



**DURBAN UNIVERSITY OF TECHNOLOGY**  
**INYUVESI YASETHEKWINI YEZOBUCHWEPHESHE**  
**CREATIVE. DISTINCTIVE. IMPACTFUL.**

**TOWARDS A MULTIMODAL FRAMEWORK FOR WORK-  
INTEGRATED LEARNING ASSESSMENTS**

**BY**

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A thesis submitted in fulfilment of the requirement for the  
Doctor of Philosophy in Library and Information Science

Faculty of Accounting and Informatics, Department of  
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## DECLARATION

I, *Pamela Portia Thembeke Rakoma* declare that:

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## LIST OF ABBREVIATIONS AND ACRONYMS

<b>CA</b>	Constructive alignment
<b>CE</b>	Cooperative education
<b>CELT</b>	Centre for Excellence in Teaching and Learning
<b>DHET</b>	Department of Higher Education and Training
<b>DUT</b>	Durban University of Technology
<b>HEQF</b>	Higher Education Qualifications Framework
<b>HoDs</b>	Heads of Departments
<b>HPCSA</b>	Health Professional Council of South Africa
<b>IBL</b>	Industry-based learning
<b>PBL</b>	Project-based learning
<b>PoE</b>	Portfolio of Evidence
<b>SDL</b>	Self-directed learning
<b>WIL</b>	Work integrated learning
<b>WACE</b>	World Association on Cooperative Education

## ABSTRACT

Work-integrated learning (WIL) is an educational paradigm that allows for the integration of theory with practice to improve student success. WIL provides university undergraduate students with the opportunity of going to industry to apply what they have learnt in the classroom. Successful WIL programmes are heavily depended on three main stakeholders: the academic institution, the student, and industry. However, WIL is important because it provides real-work experience; development of mutual relationships with industry partners and enhances students' employability. However, WIL is confronted with multiple challenges among is assessments. The aim of the study was to develop a multimodal framework for work-integrated learning using grounded theory (GT). The study had three research questions, namely, how can multimodal platforms be used to assess work-integrated learning? What is the nature of the technology used in multimodal work-integrated learning assessments? and what multimodal framework should be developed for effective work-integrated learning assessments?

This study applies Grounded Theory to understand the challenges associated with WIL with particular emphasis on assessment. This study adopted the constructivist grounded theory developed by (Charmaz 2004; 2014). The constructivist grounded theory was chosen because of its simplicity in application, though the theory does have the classical GT themes. Thereafter, the P3 multimodal WIL assessment framework was developed. The developed framework was validated using user-feedback from three expert evaluators who had participated in the study using Charmaz (2004)'s evaluation criteria. Two of the four expert evaluators felt that the P3 multimodal framework will allow academics to understand and implement efficient WIL assessments.

The study solicited academics' views, perceptions, and experiences on multimodal WIL assessments during the COVID-19 lockdown and after. Participants of the study were chosen because of being involved with WIL assessments in DUT. Data collection was mainly face-to-face with two participants opting for online using Ms TEAMS.

**Keywords:** assessments, constructivist grounded theory, higher education, multimodal WIL assessments, work-integrated learning, WIL assessment framework

# CHAPTER ONE

## INTRODUCTION

### 1.1 INTRODUCTION

The term work-integrated learning (WIL) was introduced in South Africa in 2007 after the promulgation of the new Higher Education Qualifications Framework (HEQF) (Lewis, Holtzhousen, and Taylor 2010: 26). Globally, higher education institutions integrate various forms of WIL in their educational programmes (Bernhardsson 2023: 278). According to Bernhardsson (2023: 278), WIL aims to integrate theoretical knowledge that students gain in a university and practical skills in the workplace to ensure that students are exposed to real-world experiences. WIL placements depend on three partners: the university, the student, and the industry (Fleming, Mclachlan, and Pretti 2018: 321). This chapter introduces the background of the study, the aim of the study, the research objects and it concludes with the outline of the thesis.

### 1.2 BACKGROUND OF THE STUDY

Assessments have long been part and parcel of academics' workload, and this includes teaching and learning. Scholtz (2020: 27) reveals that assessments provide academics and students with knowledge gaps and pointers to where improvements should be implemented for academics to do interventions when needed. There are two key differentiations of assessments, namely assessment *for* learning and assessment *of* learning. Khalaf et al. (2020: 1) aver that assessment for learning refers to the academic and the student actively involved in improving the learning process, while assessment of learning happens at the end of the programme.

Scholars (McNamara 2013; Trede and Smith 2014) assert that assessments in work-integrated learning placements pose challenges for assessors because hosts might not have the skills or experience to assess students. In some cases, hosts even resist assessing students. Constructive alignment (CA) states that 'assessment tasks should be aligned to what it is intended to be learned' (Biggs and Tang 2011: 97).

The COVID-19 pandemic forced countries to be on lockdown meaning services that were deemed unnecessary had to close. Additionally, the Fourth Industrial Revolution (4IR) has had noticeable impact on higher education around the globe (Oliver 2022: 35). Higher education institutions were affected as well resulting in the implementation of online teaching, learning, and assessments (TLA). Subsequently, WIL assessments had to be revamped (Hondonga, Chinengundu, and Maphosa 2022: 565) and some academic programmes were unable to offer traditional WIL placements. These challenges highlight the need to explore how WIL assessments have adapted post-pandemic and the implications for students, universities, and industry partners.

Several authors provide definitions of multimodality. Anderson and Kachorsky (2019: 312) state that multimodality means 'making and texts that incorporate multiple modes or different channels of communication.' Subsequently, Jewitt, Bezemer, and O'Halloran (2020: 3) define multimodality as a 'term used to highlight that people use multiple means of meaning-making'. However, Oliver (2020: 119) differentiates between multimodality and multimodal learning. The author explains that multimodality refers to the dynamic application of different modes, and multimodal learning refers to 'individual modal preferences, communicating through different modes, learning and teaching by means of different modes, and education taking place through different modes of delivery'. This definition of multimodal learning is further explained by Nouri (2018: 685) that in multimodal learning, modes like gestures, audio, video and images are semiotic (the study of signs) resources that are incorporated to make meaning and calls for training of academics in the use of varies information and communication technologies (ICT's).

Moreover, Oliver (2022: 42) is of the view that multimodal learning and self-directed learning (SDL) are connected because in self-directed learning, students take ownership of their own learning, and the academic is not viewed as the authoritative owner of knowledge but more as a facilitator of learning. Oliver (2022: 48) alerts academics that, even in multimodal learning environments, learning should be student-centred by allowing students to collaborate in making meaningful connections to what is taught in the classroom; learning should be authentic in relation to real-life problems; learning should be portable, flexible and mobile and academics should be able to use different modes to present their content; and lastly, academics should adapt to multimodal assessment practices.

Moreover, Picciano (2009: 8) proposes a multimodal conceptual model that can be adopted and adapted when designing and developing blended learning programmes. The model is characterised by six components: content, dialectics or questioning, reflection, collaborative learning and synthesizing, evaluation and assessing learning. *Content* in Picciano's model deals with more than just the academic being the 'speaker' in the classroom and the student being the 'writer' but rather alludes to the fact that students need support both emotionally and socially in a multimodal environment. In *dialectics or questioning*, Picciano calls for academics to 'ask the right questions' that will allow students to critically engagement with the content. *Reflection* is one of an assessment method used in work-integrated learning programme. In the multimodal model, (Picciano: 2009: 12) advises that reflection can be done via blogs or discussion forums. The *collaborative learning* talks to group work that students are involved either during lectures or assessments. In a multimodal learning group work may be assessed through group presentations or group assignments that can be conducted and/or submitted online. The final component of the multimodal component is *synthesizing, evaluating and assessing* highlights a variety of assessments that may be conducted in online environment and these assessments may include quizzes, online tests or portfolios/e-portfolios, oral presentations Picciano (2009: 13). This study also sought to ascertain from DUT academics involved in work-integrated learning programmes the concepts of multimodal assessments that their programmes engaged with for WIL assessments.

### **1.3 PROBLEM STATEMENT**

Work-integrated learning is a widely accepted effective pedagogic method used to support a smooth transition from institutions of higher learning to the world of work (Khampirat, Pop, and Bandaranaike 2019:128). It was introduced to bridge theory and practice for students by allowing students to alternate between lectures and the workplace (Smith, Ferns, and Russell 2016: 198).

When COVID-19 affected the whole world, it was no more business as usual for higher education institutions and there was an urgent need to embrace the use of information and communication technologies (ICTs) in the teaching, learning, and assessments, and work-integrated learning programmes were no exception. Work-integrated learning (WIL) is a widely accepted effective pedagogic method used to support a

smooth transition from institutions of higher learning to the world of work (Khampirat, Pop, and Bandaranaike 2019:128). Work-integrated learning is defined as a universal term used to describe diverse learning experiences (Hewitt, Owens, and Stewart 2018; Hay 2020).

