staff and students.*

Miss Bee (smiling): *This is the best timetabling we have been waiting for; students will receive quality training.*

At the textual level of CDA, analysis shows the excitement of co-researchers in achieving an operational timetabling that will assist to resolve their training challenges. The statement by ES, "*We succeeded to organise the timetabling*," demonstrates the success achieved by the team in this regard.

4.6.5 Personal protective equipment

College management supplied students with PPE, making them very happy because it enabled them to attend workshops freely. Provisioning of PPE was a huge success to students who were struggling to attend workshop training because they did not have PPE. After receiving their PPE, the students were now complying with safety regulations and could work safely in the workshops. Co-researchers commented on this.

SES (excited): *I have noticed that all students' overalls are neat and clean.*

Mr X (supporting): *All students are supposed to wear their safety apparels whenever they attend workshops.*

Lerato (happy): *I feel so nice to have finally received my safety gear; it shows our management cares.*

The students were very happy to receive PPE and that changed their wayward ways of not attending practical because they did not have PPE.

4.6.6 Employability

A climate conducive for teaching and learning was created with the recruitment of professional lecturers and placement of students for WIL. All these efforts were taken to ensure that EIC students receive the best possible training that prepares them for employability. The students received special training that actually exposes them to the world of work through partnerships established with the two partnering companies.

Mr X: *Our students are ready for the world of work due to the training they received.*

Phala (responding): *I am ready to do all installation tests required for safety.*

The students were happy to be given opportunities that expose them to the real world of work. Partnerships were of value towards the training of the students.

CER and YPAR created the space in this research for improvement in students' practical training.

4.7 Conclusion

This chapter presented the analysis, presentation and interpretation of the data and the outcomes and findings related to enhancing skills acquisition for EIC studies. The chapter identified the challenges pertaining to enhancing skills acquisition for EIC studies. The chapter also considered solutions to address the identified challenges regarding the enhancement of a skills acquisition operational framework. Furthermore, conducive conditions for the implementation of the framework for enhancing skills acquisition in EIC studies was discussed. Lastly, threats which could hamper the operationalisation of the strategy and steps taken to counteract them were also discussed. The next chapter will discuss the findings of this study.

CHAPTER 5: FINDINGS AND RECOMMENDATIONS FOR ENHANCING SKILLS ACQUISTION IN ELECTRICAL INFRASTRUCTURE CONSTRUCTION STUDIES

5.1 Introduction

This study sought to formulate the framework for enhancing skills acquisition in EIC studies for students at the selected TVET college. This chapter delivers a summary of the findings and makes recommendations for enhancing skills acquisition in EIC studies. The chapter also reports the findings on the challenges that necessitated the formulation of the framework for effectively tackling employability challenges faced by EIC graduates. Furthermore, it reports on the components of the solutions, the conditions that operationalised them, and the threats that could obstruct the successful implementation of the envisioned framework.

The challenge of the rising rate in youth unemployment in South Africa is worrisome. Various challenges exist which require a vocational strategy in EIC to enhance TVET college graduates' skills acquisition to make them employable.

The main purpose of the chapter is to respond to the research question for this study, namely: **How can youths' acquisition of skills in EIC be strengthened to empower them to be self-employed and employable?**

Subsequent to this purpose, five objectives were cited:

- To justify the need for enhancing skills acquisition in EIC among youth for empowerment purposes.
- To explore possible means and/or measures that can be considered for enhancement of skills acquisition in EIC among youth for purposes of ensuring their potential employability.
- To analyse the conditions potentially conducive for the successful operationalisation of the envisioned enhancement measures towards the anticipated empowerment of youth in EIC skills acquisition.

- To assess mitigating circumstances and factors to counteract the effects of inherent risks and threats that are likely to hinder the successful implementation of the suggested youth-skills-acquisition empowering measures in EIC.
- To highlight evidence of success of the envisioned EIC skills enhancement measures towards youth empowerment.

5.2 Summary of the Study

This study sought to formulate the framework for enhancing skills acquisition in EIC studies for students at the selected TVET college. Literature consulted in the study show that youth between 15 and 24 years of age remain vulnerable in the labour market and youth unemployment stands at 56% of the total eligible workforce, with a labour absorption of only 12% (Oluwajodu et al., 2015:1; Statistics South Africa, 2018; Woyo, 2013:182). Among the 56% of the unemployed eligible workforce are graduates of EIC from TVET colleges, who, despite their training in vocational programmes, are unable to find befitting employment. As a result, these graduates end up doing menial jobs to combat unemployment, poverty and inequality.