Assessments have been part and parcel of all higher education institutions and WIL programmes are no exception. Higher education institutions (HEIs) have traditionally assessed students either orally or written and the paradigm shift especially during COVID-19 forced academics to embrace online assessments tapping into multimodal and collaborative compositions (Ross, Curwood, and Bell 2020). During the COVID-19 pandemic in the country, higher education institutions had to change the way they delivered their programmes. The pandemic demanded social distancing and it was compulsory to wear a mask wherever one was, even in institutions. The question on the researcher's mind was, 'Will things ever be the same again or do we then embrace the 'new normal' way of doing things?' If COVID-19 persists, then, the assessment of work-integrated learning needs to change and therefore, multimodality within a work-integrated learning programme might be the solution.

Davis and Taras (2018: 475) state that assessments are regarded as important tasks that academics perform and even if an academic has been involved in assessments for a long time, they still need to be reskilled and assisted in responding to new circumstances, for example, the introduction of technology into teaching, learning, and assessments (TLA). Scholars have conducted extensive research on Work-Integrated Learning (WIL) and assessments. Studies (Zegwaard, Coll, and Hodges 2003; McNamara 2013; Ferns and Zegwaard 2014) have explored WIL and assessments in various contexts, and under different sociopolitical and sociocultural contexts. However, this study's angle of deviation is in its attempt to develop a multimodal assessment framework for WIL at the Durban University of Technology that would offer insights that may be applicable and contextualised to other institutions. The study aims to bridge the gap of a lack of consensus among several scholars on the best practices for assessing WIL, particularly when considered in the context of multimodal approaches. This need became even more pertinent post-COVID-19. Also, the study hopes to add to the body of knowledge in the under-researched area of the integration of multimodal strategies into WIL assessments.

The researcher is a lecturer in the Department of Information Systems in the Library and Information Studies Programme and has been involved with WIL in the third level of study for the past sixteen years. In her position as a work-integrated learning coordinator, she encountered challenges regarding work-integrated learning placements and assessments, especially during the COVID-19 pandemic in 2020. This ignited an interest in pursuing a study on multimodality within a university of technology where the researcher is employed. The researcher was interested to discover how DUT academics assessed students in work-integrated learning programmes and how they used technology for WIL assessments during COVID-19.

#### **1.4 AIM OF STUDY**

The study aimed to develop a multimodal framework for work-integrated learning assessments using grounded theory.

#### **1.5 RESEARCH QUESTIONS**

The research questions of the study were:

[RQ1] How can multimodal platforms be used to assess work-integrated learning?

[RQ2] What is the nature of the technology used in multimodal work-integrated learning assessments?

[RQ3] What multimodal framework should be developed for effective work-integrated learning assessments?

#### **1.6 RATIONALE OF THE STUDY**

There are numerous terms used to describe and define work-integrated learning and these terms tend to be used interchangeably (McRae and Johnston 2016). Some terms used to describe WIL are practicum, professional practice, internship, and workplace learning (Wood, Zegwaard, Fox-Turnbull 2020: 332). It has been noted that there is no one accepted term that defines WIL, but the distinguishing factor is that

successful WIL programmes depend on three stakeholders, the academic institution, the student, and the industry.

Work-integrated learning placements provide students with the opportunity to be in industry to bridge their theoretical knowledge with experience. Like any module that is offered in a university, work-integrated learning is not exempted from assessments, though in most cases, WIL assessments are conducted by both the academic responsible for WIL and the industry when the student undergoes work-integrated learning placements.

Dwesini (2017: 2) is of the view that it is the responsibility of higher education institutions to equip students with disciplinary knowledge and generic employability skills for the workplace and further suggests that work-integrated learning must be integrated into all academic programmes. There is ample literature (Jackson and Collings 2018); Whelan (2017); Govender and Wait (2017) regarding the benefits of work-integrated learning for higher education institutions and industry partners. This study will contribute to the literature on work-integrated learning by highlighting multimodal assessments in work-integrated learning. This study will further assist in presenting best practices that may be adopted by other higher education institutions. The study will present a grounded framework emerging from data for multimodal WIL assessments and respond to Huang's (2019: 52) call that there is no clearly defined multimodal framework in this case, for work-integrated learning assessments. Findings will be shared with DUT colleagues and other WIL practitioners both nationally and internationally.

The outcome of this study was the development of a multimodal framework for work-integrated learning using the grounded theory approach. The framework is called the *P3 multimodal work-integrated learning assessment framework* that can be adopted and adapted by any academic programme to streamline their WIL-related assessments. This framework is not prescriptive but offers guidelines for WIL assessments.

## 1.7 RESEARCH DESIGN

This study adopted the grounded theory (GT) methodology. Grounded theory is a method used to elicit participants' understanding, perceptions, and experiences (Payne 2007: 7). Strauss and Corbin (1990: 23) describe GT as a methodology that is 'inductively derived from the study of the phenomena it represents'. Similarly, Charmaz (2006: 2) states that GT is systematic, yet flexible in how data is collected and analysed to develop a theory that is grounded in the data.

GT was chosen because the researcher wanted to develop a framework for WIL assessments at the Durban University of Technology, and GT is the only methodology that allows the formation of a theory from the data (Strauss and Corbin 1990: 23).

This study aimed to develop a multimodal framework for the work-integrated learning (WIL) assessments at the Durban University of Technology that could be adopted and adapted by any academic department of DUT. The interviews conducted with DUT academics involved with work-integrated learning assessments sought to inform the researcher on the types of assessments used to assess WIL and how/what academics did during COVID-19. GT was the theoretical framework chosen to underpin this study since GT was the methodology that the researcher believed would allow her to develop a substantive framework borne of the data.

Data collected was interpretative because the questions asked allowed the researcher to gain an understanding of WIL practices in DUT from the participant's point of view (Maree 2016: 61). The research design was qualitative where semi-structured face-to-face interviews were held with participants. Other participants opted for the interviews to be on Ms Teams (this will be discussed further in Chapter 4 of this report). The population was DUT academics involved in work-integrated learning (in all its forms). The researcher initially inquired from the Student Admissions Department the exact number of departments; they approximated the departments to be 64. Moreover, the researcher used the DUT website to record each Faculty and the Departments within each of the six DUT faculties. The table will be presented in chapter four of the report (research methodology chapter).

In some of the chapters of this essay, extracts from participants are included to further explain the theme/s under discussion. A statistician was sought to assist with data analysis.

## **1.8 LIMITATIONS AND DELIMITATIONS OF THE STUDY**

Fleming (2018: 311) presents a discussion on being an insider researcher in work-integrated learning. This is regarded as a limitation of this study as the researcher views herself as an insider researcher by virtue of her being an employee of the Durban University of Technology and she the academic responsible for work-integrated learning in the LIS Programme and data was collected from other staff members within the institution. Due to DUT requirements a statistician for data analysis had to employ, therefore the researcher could not do her own analysis for this study.

## **1.9 DEFINITIONS OF RELEVANT TERMS IN THE STUDY**

### **1.9.1 Assessment**

The South African Qualifications Authority (SAQA 2015) defines assessment as:

The process used to identify, gather, and interpret information and evidence against the required competencies in a qualification, part-qualification, or professional designation to make a judgment about a learner's achievement. Assessment can be formal, non-formal, or informal; assessment can be of learning already done, or towards learning to inform and shape teaching and learning still to be done.

### **1.9.2 Cooperative Education**

Cooperative education is a form of experiential learning that aims at building students' career skills and knowledge (Moore 2010: 6). Haddara and Skanes (2007: 67) explain that cooperative education programmes were established to bridge the gap between theory and practice in engineering education; meet the new developments in industrial needs and make university education accessible to students. Groenewald (2003: 50) defines cooperative education as

An educational philosophy that advocates the formal integration of work experience (or community service) into the theoretical curriculum.

### **1.9.3 Host supervisor**

For this study, the researcher defines a host supervisor as the mentor or any designated employee in an industry responsible for training, mentoring, and supervising students who are completing work-integrated learning placements.

### **1.9.4 Work-integrated learning**

The *Work Integrated Learning: Good Practice Guide* by the South African Council for Higher Education (CHE) defines work-integrated learning ‘an umbrella term to describe curricular, pedagogic and assessment practices, across a range of disciplines that integrate formal learning and workplace concerns’ (CHE: 2011: 4). The guide further states that examples of WIL include

action-learning, apprenticeships, cooperative education, experiential learning, inquiry learning, inter-professional learning, practicum placements, problem-based learning, project-based learning, scenario learning, service-learning, team-based learning, virtual or simulated WIL, work-based learning, work experience and workplace learning (CHE 2011: 4). Additionally, Du Pré (2010: 17) defines WIL as a:

The strategy of applied learning (learning integrated with work) involves a structured educational programme that combines productive relevant work experience with academic study and professional reflection.