Ansah and Ernest (2013:172) corroborate that the purpose of TVET colleges is to equip people with the technical and professional skills needed for socio-economic and industrial development of the country and also to train people for self-employment. The White Paper on Post-School Education and Training (South Africa. DHET, 2014a:99) advocates for access to higher education institutions and colleges as a strategy to mitigate skills shortages and advance economic transformation. Furthermore, colleges cater mainly for those who have left school – whether having completed secondary school or not – and who wish to do vocational training or complete their schooling. The study espouses strategic partnerships as a means to expose EIC students to workplace learning at companies while still studying for the profession.

CER was adopted as theoretical framework for guiding the study. The use of CER in this study was noteworthy because the participants involved were the ones affected by the situation and were the ones expected to provide solutions to their own challenges, thus receiving empowerment and enlightenment. As a result, the co-researchers were excited to be part of the project aimed at enhancing students' opportunities for acquiring skills needed for employability. The team identified external stakeholders

who were also affected by the same challenges to be part of the project towards finding solutions to the challenges. The stakeholders are managers with vast experience and resources to assist the cause of identifying solutions to the challenges (see section 4.2). The proposed framework for enhancing skills acquisition in EIC studies was also outlined based on the unfolding of the study and lessons learnt.

The following sections report on the findings according to the objectives of this study, as mentioned in section 1.2, starting with the challenges.

5.3 Findings on the Challenges for Enhancing Skills Acquisition in EIC Studies

This section presents findings on the challenges for enhancing skills acquisition in EIC studies.

5.3.1 Lack of a skilled workforce

The co-researchers discovered that the rate of unemployment for EIC graduates was due to lack of a skilled workforce during the training preparations of EIC students at the college. The need for the intervention emanated from our first meeting to introduce the study to the co-researchers. There was only one professionally qualified lecturer for teaching practical work in the workshop of the college and the majority of lecturers were academically qualified and hence could teach only theory. The college offered more theory than practical for EIC students as a result. This practice deprived students of the opportunity to be exposed to practical work in the workshop, hence the need to recruit skilled professional lecturers (2.5.3).

5.3.2 Lack of strategic partnerships

The college was operating on its own and students were only periodically exposed to practical according to the college timetabling. The co-researchers established during the forum that the college did not have a strategic partnership with industries. As a result, the students and lecturers could not be placed for WIL and WBE, respectively. Students were denied or deprived time for industrial experimentation in the real work world, and lecturers were not exposed to new technological trends. The recommended strategy is to establish partnerships and ensure students receive industrial training and

exposure and lecturers are exposed to new technology so that they are technological knowledgeable (2.5.2).

5.3.3 Lack of professional qualifications

It was discovered during the research that the majority of EIC lecturers at the college were academically qualified but professionally unqualified. As a result, they could not be delegated practical duties in the workshop due to their qualifications (see section 2.2). That compelled the college to offer more theory than practical work (60%/40%) and by so doing the EIC students were not properly trained to attain the needed practical component to be competent in their trade. This practice will result in the production of unemployable EIC graduates or perpetuation of a high unemployment rate. It is important for the college to prioritise the reskilling of lecturers or alternatively to recruit suitably qualified lecturers in EIC (2.5.3)

5.3.4 Inappropriate timetabling

It was discovered that the timetabling utilised at the college was not properly organised for effective teaching and learning since it constituted subject clashes and distorted lecturer allocations. This resulted in students losing time for practical work in the workshop. What was worse was that there was only one qualified lecturer responsible for teaching all the practical work for all optional subjects. It is recommended that a skilled workforce be used to compile a responsive timetabling that will ensure lecturers are properly allocated and that there are no subject clashes that will hinder effective teaching and learning at the college.

5.3.5 Lack of personal protective equipment

It has emerged that students were not provided PPE for the duration of their studies at the college, with PPE only issued once at entry Level. Subsequently, no PPE was supplied for level 3 and level 4 EIC students. Students were not able to attend classes in the workshop as a result of the practice, since the OHS (South Africa. 1993) requires that students or any person entering the workshop for work should put on safety apparel to start working. Any deviation from this stipulation constitutes non-conformance to the requirement and that could be detrimental to students and in the event of accidents the college will be held accountable. It is therefore

recommended that students should be provided with safety equipment, as that will allow them easy access to the workshop for practical work.

5.3.6 Lack of employment

It was discovered in the study that students were struggling to get employment after receiving their qualification at the college. Unemployment could have both a social and economic impact on EIC students. Normally, unemployment deprives individual EIC graduates of opportunities to gain and retain fulfilling work within a specified period. Unemployment exists when individuals are subjected to psychological distress associated with a decline in life satisfaction, contributing to the risks for mood disorder and substance abuse. Socially, unemployment leads to stigmatisation, classification, unfair treatment and social marginalisation. The socio-economic implications of unemployment normally result in social exclusion, protests, increased crime rates and morbidity (see section 2.2). EIC students should be taught by professional and skilled EIC lecturers.