Sachs, Rowe, and Wilson (2016: 9) in the report prepared for the Australian Department of Education, titled *2016 Good Practice Report-work Integrated Learning (WIL)* explain WIL as

‘A’ term used in many ways to refer to various types of education-work experiences. It is often used interchangeably with other terms such as work-based learning, cooperative education, and experiential education/learning.

### **1.9.5 Work integrated learning placements**

For this study, the researcher explains work-integrated learning placements to refer to the period students spend in industry as required by their academic departments. The duration of WIL placements is dependent on the requirements of the academic programme.

### **1.10 ETHICAL CONSIDERATION**

Kumar (2014: 284) points out that the researcher needs to first get the participants' informed consent before collecting data; the researcher should ensure that participants suffer no harm; and that all information is confidential and where participants are identifiable, their information to be anonymous. During this study, the researcher kept to Kumar's (2014: 284) ethical issues by getting the participants' ethical clearance and the researcher made sure that the participants were not harmed and the presentation of the results would not reveal the participants' identity. The researcher applied for ethical clearance through the Institutional Research Office (DUT) for gatekeepers' permission. Participation in the study was voluntary, no incentives were offered.

### **1.11 STRUCTURE OF THE CHAPTERS**

**Chapter One** presents the **introduction** of the study. This chapter sets the tone for the research by providing definitions of relevant terms pertaining to the study and also clarifying the operationalized term that the researcher adopted for the study. This chapter further highlights the problem statement, objectives of the study, research questions, the rationale for the study, and concludes with a summary.

**Chapter Two** presents a **review of literature** that was consulted for the study.

**Chapter Three** discusses the **theoretical framework** for the study. This chapter provides a background of the Grounded Theory (GT) and presents the processes followed when is using GT method.

**Chapter Four** is the **research methodology** chapter.

**Chapter Five** is the **presentation of the key findings**.

**Chapter Six** presents the **discussion of the results**.

**Chapter Seven** concludes the study.

## **1.12 SUMMARY**

This first chapter presented the introduction to the study and background of the study that aimed to set the scene for chapter two by presenting the concepts of multimodal learning and assessments. Relevant definitions pertaining to the study were also presented. The objectives of the study, the aim and research questions, and the problem statement were discussed. It concluded with a summary of the outline of the thesis report. Chapter two will present the theoretical framework adopted for this study.

## **CHAPTER TWO**

### **THEORETICAL FRAMEWORK FOR THIS STUDY**

#### **2.1 INTRODUCTION**

The previous chapter presented the introductory discussion. The researcher adopted Grounded theory (GT) for this study. Grounded theory is one of the methods in qualitative research where qualitative research methods are employed to understand how individuals assign meaning to social problems. (Creswell and Creswell, 1990: 17). In the previous chapter, the researcher presented the introduction and background to the study, as well as discussed and defined the conceptual terms of this study. This chapter presents the theoretical framework adopted for this study. The researcher provides detailed discourse on grounded theory from the perspectives of Strauss, Glaser, and Charmaz. The choice of one of the GT methods was made only after the researcher had explored the classical grounded theories developed by Glaser and Strauss; Strauss and Corbin, and finally Charmaz.

#### **2.2 GROUNDED THEORY RESEARCH**

According to Chun Tie et al. (2019), grounded theory sets out to discover or construct theory from data, systematically obtained and analysed using comparative analysis. While grounded theory is inherently flexible, it is a complex methodology. Golding (2002; Nelson et al. 2023) argue that grounded theory is embedded in symbolic interactionism and pragmatism because the researcher is required to enter the worlds being studied, engage in symbolic interaction by observing, interacting and interpreting the subject's worlds. Golding (2002: 42) explains symbolic interactionism to be a 'theory of human behaviour and an approach to enquiry about human conduct and group behaviour'. Nelson et al. (2023: 1) state that researchers in the pragmatic worldview believe that 'research should produce knowledge' and change should be instigated. Thus, novice researchers strive to understand the discourse and the practical application of grounded theory concepts and processes. Merriam and Tisdell

(2015: 32) are of the view that in grounded theory, data can be from interviews, observations, and a variety of documentary materials. The three main grounded theory research methods are Glaserian grounded theory (Glaser 1978); Straussian grounded theory (Strauss and Corbin 1990) and constructivist grounded theory (Charmaz 2006, 2014).

Grounded theory (GT) was developed in the 1960s, but researchers are still confused with the different versions of GT and the terminology therein (Birks, Hoare, and Mills, 2019: 1). Rasmussen, Akinsulure-Smith, and Chu (2016: 23) believe that grounded theory (GT) can be traced to the works of sociologists Barney Glaser and Anselm Strauss in their book titled *the discovery of Grounded Theory: strategies for qualitative research* (1967). Glaser and Strauss (1967), in their seminal work, put forward a postulation that explored how researchers can develop theory from data collected, instead of starting the data collection process with a theoretical framework in mind.

Mohajan and Mohajan (2023: 73) differentiate between the two approaches. The Straussian grounded theory permits a literature review during data analysis. It involves an observer interpreting theory and an active researcher, employing complex and systematic procedures. On the other hand, the Glasserian grounded theory is interpretative and grounded in data where the researcher is largely passive (Mohajan and Mohajan 2023: 73). The authors further caution novice researchers to not start their research with 'preconceived theory' but to allow theory to emerge from data as previously advised by Glaser and Strauss (1967: 3).

### **2.2.1 GLASERIAN GROUNDED THEORY**

The Glasserian grounded theory is against literature review; theory is grounded in data where you have a passive researcher; it is interpretive (Mohajan and Mohajan 2023: 73). Strauss and Corbin (1990: 25) augment that Glaser wanted a 'well thought out, explicitly formulated and systematic set of procedures for coding and testing the hypotheses generated during the research process'. But Mohajan and Mohajan (2023: 73) caution novice researchers to not start their research with 'preconceived theory' but to allow theory to emerge from data as previously advised by Glaser and Strauss (1967: 3).

### **2.2.2 STRAUSSIAN GROUNDED THEORY**

The Straussian grounded theory allows literature review when data is being reviewed; theory is interpreted by an observer and you have an active researcher; uses very complex and systematic procedures and certifies. Strauss and Corbin (1990: 25) highlight Strauss' contribution to grounded theory, that:

- The need to get out into the field if one wants to understand what is going on;
- The importance of theory grounded in reality to the development of a discipline;
- The nature of experience and undergoing as continually evolving;
- The active role of persons in shaping the worlds they live in;
- An emphasis on change and process and the variability and complexity of life; and
- The interrelationships among conditions, meaning, and action.

### **2.2.3 CONSTRUCTIVIST GROUNDED THEORY**

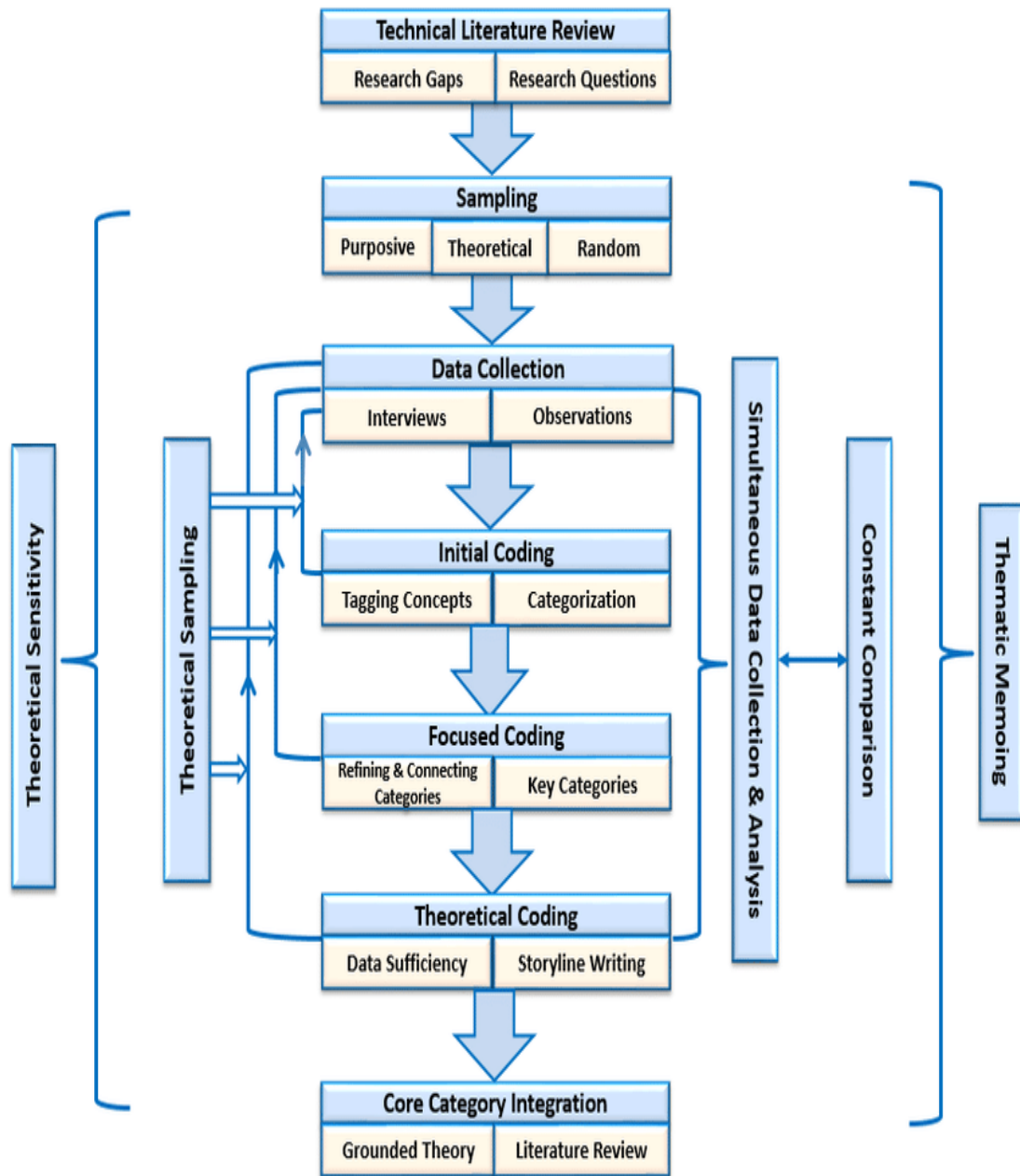
Constructivist grounded theory is referred to as a 'unique version of grounded theory that has its own ontology and epistemology (Nelson et al. 2023: 2). Constructivist grounded theory was developed by Charmaz (2006:9). In her book, *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*, Charmaz interprets grounded theory and provides guidelines by revisiting the classical methods of Glaser and Strauss. Charmaz later published a more exhaustive, detailed, and explanatory second edition titled *Constructing Grounding Theory* (2014). Charmaz (2006: 130) explains constructivist grounded theory as a method that places priority on the phenomena of study. It sees both generated data and the analysis as created from shared experiences and relationships with participants. Furthermore, constructivist grounded theory recognizes that the developed theory (in the case of this study, a framework) depends on the researcher's view. In this case, the researcher also takes a reflexive stance (explained below) and is aware of presuppositions (Charmaz 2006: 131). The researcher opted to adopt the constructivist grounded theory for this study

because as a novice researcher in GT, the researcher realized that this was the best GT method for her, as it was more understandable than the classical GT methods.

### **2.3 QUALITY IN GROUNDED THEORY**

Charmaz and Thornberg (2021: 314) stress the importance of quality in qualitative studies. They aver that grounded theory 'needs its own set of criteria to evaluate its quality'. The recommended criteria for evaluating grounded theory developed by Glasier and Strauss (1967) are: credibility, which speaks to the researcher's confidence and knowledge about the topic studied, and applicability: which is about the ability of the theory developed to be applied in different settings.

Later, Glaser (1978, 1998) developed four criteria for evaluating quality namely, quality of data; value of theory; thorough research process, and the grounding of the theory in the data (Charmaz and Thornberg 2021: 314). The constructivist grounded theory Charmaz (2006; 2014) also has four evaluation criteria: credibility, originality, resonance, and usefulness. Since this study adopted the constructivist grounded theory, Charmaz's (2006; 2014) evaluation criteria were used to evaluate the developed framework through expert evaluators who had participated in the study. The results of the evaluation are discussed in detail in Chapter 7 of this report.



**Figure 2.1: A presentation of grounded theory** Adapted from Charmaz (2014) and Chun-Tie et al. (2019) (<https://www.researchgate.net/>)

## 2.4 REFLEXIVITY

Reflexivity is when a researcher reflects on their role in the study, vis-à-vis their background, culture, and experiences, and how they potentially shape their interpretations. The researcher also considers how their biases, values, and personal background, e.g. gender, history, culture, and socioeconomic status shape their interpretations formed during the study (Creswell and Creswell 2023: 197). Likewise,

Birnbaum (2025: 62) agrees that reflexivity is a prominently featured in qualitative research books reminding researchers and novice researchers of the importance of scrutiny of their belief systems, assumptions, biases and social positions during their research journey. The notion of *epistemic cognition* as explained by Birnbaum (2025: 61) is the researcher's ability to be aware of multiple perspectives and ways of thinking, acquiring the capacity to flexibly use different bodies of knowledge and logical operations, recognising the strength and limitations in one's own reasoning and finding more than one solution to a particular to a research problem. The researcher employed reflexivity during this study by making memos of this study. When the researcher felt lost, she consulted and returned to GT books, articles for clarity.

## **2.5 CRITIQUES OR LIMITATIONS OF THE THEORY**

The researcher observed many similarities in the constructivist grounded theory to the classical grounded theory methods. However, the constructivist grounded theory was easy to understand and implement in this study. The theory signifies the importance of reflexivity that the researcher had to implement. The researcher was exposed to quantitative research and not much of qualitative research. It was a learning curve for the researcher.

## **2.6 SUMMARY**

This chapter presented the theoretical framework for this study. A discussion on the chosen constructivist grounded theory method for this study was provided. This chapter also clarified the researcher's stance regarding reflexivity by acknowledging her experience and being mindful of the end-product that is, the P3 multimodal WIL assessment framework presented in chapter seven of this thesis. The next chapter presents the literature review relevant to this study.

## **CHAPTER THREE**

### **LITERATURE REVIEW**

#### **3.1 INTRODUCTION**

The previous chapter presented the theoretical framework for this study. This chapter presents the literature review to provide ample context for the study. Included in this chapter is a discussion on work-integrated learning (WIL) concepts, WIL policies, the impact of WIL assessments during COVID-19, and WIL assessment strategies. This chapter also presents literature relating to the themes and sub-themes that emerged from the analysis. The researcher followed guidelines as provided by Charmaz (2014) and Glasier and Strauss (1967) who advised researchers to consider preparing this chapter only after data analysis had been completed to not influence the theory that will be developed. The literature review was guided by the research questions (presented in Chapter One) of this report and the interview questions to the participants.

#### **3.2 UNPACKING THE CONCEPTS OF WORK-INTEGRATED LEARNING**

Work-integrated learning is defined as a universal term used to describe diverse learning experiences (Hewitt, Owens, and Stewart (2018); Hay 2020). Scholars (Boud et al. 2023); Foster and Pierce (2021); Rowe and Zegwaard (2017); and Bilgin, Rowe, and Clark (2017) posit that WIL encapsulates other forms of experiential learning for example, service learning, cooperative education, work-based learning, internships, clinical placements, fieldwork, simulations, and practicums. It was revealed in this study that the majority of academic programmes in DUT use the term 'work-integrated learning'.

Kaider, Hains-Wesson, and Young (2017: 154) differentiate between WIL placements and non-placement WIL. WIL placements include internships, practicums, clinical rotations, industry-based learning (IBL), and cooperative education whereas, non-placement WIL may include industry and community projects, problem-based learning (PBL), and simulated and/or online workplace environments. Work-integrated learning

programmes are mostly credit-bearing and students are assessed based on the learning outcomes Boud et al. (2023: 1324) as it is the case with most DUT academic programme, their WIL components are credit bearing. Within the broader term of work-integrated learning, there are work-integrated learning placements defined by Smith, Ferns, and Russell (2016: 198) as ‘complex, focused activities designed to integrate theory with work practices’.

Numerous benefits of work-integrated learning have been discussed in the literature. WIL allows students to prepare for the world of work within a workplace (Forster and Pierce 2021). It improves students’ employability (Winchester-Seeto et al. 2024); raises self-confidence (Winchester-Seeto et al. 2024); integrates theory with practice (Wang et al. 2023); and provides students with first-hand experience and knowledge based on the qualification they are registered for (Jackson, Dean, and Eady 2023). Industry partners benefit as well when they host students. The benefits may include getting ‘free’ labour for the duration of the WIL placement, and getting new ideas/innovative ways from the students; recruitment is made easier if they select from the pool of students they host or have hosted previously. Though there are benefits, there are challenges that have been noted in the literature. Insufficient WIL placements due to a high number of students, financial constraints (travelling) and reluctance from industry to host and assess students (Jackson 2017).

Yong et al. (2024: 323) attest that WIL is an example of experiential learning and has its foundations in Kolb’s Experiential Learning Theory (ELT) where the basis of learning is experience. According to Kolb (1984:38), “learning is the process whereby knowledge is created through the transformation of experience” and “learning is continuously derived from and tested out in the experiences of the learners”. Experiential learning is also termed learning by doing and at the end of the learning experience, the student has to engage in critical reflection (Yong et al. 2024: 323).