5.4 Useful Solutions to the Challenges for Enhancing Skills Acquisition in EIC Studies

This section presents findings on the components of the solutions to the challenges experienced.

5.4.1 Availability of a skilled workforce for employability

Two professionally skilled lecturers were recruited at the college to provide quality training needed to develop competent EIC students. The two lecturers were used to close the gap in the workshop to afford all the students opportunities to access practical training in the workshop. Their presence also assisted to relieve Mr X of his workload and to expedite practical work for students (see section 4.3). This lecturer will thus be able to do practical work, which was a challenge before the two lecturers' arrival at the college (2.7.1).

5.4.2 Availability of strategic partnerships

The research team's discussions on the topic of strategic partnerships revealed a common vision among the co-researchers for the establishment of much-needed

partnerships for placements. The shared vision by co-researchers brought the elements of commitment and a sense of belonging to the team. The partnerships also bolstered the students' opportunities for acquisition of skills needed for employability, since they have received the relevant support and training needed for their competencies. Training of lecturers for PLC is significant, since it exposes them to new technological trends. Knowledge of new technological developments is also important for incorporation into lecturers' teaching practice in the workshops. Partnerships contributed to the placement of students with industry, which on its own opened their minds to absorb the crucial skills needed for carrying out their profession in EIC studies.

5.4.3 Improvement or augmentation of professional qualifications for effective skills acquisition

The involvement of lecturers with professional qualifications in EIC was important for strengthening available skills in EIC studies for effective curriculum delivery at the college. The new lecturers served as motivation for students to learn and understand that the collaboration between management and students is the solution to their challenges. The collaboration is important, since it enabled lecturers to effectively engage students in meaningful learning.

5.4.4 Responsive timetabling for enhancing skills acquisition in EIC studies

The study recommends the use of responsive timetabling as a suitable approach that can foster effective teaching and learning. To achieve the expectations of a responsive curriculum, the study engaged the services of a skilled workforce to draw up a timetable that minimised subject clashes and also assist the equitable distribution of workload among all EIC lecturers. The timetable drawn up by the skilled workforce assisted the lecturing staff to make teaching and learning conducive for skills transfer in EIC studies.

5.4.5 Use of personal protective equipment in the workshops

The OHS (South Africa. 1993) stipulates that all persons entering workshops for work should be provided safety equipment for personal protection. Provisioning of PPE to students facilitated easy and safe access to the workshops. This is one important aspect that demonstrates compliance to safety standards while carrying out work in the workshop. The intention of the management was to supply students with PPE to

produce good EIC graduates who are responsible tradesmen conscious of compliance issues whenever they carry out any EIC-related duties.

5.4.6 Creating opportunities for employability in EIC studies

Data collected during the forum evidently show that proper and effective training of EIC students by a skilled workforce created hope for job opportunities that can be used to fight unemployment, poverty and inequality. This involves employing the services of a skilled workforce comprised of professionally qualified EIC lecturers for all practical tasks in workshops. It also involves exposing EIC students to industry for hands-on experiential training, thus preparing them for real work conditions. By observing all of the above measures, the system is rendered capable of producing knowledgeable and competent EIC graduates who are employees of choice or capable of creating jobs for others. Students undergoing training in a conducive environment are guided by the observation of occupational health and safety conditions, for example, having safety apparel readily available and using safe workshop equipment for training purposes.

5.5 Threats to the Successful Enhancement of Skills Acquisition in EIC Studies

This section discusses the threats that were identified that may hamper enhancement of skills acquisition in EIC studies.

5.5.1 Lack of a skilled workforce for enhancing skills acquisition in EIC studies

A threat and risk identified by the co-researchers in our first meeting was lack of properly qualified EIC lecturers, since there was only one lecturer qualified to do practical work in the workshop. The empirical data also indicate that the same lecturer was expected to do practical for all EIC optional subjects. The management might have been aware of this deficit, although their hands were tied due to lack of a skilled EIC workforce. This restriction hampered their planning of a successful curriculum implementation towards the production of competent and skilled EIC graduates in the workshop. Findings in this study indicate that such practical work needs to be offered on a continuous basis by the professional qualified lecturers in different workshops, on rotational basis in order to cover or provide for all students' practical needs in the workshops. Such arrangements will help the workshop lecturers to effectively engage

students in their own practical training and thus increase the students' understanding of the EIC development content.

5.5.2 Lack of strategic partnerships for enhancing skills acquisition in EIC studies

Both literature and empirical data indicate that lack of strategic partnerships will hamper the college in its vision to offer the best possible practical training for EIC studies. Strategic partnerships or collaborations are about empowerment. Findings in this study also indicate that lack of college-industry partnerships or collaborations could have a detrimental effect insofar as enhancing skills acquisition in EIC is concerned. This is because placement opportunity for lecturers and students for WBE and WIL, respectively, will be lost. In addition, the college cannot afford to depend on lecturing staff who last visited industry in their prime days as artisans but are not up to date with the most recent technological developments. Furthermore, students are likely to miss the opportunity for industrial exposure for hands-on training experimentation with a real work situation. Most importantly, the provisioning of a responsive curriculum that ties industry with college to meet the needs of a developmental state will not be realised.

5.5.3 Lack of professional qualifications for enhancing skills acquisition in EIC studies

Another threat and risk that emerged from this study as indicated by both the empirical data and literature was the shortage of professional qualified EIC lecturers capable of combining theory and practical for effective training of EIC students in workshops. The co-researchers mentioned that there was a limited pool of talented EIC lecturers to select for placement in the workshop (see section 2.2). Although that seemed to pose a threat, since there was a limited pool from which to select, the college management opted to align teaching and learning that cater for more theory than practical to augment for the lack of professional qualified lecturers. However, this deprived students of the opportunity to learn practical work and, as a result, the college will indirectly contribute to producing tradesman who are theory oriented and hence cannot get employment.

5.5.4 Ineffective timetabling

One of the findings that emerged from this study was that the timetabling used for administering teaching and learning was not suitable for purpose. The timetabling issue hindered teaching and learning because it contained many subject clashes and lecturers were not properly allocated as well. The subject clashes resulted in students not attending classes, especially practical in the workshops. This practice led to depriving students of time for practical work needed for competency. The empirical data collected show that students were exposed to more theory than practical. For the timetabling to be effective or responsive, a skilled workforce should work on it and use their experience and expertise to make sure that it is void of clashes and that all lecturers are properly allocated subjects that they are good at.

5.5.5 Lack of personal protective equipment for students

Literature and empirical data indicate that the proper implementation of the EIC Programme requires that all occupational health and safety regulations form the embedded part for knowledge and skills transfer in the workshop (see section 2.2). One of the findings that emerged from this study was that the students were not provided safety apparel, yet they had to attend workshops for practical work. This practice exposed the students to physical harm, since they did not have PPE for protection and safety. In response to objective 4 of the study, the aforementioned factors were anticipated as threats to the successful enhancing of skills acquisition in EIC studies.

5.5.6 Lack of employment for EIC students

One of the findings that emerged from this study was that the EIC graduates lacked exceptional EIC skills needed for employability. Empirical evidence collected during the study suggests the following factors as contributors: lack of professional qualified lecturers, lack of strategic partnerships for placement of students, lecturer professional development, and timetabling that does not resonate with the expectations of curriculum implementation for students' empowerment. The aforementioned factors if properly managed and changed have the potential to assist with the effective training of EIC students and to infuse much-needed knowledge and experience for the development of EIC products of choice (2.2,1).

5.6 Evidence of Success for Enhancing Skills Acquisition in EIC Studies

This section justifies the success for enhancing skills acquisition in EIC studies.

5.6.1 Availability of a skilled workforce

The empirical data in this study indicate that a professional skilled workforce were successfully recruited into the EIC department. The objective for employing these professionals was twofold. First, they had to assist with the provisioning of quality training needed for producing competent young EIC graduates. Second, they had to diversify the EIC department, thereby offering students opportunity to enhance theory and practical for all EIC optional subjects in the workshop. This approach will engender the dual process as applied in countries such as Malaysia, Australia and Germany (see section 2.2). Therefore, we must adopt and adapt the dual process to suit the conditions of the country.

The presence of the SES in the project and her voice in encouraging the recruitment of professional qualified EIC lecturers made it possible to realise the successful acquisition of these professionals. The study findings indicate that with the SES, ES, lecturers, and students as co-researchers in the team, this collective managed to get the solutions for their challenges.

5.6.2 Strategic partnerships for enhancing skills acquisition in EIC studies

Findings of the study indicate that the establishment of a strategic partnership or collaboration with industry helped in ensuring that lecturers were reskilled and students also benefited by receiving placement with industry for experiential learning. The offer of the two managers who volunteered to train lecturers in PLC and provide the opportunity to take students for WIL was highly successful for addressing students' preparation for their professional training.