The *White Paper for Post-School Education and Training* (2013: 9) emphasises that theoretical knowledge and practical experience are essential because ‘theory provides general principles and practical experience builds applied knowledge and develops self-confidence’. Every graduate hopes to find employment after their studies, unfortunately for some, this might not be the case, therefore, universities are looking for new and innovative ways to equip students with employability skills needed by

industry, and one way of this is through work integrated learning and work integrated learning placements (Kaider, Hans-Wesson & Young, 2017: 153).

### **3.3 WIL PARTNERS**

Work-integrated learning involves partnership consists of academics, students and industry. The three parties are all important for a work-integrated learning programme to be a success. Each partner has different roles to fulfil. Academics involved in WIL are responsible for preparation before WIL placements this may include hosting seminars or lectures, assessments and finding placements for students and building industry relationships (Bilgin et al. 2024: 1808). Moreover, once students have been placed, academics monitor the students either through visits, telephone calls, emails or online meetings. Once students return to campus, academics assess the students. According to Bilgin et al. (2024: 1797) academics view WIL as a continuous engagement since WIL begins even before lectures resume and continues even after lectures have ceased. Furthermore, industry partners are regarded as mentors, assessors or supervisors as they hold a position of power above students because of their knowledge, expertise and authority (Baumber et al. 2024: 217).

Of interest is the term Students as Partners (SaP) a scholarship of students in WIL presented by (Baumber et al. 2024: 217). SaP is an umbrella term for all initiatives and approaches that involve students by granting students a voice. Depending on where the students are (WIL placement or university), students may either be evaluators or co-creators of the curriculum or they can either be change agents or decision makers. As much as students undertake WIL placements to learn, the learning is reciprocal in the sense that industry can learn from the WIL students.

### **3.4. WORK INTEGRATED LEARNING POLICIES**

Turner and Astin (2020: 286) aver that extensive literature review should be avoided if the researcher wishes to develop a multimodal WIL assessment framework. Therefore, in light of this, the researcher discussed these two policies in relation to WIL.

### **3.4.1 WIL COMPONENT OF THE HIGHER EDUCATION QUALIFICATIONS FRAMEWORK (HEQF)**

The Higher Education Qualifications Framework (HEQF) was developed to 'meet demanding challenges facing higher education in the 21<sup>st</sup> century' (HEQF 2007: 3). Concerning work-integrated learning and assessments, the framework states that:

Some qualifications will be designed to incorporate periods of required work that integrate with classroom study. Where work-integrated learning (WIL) is a structured part of a qualification the volume of learning allocated to WIL should be appropriate to the purpose of the qualification and the cognitive demands of the learning outcome and assessment criteria contained in the appropriate level descriptors.

It is the responsibility of institutions, which offer programmes requiring WIL credits to place students into WIL programmes. Such programmes must be appropriately structured, properly supervised, and assessed HEQF (2007: 9).

### **3.4.2 WORK INTEGRATED LEARNING: GOOD PRACTICE GUIDE**

The *Work Integrated Learning: Good Practice Guide* was formulated by the Council on Higher Education (CHE) to assist academics in considering 'the educational role of work-integrated learning' in their programmes by providing them with a theoretical foundation for WIL. The guide uses both national and international examples that are contextualised to South Africa's unique milieu. The guide features seven chapters, namely, introduction to WIL, the Conceptual Framework for WIL, Curriculum Design, and Development for WIL, teaching, and Learning for WIL, assessment for/of WIL, partnerships, and Management of WIL (WIL Guide 2011: 3).

## **3.5 IMPACT OF COVID-19 ON WORK-INTEGRATED LEARNING**

On the 23rd of March 2020, the President of South Africa Mr. Cyril Ramaphosa announced a national lockdown, which meant that everything stopped, even higher education institutions could not continue with academic programmes as usual. The national lockdown was initiated to ease the spread of the COVID-19 virus (Makombe 2021: 10). The COVID-19 pandemic, put devastating demands on health, education and economic systems and the pandemic brought a sense of fear, disorientation, uncertainty, loss of lives and emotional imbalances on society (Naidoo, Naranjee and Sibiya 2021: 20). During the national lockdown, higher education institutions were

under pressure to 'save the academic year' but also making sure that everyone was safe (Makombe 2021: 5). Higher education institutions had to think of how teaching, learning and assessments were going to be conducted. The concept of 'working from home' or remote work was the order of the day. Higher education institutions had to abruptly move from traditional face-to-face lectures and assessments to online within a short period of time. New methods of teaching and assessments had to be applied in order to save the academic year. Students vacated residences and had to go back home, online learning was not without challenges for some students due to their geographical location, access to internet and power shortages (Makombe 2021: 13).

However, on June 1, 2020, the Minister of Higher Education, Science and Innovation, Mr Blade Nzimande announced the gradual return of final year students and stressed the use of remote learning for the students who could not return to universities. The return of students to higher education institutions was done in phases, under Level 4 and 5 no students were allowed; during level 3, 33.3% of the students were allowed back to campuses; during level 2 another 33.3% of the students came back to campuses and when we were on level 1, all students came back (Mlambo and Ndebele 2021: 47). The national lockdown mandated higher education institutions to implement online learning, teaching, and assessments, with immediate effect. According to Rook and McManus (2020: 601), though online teaching was not a new mode of teaching for other institutions of higher learning, shifting to solely online teaching, learning and assessment was a steep learning curve, this was a case of the DUT because it was not an online institution, but rather other departments did use blended learning.

The pandemic necessitated a shift from traditional WIL assessments to online assessments. Because most WIL assessments are conducted face-to-face, various academic programmes could not continue with WIL placements. Thus, some institutions adopted new WIL assessment strategies (Hondonga, Chinengundu, and Maphosa 2022: 565).

Scholars Schuster and Glavas (2017); Glavas and Schuster (2020) are of the view that incorporating technology into WIL can remove geographical barriers and reduce the financial burden the students spend on travelling and accommodation. Technology can be used in WIL for communication (emails, mobile apps), online portals (Blackboard), and virtual reality (e.g. Second Life) (Glavas and Schuster 2020: 1). It is

further noted by Glavas and Schuster (2020: 5) that when technology is used to enhance WIL it is then called eWIL, blended WIL (where it is a combination of face-to-face and online), virtual WIL. Likewise, Gamage (2022: 1358) defines eWIL as 'work-based learning activities that are exclusively supported and delivered by technology'.

Moreover, designing eWIL academics needs to ensure that the experiences are authentic, reflect real-world experiences (as those in the traditional workplace), and that there is adequate training for both the students and the academics. It has been noted that preparing traditional assessments is different from when one is preparing for online content.

Unfortunately, online learning requires that students have reliable connectivity and devices, and this is not the case for students, as we still experience the digital divide among South African communities. These challenges may be addressed by the use of multimodal teaching and learning. *The Merriam-Webster online dictionary* defines multimodal as 'relating to or utilizing more than one mode or modality'. Some institutions had already implemented online learning and for some, it was a case of 'now or never'.

COVID-19 introduced to some institutions, the concept of eWIL remote WIL or virtual WIL. Virtual or remote WIL is explained by (Briant and Crowther 2020: 619) to refer to a WIL that is remotely located, away from an industry/workplace, and all communication is completed in an online environment. Briant and Crowther (2020: 619) further, add that remote WIL may include virtual reality, online role plays, blogging, online forums, iPortfolios (also known as eportfolios), live chat rooms, virtual simulations, and video conferencing.

Some of the technologies adopted by Salter et al. (2020: 593) during COVID-19 were Zoom, emails, and webinars. Interestingly, students were also provided with data to enable them to complete their placements in an online environment which has resulted in the Going Rural Health programme wishing to integrate telesupervision in their clinical WIL placements (Salter et al. 2020: 595). As good as online placement was for this programme, challenges were noted: hosts delayed responding to emails requiring answers to students' queries. Given that this occurred during COVID-19, hosts were not well equipped and staffed to deal with their work and students' supervision. These challenges were further compounded by connectivity challenges. Although Salter et

al. (2020) provided a valuable discussion on online WIL, there is no discussion on online assessments.

In the same vein, Bilisland, Nagy, and Smith (2020: 428) point out that if an institution has a learning management system (LMS), opportunities for online learning are endless. For example, Microsoft Teams, Skype, email Adobe Connect, Zoom, and Google Hangout allow for synchronous and asynchronous teaching and learning in various academic settings. These tools can be used for the three partners in WIL, that is, the student, the academic, and the host supervisor.

### **3.6 WIL ASSESSMENTS IN HIGHER EDUCATION**

Assessments are part and parcel of higher education, and they are formative or summative assessments. Formative assessments in WIL are a preferred form of assessments because they provide immediate feedback to summative assessments that provide judgement at the end (Smith et al. 2019: 3). WIL assessments tend to be formative, however, Joseph and Winberg (2024: 142) report that professional bodies might require students to write examinations in order to be admitted into practice. a combination of both formative and summative assessments may be used in WIL assessments.