5.6.3 Timetabling for enhancing the skills acquisition in EIC studies

The findings of this study indicate that a responsive timetabling helped in ensuring that the EIC students received much anticipated access to the workshop for practical. The presence of the skilled workforce also assisted with the successful drawing up of the timetable. Furthermore, the timetabling successfully assisted to avail more time for

students to be able to do practical on the following terms: 70% for practical and 30% for theory.

Through the establishment of responsive timetabling, the students' confusion was eliminated as all the lecturers followed a common plan, hence the opportunity to have sufficient time for planning teaching activities. The plan thus ensured synchronisation of the activities and eliminated clashes and overlaps of class periods.

5.7 Recommendations for Enhancing Skills Acquisition in EIC Studies

The study recommends that for the enhancement of skills acquisition in EIC studies to be functional, the management and lecturing staff who are deemed to be the prime stakeholders should not be solely responsible, but involvement of the student populace is equally important. This means that everybody involved must be allowed to voice their opinion. For instance, in this study, in providing solutions to the challenges which were faced by the EIC students for skills acquisition for employability, the SES, ES and lecturers were able to share their experiences, and it was through those shared discussions that students were able to learn.

Collaboration with managers from industry also forms part of the solution in that they shared their experiences together with the co-researchers. Students were placed under the tutelage of experienced mentors, who showed them how to solve EIC-related challenges. They contributed immensely towards making the envisaged framework successful. The experienced mentors from industry were also helpful to guide and support the college lecturers for PLC during lecturer WBE. Furthermore, the introduction of the 70% practical–30% theory timetabling helped to facilitate the dual process as a means of strengthening skills acquisition by integrating theory with practical.

5.8 Limitations of the Study

The study was limited due to the fact that it was conducted at only one TVET college in the Free State province. Generalisation of the results is thus not encouraged, as conditions may differ from one college to another. However, other colleges and urban

colleges experiencing similar challenges under similar conditions to those in this study could use the proposed framework.

5.9 Proposed Framework for Enhancing Skills Acquisition in EIC Studies

The tables below present the proposed framework that could be implemented for enhancing skills acquisition in EIC studies.

Table 5.1: Proposed framework

EIC/Participants	Activities	Objectives	When?
Students	Attend EIC sessions regularly	To gain knowledge and skills that will enable them to master course content at the end of the year	From the beginning of lectures until lectures stop
	Ask questions for clarity (theory)		During the five days when they attend theory and practical training sessions
	Do EIC practical five times per six-day cycle (workshop)		
	Do WIL	Learning the skills in practice and from the authentic environment is a means of: • achieving economic, social and individual goals; and • producing skilled workers with flexible qualifications who are mobile and capable of working in their chosen fields.	From year two of the study until graduation
Lecturer A **Theory**	Attend class regularly	Lesson presentations	**Two days** in a six-day cycle
	Do lesson presentations for EIC	Transfer knowledge for students to understand	Every week before lesson presentations
	Issue assignments to students	Assess student comprehension	Twice in a week

EIC/Participants	Activities	Objectives	When?
	Mark assignments	Verify student responses	Quarterly
	Set assessment tasks (ICASS/ISAT)	Assess understanding of concepts	Quarterly
	Do an attendance register	Control student attendance	Daily
Lecturer A **Practical**	Teach the practical component of the subject	Knowledge transfer	**Three days** in a six-day cycle
	Do WBE	Reskilling or reorientation of lecturers on the job	Once a year
Education specialist (ES)	Coordinate the programme	To ensure that the programme runs smoothly	From the beginning of lectures until lectures cease
	Do lesson presentations	Knowledge transfer	Once a week
	Perform class visits	Monitoring of lecturer performance	Once in a quarter (whenever there is a need)
	Monitor lecturer files	Verify marks/ performance management	Once a month
	Set dates for assessments	Ensure compliance with DHET curriculum plan	Beginning of every quarter of the year
	Monitor and verify attendance (student/lecturer)	Management of attendance	Weekly
	Verify marks	Authenticity of marks	Quarterly
	Monitor ICASS/ISAT marks	Verification	Quarterly
	Organise subject meeting	To discuss curriculum matters	Once a month
SES	Monitor lecturer files; four files per month	Performance management	Once a month
	Monitor ICASS/ISAT marks	Verification of good academic performance of students	Quarterly
	Moderate ICASS/ISAT	Verification of good academic	Quarterly

EIC/Participants	Activities	Objectives	When?
		performance of students	
	Verify marks	Authenticity of marks	Quarterly
	Monitor lecturer and student attendance	To ensure that the pillars work together in order to make the programme a success	Weekly
	Do in-house training of lecturers	To support and develop lecturers	Quarterly
Managers	Provide training opportunities for students and lecturers	Support development of students and lecturers	Annually