Ferns and Zegwaard (2014: 179) are of the view that 'assessment is central to the integrity and accountability of a university'. They also posit that assessment also forms part of the academic's workload. The two main types of assessments are formative and summative assessments. According to the WIL Guide (2011: 42), formative assessment is an 'assessment for learning' where students receive feedback on the assessment given. On the other hand, summative assessment is described as an 'assessment of learning' and is a process of evaluating the student's learning at a point in time. Hodges, Eames, and Coll (2014: 190) state that formative assessments 'help the students to improve as they work' and summative assessments 'make evaluative judgments about the level of achievement at the end'.

Then again, summative assessment is an 'assessment of learning' to indicate the student's success in meeting the assessment criteria. It is further described as a process of evaluating a student's learning at a point in time conducted by either the

academic or an industry representative or a professional body *Work integrated learning: good practice guide* (2011: 43). The WIL Guide (2011) further stipulates that in South Africa, many universities use continuous assessment, explained as assessment of a student's progress throughout the course rather than by examination. The guide further clarifies continuous assessment as series of summative assessments, as each assessment counts towards a final mark (*Work integrated learning: a good practice guide* 2011: 43). The current study will reveal types of assessments are commonly used by academics in work-integrated learning programmes at the Durban University of Technology.

In relation to work-integrated learning, McNamara (2013: 187) suggests that the 'learning outcomes should include learning theory, critical reflection, professional competence, and career management'. The author alludes to the fact that WIL learning activities relevant to the development of professional competence include work placement and feedback from host supervisors. She further adds that academics are encouraged to assist in the development of the student's professional competence through 'preparation for the WIL placement, identification of skills to be developed during the placements and the ability to self-evaluate and learn from the experience'. She proposes that professional competence should be included in the summative assessment of WIL to ensure the alignment of learning objectives and assessment and to provide feedback to the student (McNamara 2013: 188).

In work-integrated learning programmes, assessments are twofold: they happen in the classroom as well as in the workplace and these assessments are sometimes problematic due to the fact they sometimes have to include the assessment of both hard and soft skills (Hodges, Eames, and Coll 2014: 189). WIL assessment tends to assess holistic learning, the focus of assessments then tends to be formative rather than summative, and formative assessments are then more likely to increase the workload of academics responsible for WIL since formative assessments are developmental (Bilgin, Rowe, and Clark 2017: 168). Formative assessments require that effective and prompt feedback be given to students (Bilgin, Rowe, and Clark 2017: 169). Richardson et al. (2009: 339) believe that WIL assessments should include critical reflection because critical thinking encourages students to justify and validate their learning. The study sought to explore how Durban University of Technology

(DUT) academics with WIL, assessed their students and if they used multimodal assessments in their programme. The study further sought to find out if a programme did not have WIL, and what was done to link theory with practice. Joseph and Winberg (2024: 143) present points to include and consider when preparing WIL formative assessments, namely: the assessment should promote learning and understanding, promote critical thinking and reflective practice, the assessment should be authentic and include feedback.

The researcher shares Malczyk's (2018: 17) sentiments that indeed there is uncertainty about what the future holds, as face-to-face meetings or training sessions have been replaced with webinars or online tutorials. Malczyk (2018: 28) states that though there are benefits to multimodal instruction for higher education institutions, pedagogical and technological innovations need to be considered. Also, calls for the examination of the benefits and challenges of multimodal instruction for both students and academics should be critically examined, and if the merits outweigh the demerits, it should be implemented. Higher education institutions need to put systems in place to monitor, track, and support students in multimodal education. They also need to provide the necessary hardware and software (Malcyk, 2018: 27). Through digital technology, students are now able to create and distribute multimodal work (Archer, 2017: 2).

There is an array of assessments that may be conducted in WIL programmes, namely: workplace reports, written group/individual reports, examinations, oral group presentations, individual presentations, host supervisor reports, and reflective essays (Bilgin, Rowe, and Clark 2017: 169). Moreover, Briant and Crowther (2020: 622) list written reports, verbal pitches, research tasks, written reflections, and verbal presentations as some of their WIL assessments. Additionally, Bilgin, Rowe and Clark (2017: 170) present similar WIL assessments to be, tests and quizzes, skills audit, written group reports, essays, posts for online discussions, project management plans, participation in lectures, host supervisor reports, individual reports and written reflection. One of the questions in the interview asked participants to identify the types of WIL assessments conducted in their departments, these will be elaborated upon further in the 'discussion' chapter.

The Australian Council of Deans of Science have published *The Quality and Standards for work-integrated learning* (2019) refer to Winchester-Seeto et al (2010) where the authors presented six key aspects that may be assessed in a WIL programme, namely: discipline-specific academic skills and theoretical knowledge; 'hard' professional skills and knowledge (technical skills and competencies); 'soft' professional skills and knowledge (interpersonal and communication skills); graduate capabilities/attributes related to employability, life-long learning and citizenship; application of theory to practice and personal development/transformational learning.

Luk and Chan (2024: 1) present a list of assessment types that are used in higher education institutions for work-integrated learning derived from a review of articles between 2001-2020 to ascertain types of assessment methods for WIL programmes. The authors present assessment types for three phases of WIL, pre-experience, experience and post experience.

- Pre-experience assessment types include workshops, short presentations, portfolio artifacts and learning contracts.
- Experience assessment types are learning logs, oral presentations, reflective reports and videos, written reports, interim self-assessments and work supervisor evaluations.
- Lastly, it is assessment types for post-experience being summative evaluations used for learning outcomes, self-assessment questionnaires, final reflective reports learning logs, oral presentations and reflective essays.

It was noted that some DUT academics involved in WIL programmes mentioned some of these assessment types for their programmes. These are further discussed in chapter six under assessment modalities.

### **3.7 MULTIMODAL ASSESSMENTS OF WIL IN HIGHER EDUCATION**

Higher education institutions globally have adopted new online environments to replace the traditional pen-and-paper methods of subject instruction (van de Heyde and Siebrits 2019: 2). Multimodal assessments have been adapted by academics because they allow students to engage with social, visual and interactive technologies and students must have 'multimodal literacy' skills (Ross, Curwood and Bell 2020:

290). Academics need re-skilling to be able design and design multimodal assessments since traditional assessment strategies may not apply. This is supported by (Ross, Curwood and Bell 2020: 292) that for academics, 'presents challenges to their pedagogy, including how they formatively and summatively assess student learning'. Multimodal literacy is clarified by (Ross, Curwood and Bell 2020: 290) that

which draws upon a social semiotic approach to emphasise how multiple modes (e.g. written words, visual images or moving digital images) serve as socially and culturally shaped resources for meaning making.

Ross, Curwood and Bell (2020: 302) maintain that introducing multimodal assessments start with academics when they introduce multimodality in their teaching, introducing students to concepts of presenting knowledge in visual form and providing students with constructive feedback. Ross, Curwood and Bell (2020: 299) present a multimodal assessment framework based on four dimensions: criticality, cultivating creativity, taking a holistic approach and valuing multimodality.

- *Criticality*: academics are reminded that multimodal assessments may include sound, image, hyperlinks and navigation requiring knowledge of how these may be used in assessments.
- *Cultivating creativity*: they maintain that creativity is important in multimodal assessments and academics need to design assessments that allow students' creativity.
- *Holism*: this talks to the combination of images, music, voice and written words for the final product, and academics need to assess in totality.
- *Valuing multimodality*: academics need to embrace multimodality in all their teaching and assessments and afford students the opportunity to learn within multimodal spaces.

Authors (Smith et. al. 2020: 195) maintain that WIL can be completed virtually and further explain that a virtual environment means a synthetic, special (usually 3D) seen from a first-person point of view thus offering simulated experiences for WIL students without being physically present in the work environment. The authors present a gaming virtual environment that was created for construction students in an Australian university.

Though there are benefits to multimodality, Cruywagen and Potgieter (2020: 3) present challenges such as resistance of lecturers to change from traditional well-known methods of teaching and learning to developing online pedagogies; lack of experience, confidence, teaching material and assessment criteria; non-availability of personal computers with appropriate software programs for lecturers and students; absence of stable Internet connectivity.

### **3.8 PARTNERS IN WIL ASSESSMENTS**

Several scholars Zegwaard, Coll and Hodges (2003); McNamara (2013); Ferns and Zegwaard (2014) are of the view that academics responsible for WIL should involve host supervisors to assess students during work-integrated learning placements. It is recommended that academics should provide host supervisors with assessment rubrics to allow for WIL assessments to be standard irrespective of where the student is placed. Jackson (2018a: 556) supports the notion of host supervisors assessing students during WIL placements as host supervisors are the ones who can observe the students' performance during WIL placements.

Though other authors Ferns and Zegwaard (2014); McNamara (2013); Ferns and Moore (2012) agree with Jackson that if host supervisors are involved in assessing students, the challenge of reliability and validity of the assessments is questioned. Jackson also notes that host supervisors are sometimes reluctant to be involved in assessments and Winchester-Seeto et al. (2010: 74) note that the reluctance is because host supervisors do not want to give negative feedback or low grades to the students. In most WIL placements, students are assessed by both the academic and the workplace supervisor (Boud et al. 2023: 1325). It has been noted that in other programmes, professional bodies have the right to conduct WIL assessments.