Table 5.2: Priorities …

Priorities	Activities	SES/Lecturer	Evidence
Skilled workforce	Create a conducive environment for teaching and offer practical training to EIC students	Present EIC content and take responsibility for skills transfer	Logbook and attendance register. Assessment and moderation tools.
Strategic partnership	1. Manager should discuss progress of students with senior education specialist and lecturer during WIL 2. Manager should discuss lecturers' developmental progress during PLC training	1. Interact with students to discuss the progress of students during WIL 2. Interact with lecturers to discuss developmental progress with them	Attendance registers
Professional qualifications	Discuss recruitment of professionally qualified lecturers in EIC studies	SES to interact with professional lecturers to discuss the recruitment process and introduce them to lecturers and students	Lecturer results. Trade test certificates.
Timetabling	Use experienced lecturers to draw up a responsive timetabling	Align timetabling to comply with 70% practical and 30% theory for dual system	A synchronised timetabling

Priorities	Activities	SES/Lecturer	Evidence
PPE	Discuss provisioning of PPE for students for compliance with health and safety regulations	Lecturer to issue PPE to EIC students for safety in the workshop	Safety register
PLC	Expose lecturing staff to modern technology	Lecture staff for improved competency	
Unemployment	Implement training programme to foster employment opportunities for	Implement effective training programme controlled by professional qualified EIC lecturers	Placement stats for EIC students

5.10 Implementation of the Framework

The cycle of YPAR, that is, problem identification, data collection, data analysis and planning (Kornbluh et al., 2015:870), plays a vital role in the implementation of the proposed framework. This cycle is not fixed; it can start at any stage depending on the time and the need identified to effect a change. The cycle continues until improvement is observed. For this study, it is recommended that the cycle is implemented annually for each group of students taking EIC studies, to prepare them for employability. Figure 5.2 should be incorporated into the cycle to implement a constructivist framework more effectively. The respective stages of the cycle and their relevance to the implementation of the framework are discussed below.

5.10.1 Stage 1: Problem identification

The YPAR cycle, according to Kornbluh et al. (2015), shows that the process of change is not fixed; it can start anywhere by anyone in a team which is concerned with a particular community situation. The person(s) can start by involving people who might have the same problem or interest in solving the problem. The preparation of EIC students for enhancing skills acquisition can be started by anyone – the learning institution, principal, SES, any member of the community concerned with EIC studies or even lecturers – as long as they have a vested interest to enhance skills acquisition in the TVET sector. The individual must recruit members to establish a team of people with a common vision that could join forces and contribute different skills, interests and perspectives to the team. Their team effort may result in the development of an

intervention needed for enhancing skills in EIC studies for employability or even job creation.

5.10.2 Stage 2: Planning

As mentioned, the cycle of YPAR is not fixed and as such can start anywhere, such as with planning. The planning stage involves recruitment of people with the common vision of bringing about change in society. An individual may decide to plan together with the team after consultations or to recruit people with a common vision having planned the process for discussion with the established team. The planning stage for enhancing skills acquisition in EIC studies needs the establishment of a strategic partnership with local industry for placement of EIC students for WIL. In this study, the SES, ES and the lecturers were planning the WIL process for placement of EIC students.

5.10.3 Stage 3: Data collection

The preparatory meeting agenda of this study focused on team establishment, conceptualisation of the study, analysis of the situation in respect of the research site and development of the study action plan. The research team participated actively in the research and took ownership of the study and were motivated to identify and address issues of concern to the college community. For this stage, where a weakness is identified, the team may choose to recruit people with the relevant skills to strengthen the team. In this study, these processes were used to recruit a professional qualified workforce who will be capable of enhancing skills acquisition in EIC studies.

5.10.4 Stage 4: Data analysis

At this stage, the team members performed an analysis of their strengths, weaknesses, opportunities and threats in relation to the common problem identified. This stage of data collection gave the team an opportunity to identify roles for the co-researchers with a view to ensuring that the process was as open and transparent as possible. Thereafter, individuals with relevant skills were contacted with a view of recruiting them for the team.

5.11 Conclusion

This chapter commenced by presenting the background of the study with the research question and objectives to involve the reader. The chapter further presented the findings and recommendations for enhancing skills acquisition in EIC studies. Furthermore, it discussed the limitations of the study. The findings of the study justified the need for enhancing skills acquisition for employability of IEC students. The results indicated that current prospective EIC students were now prepared to undergo trade testing for competency in EIC. The chapter concluded by presenting a summary of the proposed YPAR stages to implement a framework for enhancing skills acquisition in EIC studies.