Technology innovation has changed the educational landscape around the globe (Al-Omari, Carter and Chiclana 2016: 334). Online technologies may include blogs, microblogs, social networks, Learning Management Systems (LMSs), and virtual worlds (Naaji et al. 2015: 106). Schuster and Glavas (2017: 56) affirm that the use of technology may allow WIL experiences to happen within digital spaces rather than a

physical space thus coining a new term 'blended WIL' explained as a WIL experience delivered in online and face-to-face environments.

Online education is also assumed to be synonymous with asynchronous teaching and learning with Learning Management Systems used to administer course content (Roseth, Akcaoglu and Zellner 2013: 54). Technology advancement has further allowed new ways of using online technologies which include blended approaches that allow academics to combine varied forms of media within the same course (Roseth, Akcaoglu and Zellner 2013: 54). Blended learning approaches allow academics to match technology, pedagogy with the course content (Roseth, Akcaoglu and Zellner 2013; Naaji et al. 2015). Another objective of this study is to survey the use of online or blended assessments within departments that have work-integrated learning programmes.

### **3.9 GAPS IN LITERATURE**

Research gaps that have been identified in literature are about WIL assessments and the challenge faced by academics in designing effective assessments for WIL. In addition to this, is the integration of online assessments in WIL is a concept that is not yet accepted by most academics.

### **3.10 SUMMARY**

This chapter provided a brief overview of the literature on the study. Due to the nature of grounded theory, researchers are cautioned against providing a detailed literature review because the development of the theory (in this case, a framework) should come from the data and not any influences from related studies, therefore the researcher adhered to and provided just a brief discussion on the literature on work-integrated learning. The following chapter presents research methodology for this study.

# **CHAPTER FOUR**

## **RESEARCH METHODOLOGY**

### **4.1 INTRODUCTION**

The previous chapter presented the review of literature that was consulted after data was collected and the framework developed. The presentation of this chapter follows the diagrammatical presentation of Figure 2.1. Research allows us to discover answers to questions regarding a phenomenon by using scientific procedures to get to the truth. The two main approaches in research are quantitative and qualitative approaches. Quantitative approach uses rigorous quantitative data analysis whereas the qualitative approach is about subjective assessment of attitudes, opinions and behaviours (Kothari 2004: 5). Furthermore, Merriam and Tisdell (2015: 18) add that qualitative research is flexible and emergent. The selection of the sample is mostly purposeful and small, and the qualitative researcher spends valuable time in the field with participants. The authors recommend the following as characteristics of a qualitative researcher:

- A questioning stance concerning work and life context;
- High tolerance for ambiguity;
- Being a careful observer;
- Asking good questions.

### **4.2 RESEARCH CONCEPTS**

Gupta and Awasthy (2021: 27) mention that the three facets of research are ontology, epistemology and methodology, these concepts give an outline for planning, implementing and evaluating the quality of the research undertaken allowing researchers to form their research foundation based on their ontological and epistemological positions. At the core of research is ontology which is the study of being asking what exists and what is real. Researchers take a stand regarding their perceptions of how things really are and how things really work. Ontological assumptions of researchers are that there is a social world that is a hard, concrete,

and real and that the social world is a continuous process created afresh in each encounter of everyday life as individuals impose themselves on their world to establish a realm of meaningful definition (Gupta and Awasthy (2021: 27). Epistemology is the theory of knowledge. The researcher clarifies the claims and assumptions that are made about what the nature of knowledge is (Goodson and Phillimore 2004: 53). An epistemological stance is a choice between positivism (quantitative) and interpretivism (qualitative). Positivism emphasises an objective form of knowledge whereas interpretivism encourages a subjective form of knowledge.

Methodology is the angle the researcher wishes to take on the question being asked. It explains the systematic procedures of data collection and analysis without losing the researcher's philosophical stance, ontology and epistemology (Goodson and Phillimore 2004: 54). Furthermore, Kotari (2004: 7) distinguishes between research methods and research methodology that, research methods are techniques or methods used in the research and are concerned with the collection of data; statistical techniques used to establish relationships between data and the evaluation of the accuracy of the data collected. On the other hand, research methodology has many dimensions than research methods. Research methodology refers to the scientific way of studying how research is done, and it includes the logic behind the method chosen (Kothari 2004: 8).

### **4.3 RESEARCH PARADIGMS**

The notion of a paradigm originates from Thomas Kuhn in his book titled '*structure of scientific revolutions*' and used the term paradigm to replace the common philosophical usage of 'theory' (Pickard 2013). Kuhn (1962: 47) states that a paradigm guides research through direct modelling and abstracted rules and that, paradigms can function without agreement over rationalization. It is the worldview that guides the research, and it is the foundation of the research (Pickard 2013: 1). It includes researcher's beliefs about the nature of reality. A paradigm shapes the objective of the study, the motivation for the study and the expected outcomes of the research and it also assists in establishing the criteria for the research tools required for the study, for example, the methodology, the type of instruments and data collection that will solve the research problem being studied (Yong, Husin and Kamarudin 2021: 5857).

Furthermore, Packard (2013: 5) alludes to three major paradigms that is, positivism, postpositivism and interpretivism. Positivism and postpositivism are paradigms associated with quantitative research, while interpretivism is associated with qualitative research (Goodson and Phillimore 2004: 54).

#### **4.3.1 Positivism**

Positivism assumes the existence of an objective, independent and stable reality, what is real is what can only be seen. A positivist is regarded as an objective observer; the research begins with a hypothesis that is tested for verification through experiments and a use of statistical formulae. Positivists benefit from being in control of what happens next (Packard (2013: 9).

#### **4.3.2 Postpositivism**

Postpositivism includes mixed methods research (MMR) and researchers in this paradigm believe that all discovery is subject to interpretation and objectivity is dependent on the researcher. Postpositivists favour experiments and hypothesis testing; variables are manipulated after identification and measurement of the relationship between variables is through statistical techniques and generalisation of results is ensured (Packard (2013: 11).

#### **4.3.3 Interpretivism**

Researchers taking the interpretivist paradigm believe that you can only make sense of the social world through those who operate within it, the researcher and participants are both equal in knowledge production and interaction between the two is key (Goodson and Phillimore 2004: 54).

#### **4.4 RESEARCH QUESTIONS**

The study aimed to develop a multimodal framework for work-integrated learning assessments. The generated research questions were:

[RQ1] How can multimodal platforms be used to assess work-integrated learning?

[RQ2] What is the nature of the technology used in multimodal work-integrated learning assessments?

[RQ3] What multimodal framework should be developed for effective work-integrated learning assessments?

#### **4.5 METHODOLOGY SELECTED**

There are many types of qualitative studies and these include ethnography, phenomenology, case study, content analysis, narrative inquiry, action research, critical thinking and grounded theory Saldana (2011: 11). Grounded theory (GT) was chosen for this study. After extensive readings on qualitative research and three main grounded theory methods, the researcher decided to follow Charmaz's (2014) guidelines on constructivist grounded theory. Charmaz (2014) was chosen on the basis that the researcher is a novice in GT methods, Charmaz' books (2006; 2014) presented GT in simple terms and steps that were employed in her study. Reflecting on the discussions of the research concepts in this chapter, this study adopted the qualitative research method. Semi-structured interviews with academics involved in WIL assessments were conducted face-to-face and online using Ms Teams placing this study within the interpretivist paradigm.

With reference to the criteria for evaluating grounded theory studies, the researcher sent the framework to four participants requesting them to evaluate using the four criteria (credibility, originality, resonance and usefulness). The results of the evaluation feedback prompted the researcher to redesign the framework, and the three Ps were individually and extensively explained. These are presented in Chapter seven of this report.

#### **4.6 RESEARCH GAP**

As presented in chapter one, the study will present a grounded framework emerging from data for multimodal WIL assessments and respond to Huang's (2019: 52) call that there is no clearly defined multimodal framework in this case, for work-integrated learning assessments. Findings will be shared with DUT colleagues and other WIL practitioners both nationally and internationally. The outcome of this study was the development of a multimodal framework for work-integrated learning using the grounded theory approach. The framework is called the *P3 multimodal work-integrated learning assessment framework* that can be adopted and adapted by any academic programme to streamline their WIL-related assessments. This framework is not prescriptive but offers guidelines for WIL assessments.

#### **4.7 RESEARCHER INTEREST**

The researcher is currently employed by the Durban University of Technology in the Department of Information Systems in the Library and Information Studies Programme. She is responsible for the preparation, placement, assessment, and monitoring of third-year Library and Information Studies students who are eligible to complete WIL. A spark was ignited when she went to the World Association for Cooperative and Work-Integrated Education (WACE) conference in Philadelphia, USA where she presented a paper on WIL. The researcher was not aware that WIL was such an important aspect around the world. From then, her passion for WIL increased and she decided that WIL would be her niche area hoping to be called a WIL expert someday. It is hoped that this study represents the first step toward fulfilling her dreams and inspirations.