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Appendix A: Ethical Clearance

UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA

UFS UV

GENERAL/HUMAN RESEARCH ETHICS COMMITTEE (GHREC)

12-Dec-2021

Dear Mr Kgopiso Lehlakola

Application Approved

Research Project Title:
ENHANCING SKILLS ACQUISITION IN ELECTRICAL, INFRASTRUCTURE AND CONSTRUCTION STUDIES

Ethical Clearance number:
UFS-HSD2021/1551/21

We are pleased to inform you that your application for ethical clearance has been approved. Your ethical clearance is valid for twelve (12) months from the date of issue. We request that any changes that may take place during the course of your study/research project be submitted to the ethics office to ensure ethical transparency. furthermore, you are requested to submit the final report of your study/research project to the ethics office. Should you require more time to complete this research, please apply for an extension. Thank you for submitting your proposal for ethical clearance; we wish you the best of luck and success with your research.

Yours sincerely
Dr Adri Du Plessis
Chairperson: General/Human Research Ethics Committee

Dr Adri du Plessis
Digitally signed by Dr Adri du Plessis
Date: 2021.12.13 07:37:07 +02'00'

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Appendix B: Information Leaflet and Consent Form

23 Kiewiet Str

Meyerton

1961

Informed Consent

INVITATION TO PARTICIPATE

Dear Prospective Participant/Co-researcher

PROJECT TITLE:

ENHANCING SKILLS ACQUISITION IN ELECTRICAL INFRASTRUCTURE, AND CONSTRUCTION

RESEARCHER: KD Lehlakola

LETTER OF CONSENT TO PARTICIPATE IN RESEARCH

Primary Researcher: Mr KD Lehlakola, M Ed (Education)

Supervisor: Dr MF Tlali, University of Free State, Bloemfontein

This letter serves to invite you to participate in my research project – for my Master of Education studies (M.Ed.) – University of Free State. I am Mr KD Lehlakola Campus Manager at Maluti TVE in Qwaqwa and a registered student in the Master of Education programme with the University of Free State student number: 2017561735. Please read this form carefully, should you have questions or concerns please contact Mr Kgopiso Daniel Lehlakola, 0826305416/ mdlehlakola@gmail.com

AIM OF THE STUDY

To contribute towards the enhancement of acquisition of skills in EIC among youth with the purpose of providing them competences that have the potential of heightening chances of their employability.

PROCEDURES

You will be requested to participate in the focus group discussions/ and free interviews where necessary to observe structural setting where teaching and learning occurs. A maximum of three focus group discussions/ and free interviews will be conducted and observation of structural setting of teaching and learning will take a maximum of five days. All these activities will be conducted during teaching and learning times and focus group interviews will be held immediately after school.

POTENTIAL RISKS AND DISCOMFORTS

There are no expected risks or discomforts associated with participating in this study. The study will adhere with precautionary measures of COVID-19.

PAYMENT FOR PARTICIPATION

There is no compensation for participating in this research. Only the findings of the final study report will be presented, if required by the College internal reflection.

CONFIDENTIALITY

Any gathered data in connection with this study from you, will remain confidential. All responses will be combined in a way that assures anonymity. No names of the participates and institutions will be mentioned in a final report of this study. Your cooperation and participation are greatly valued as there is a dire need to enhance integration of content knowledge and practical work at TVET college through action learning approaches.

PARTICIPATION AND WITHDRAWAL

While I greatly appreciate your consent in this study and the valuable contribution you can make, participation remains voluntarily and is not compulsory. If you choose to take part and issue arises that causes discomfort you may cease your participation at any time. Please feel free to contact me directly to discuss it.

Please fill in and return this page and delete which is not applicable. Keep this letter above for future reference

I……hereby **GIVE CONSENT/DECLINE** to participate in the study.

PROJECT TITLE: **ENHANCING SKILLS ACQUISITION IN ELECTRICAL, INFRASTRUCTURE AND CONSTRUCTION**

RESEARCHER: **Mr KD Lehlakola**

Participant

Name and Surname: _____

Contact number: _____

☐ I hereby give free and informed consent to participate in the aforementioned research study.

☐ I understand what the study is about, why I am participating and what are the risk and benefits

☐ I give the researcher a permission to use the all types of data gathered from my participation, subject to the information indicated in the above latter.

Signature: _____ Date: _____ /____ / 20____

Appendix C: Research Team Agendas

First forum agenda

Agenda

1. Opening and welcome
2. Purpose of the meeting
3. Introductions
4. Problem and way forward
5. Background and objectives of the study
6. Role of the team
7. Logistics
8. Convenient venue and time
9. Frequency of the forums
10. Facilitations of the subsequent forums
11. Planning of the next forum
12. Closure

Meeting agenda

Agenda

1. Opening and welcome
2. Apologies
3. Minutes of the previous meeting
4. Adoption of the minutes
5. Discourses around SWOT analysis
6. Planning of the next forum
7. Closure

Appendix D: DHET Permission

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

GOLDFIELDS TVET COLLEGE

Enquiries: Dr RS Radile
Email: dobsradile@goldfieldstvet.edu.za
Contact: 057 910 6000

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WELKOM CAMPUS
CNR PETRUS BOSCH &
TORONTO ROAD
JAN CILLIERS PARK
WELKOM
9459

TEL: 057 910 1600
FAX: 057 353 2298

By email: mdlehlakola@gmail.com

08 December 2021

Mr KD Lehlakola
Itemoheleng Campus
Mampoi Street
PHUTHADITJHABA
9866

Dear Mr Lehlakola

RE: PERMISSION TO CONDUCT RESEARCH AT GOLDFIELDS TVET COLLEGE

Kindly be advised that permission has been granted for you to conduct research at Goldfields TVET College under the topic ***"Enhancing skills acquisition in Electrical, Infrastructure and Construction studies".***

The condition of this permission is subject to your compliance with the ethical considerations as stipulated in your application (Section 6) as well non-interference with teaching and learning activities at the college.

Goldfields TVET College wishes you success in your studies and would eagerly await to be informed of the outcome of your research.

Yours faithfully

MR FS MAHLANGU
PRINCIPAL: GOLDFIELDS TVET COLLEGE

Appendix E: Research Action Plan

ACTION PLAN

RESEARCH ACTION PLAN

ITEM	DATE	Venue	RESPONSIBLE PERSON
1. Confirmation of research or study site		On line	Researcher
2. First consultation meeting with research participants (College)	19.04.2022	Research Gold fields TVET	Researcher
3. Daily activity review	19.4.2022		Researcher
4. First consultation meeting with research participant (manager A)	20.04.2022	Sasolburg	Researcher
5. First consultation meeting with research participant (Manager B)	25.04.2022	Gold fields TVET	Researcher
6. Daily activity review	25.04.2022		Researcher
7. Focus Group Discussions meeting with participants (College participants)	19.04.2022	Gold fields TVET	Researcher
8. Observation of Teaching and Learning (Evidence)	19.04.2022	Gold fields TVET	Researcher
9. Data generation review	20.04.2022		Researcher
10. Continuation of data review.	21.04.2022		Researcher
11. Follow up meeting with Manager A	25.04.2022		Researcher
12. Follow up meeting with Manager B	26.04.2022		Researcher
13. Data coordination	27.04.2022		Researcher
14. Continuation of data coordination	28.07.2022		Researcher
15. Data streamline or restructure	29.04.2022		Researcher

Appendix F: Application for Title Registration

UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA
UFS UV

Postgraduate Office
Faculty of Education

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South Africa

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www.ufs.ac.za
Duvenhagecs@ufs.ac.za

18 September 2019

APPLICATION FOR TITLE REGISTRATION

Applicant: Lehlakola, KD
Student Number: 2017561735
Discipline: Higher Education
Study Code: Masters (EDHE8900)

Dear Mr Lehlakola

Your registered title is as follows: "*Enhancing skills acquisition in Electrical, Infrastructure and Construction studies*"

All of the best with your studies.

Yours sincerely,

Prof Jan Nieuwenhuis
Chair: CTR committee

Ms CS Duvenhage
Secretary: CTR committee

Appendix G: Editor's Letter

Rephrase it! Academic Text Editing

17 Fallopius Street, Bloemfontein
+(27) 076 081 0730
info@rephraseit.co.za

18 January 2023

Student: **KD Lehlakola**
Student number: **2017561735**

I declare that I language edited the master's dissertation titled, *Enhancing Skills Acquisition in Electrical Infrastructure Construction Studies*

During the editing process, I looked for and corrected spelling, grammar, punctuation, paragraph and syntax errors. Where I noticed inconsistencies or unclarities in the text, I made comments to draw the author's attention to the inconsistency or unclarity. I also made suggestions where changes could be made. Lastly, I double-checked the references in-text and in the reference list to make sure that they are consistent throughout. Where sources or source information were still missing, I indicated such to the author so that he could locate and add the missing information.

Disclaimer: The ultimate responsibility for accepting or rejecting the changes and recommendations rests with the student and I cannot be held responsible for any layout or language issues that might have emerged as a result of subsequent amendments to the text.

Yours sincerely

Johannes Pieter Odendaal