#### **4.8 RECRUITMENT OF PARTICIPANTS**

The Durban University of Technology (DUT) was chosen because of the ease of access to participants. The researcher thought it would be easy to get participants for the study. The researcher accessed the DUT website to get all the Faculties and departments in the institution (see Table 4.1). A handwritten list of all the departments and contact details was created. The researcher made initial telephone calls to Heads

of Departments or Secretaries to introduce herself. The researcher also sought to find out if the programme had WIL. The researcher thereafter sought permission to conduct face-to-face interviews and requested contact details of the person(s) responsible for WIL. In some cases, an email was sent to HoDs using the same process outlined.

If a department did not have WIL, the researcher requested to continue with the interview, provided the academic agreed. The researcher sought to establish, in the absence of WIL, what strategies departments used to allow students to bridge theory with practice. Some departments, agreed for the interview to continue others refused stating that there was nothing worth discussing.

It was strange to discover that other staff members 'did not know who was responsible for WIL in their departments', hence the conversations (both through the telephone or emails) could not continue. The worst-case scenario was when emails were not responded to. What started as an easy task, ended up being an impossible mission to accomplish.

Once the researcher was approved to conduct the study, she then contacted the academic responsible for WIL and the same information was communicated to the participant. The academic was informed that initial communication was with the HoD. Sometimes, the HoD responded to the researcher, and the academic responsible for WIL was copied in the email.

The first communication with the HoD and future participants was important because first impressions last. How the emails were written to how the researcher communicated over the phone played a crucial role in making sure that the academics were willing to give the researcher their time to respond to the questions. Once the introductory parts were concluded, the researcher requested the participants' convenient time for the interviews. The researcher asked the participants to choose the dates, times, and places convenient to them. Almost all the interviews were held in the participants' offices. No incentives were offered to the participants and participation in the study was voluntary.

**Table 4.1: DUT Faculties and Departments**

<p><b><u>FACULTY OF ACCOUNTING AND INFORMATICS</u></b></p> <p><b>DEPARTMENTS:</b></p> <ul style="list-style-type: none"> <li>• Auditing and Taxation</li> <li>• Finance and Information Management (Midlands)</li> <li>• Information and Corporate Management</li> <li>• Information Systems</li> <li>• Information Technology</li> <li>• Management Accounting</li> <li>• Financial Accounting</li> </ul>	<p><b><u>FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT</u></b></p> <p><b>DEPARTMENTS:</b></p> <ul style="list-style-type: none"> <li>• Architecture</li> <li>• Chemical Engineering</li> <li>• Civil Engineering and Geomatics (Durban)</li> <li>• Civil Engineering (Midlands)</li> <li>• Construction Management and Quantity Surveying</li> <li>• Electrical Power Engineering</li> <li>• Electronic and Computer Engineering</li> <li>• DCT-REES</li> <li>• Industrial Engineering</li> <li>• Town and Regional Planning</li> <li>• Urban Futures Centre</li> </ul>
<p><b><u>FACULTY OF APPLIED SCIENCES</u></b></p> <p><b>DEPARTMENTS:</b></p> <ul style="list-style-type: none"> <li>• Biotechnology and Food Science</li> <li>• Chemistry</li> <li>• Textile Science and Apparel Technology</li> <li>• Consumer Sciences Food and Nutrition</li> <li>• Horticulture</li> <li>• Maritime Studies</li> <li>• Mathematics</li> <li>• Physics</li> <li>• Statistics</li> <li>• Sports Studies</li> <li>• Short Courses</li> </ul>	<p><b><u>FACULTY OF HEALTH SCIENCES</u></b></p> <p><b>DEPARTMENTS:</b></p> <ul style="list-style-type: none"> <li>• Basic Medical Sciences Department</li> <li>• Biomedical and Clinical Technology</li> <li>• Chiropractic</li> <li>• Community Health Studies</li> <li>• Dental Sciences</li> <li>• Emergency Medical Care and Rescue</li> <li>• Homeopathy</li> <li>• Medical Orthotics and Prosthetics</li> <li>• Nursing</li> <li>• Radiography</li> <li>• Somatology</li> <li>• Short Courses</li> </ul>
<p><b><u>FACULTY OF ARTS AND DESIGN</u></b></p> <p><b>DEPARTMENTS:</b></p> <ul style="list-style-type: none"> <li>• Drama and Production Studies</li> <li>• Fashion and Textiles</li> <li>• Fine Art and Jewellery Design</li> <li>• Media, Language, and Communication</li> <li>• Education</li> <li>• School of Education</li> <li>• Adult and Community Education Unit</li> <li>• Centre for General Education</li> <li>• Video Technology</li> </ul>	<p><b><u>FACULTY OF MANAGEMENT SCIENCES</u></b></p> <p><b>DEPARTMENTS:</b></p> <ul style="list-style-type: none"> <li>• Applied Law</li> <li>• DUT Business School</li> <li>• Entrepreneurial Studies and Management</li> <li>• Hospitality and Tourism</li> <li>• Human Resources Management</li> <li>• Marketing and Retail</li> <li>• Operations and Quality Management</li> <li>• Public Management and Economics</li> <li>• Public Relations Management</li> </ul>

<ul style="list-style-type: none"> <li>• Visual Communication</li> <li>• Short Courses</li> </ul>	<ul style="list-style-type: none"> <li>• Short Courses</li> <li>• Wholesale and Retail Leadership Chair</li> <li>• FMS Postgraduate Studies</li> </ul>
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#### 4.9 SAMPLING

Sampling is mainly used in quantitative studies, though this study used a grounded theory paradigm, the researcher needs to clarify how her participants were selected for the study. Sampling is about selecting a sample from the population that you want to study and the two main types of sampling methods are probability and nonprobability sampling. Probability sampling is the ‘selection of a random sample from a list’ of every potential participant, whereas nonprobability sampling is when the researcher does not have a list to choose from, and participants are purposively chosen (Babbie 2014: 186). Purposive sampling involves selecting participants because of their knowledge of the area or phenomenon under investigation study. This study employed purposive sampling because only academics involved with WIL were identified, selected, and invited to participate in the study. The WIL academics were believed to be knowledgeable about the topic of WIL assessments and would provide valuable insights for the development of the framework presented and discussed in Chapter Seven.

#### 4.10 STUDY APPROVAL

The first step in getting registered for an NQF Level 10 qualification at the Durban University of Technology is to fill out a detailed Research proposal and ethics checklist which has the topic, and context of the research. Once filled and approved by the supervisors, the form is signed by the Head of Department (HoD) and then sent to the Faculty Research Committee (FRC) which appoints reviewers for the proposal. The student is then required to make the necessary changes (if any) as directed by the reviewers and submit a ‘post review template’ showing where and how the concerns raised were addressed by the student.

Once the researcher’s research proposal and ethics checklist were approved by the Faculty Research Committee (FRC), the researcher had to apply for ethical clearance from the FRC. The researcher was granted ethical clearance, see **Appendix A**. With

the ethical clearance letter, the researcher could now apply for a gatekeeper request from DUT. The researcher was granted full permission, see **Appendix B** to conduct her study.

#### **4.11 DATA COLLECTION**

Charmaz (2014: 27) states that in grounded theory, 'data collection flows from the research question.' Based on the type of data that the researcher wanted to collect, the researcher physically visited each participant for data collection. During data collection, the researcher employed the 'interpretive qualitative method' because she entered her participants' worlds. The researcher ensured that their dignity and practice were respected. She also ensured that she established a rapport with all her participants before the commencement of the study (Charmaz 2014: 33).

Data collection started in the middle of October 2022 until early 2024 because at some point the researcher had to pause data collection due to personal challenges. There is currently no guide to the number of interviews that a GT researcher should conduct as in the case with quantitative studies where one has a sample frame. When the researcher realised that there was no more new data and no more responses from participants, she had to stop data collection and get ready for data analysis.

Semi-structured interviews (Appendix C) were chosen as the best method to use due to the aim of the study. Semi-structured interviews allowed the researcher to ask for additional clarity if needed (Creswell and Creswell 2023: 199).

Before the start of the interviews, the researcher sought permission from the participants to record the interviews. The recordings were done using a voice recorder and on days that this was not possible, the researcher used her cell phone. Suffice to add that detailed handwritten notes were also taken. This method is referred to as 'memoing', and is an important part of grounded theory, where the researcher records methodological dilemmas, directions, and decisions (Charmaz, 2014: 164).

On the day of the interviews, the researcher arrived early at the venue where the interview was to be held. She introduced herself and thanked the participant for agreeing to the interview. The participants were informed of the purpose of the interview. The participant was assured of confidentiality and at the end of each

interview, participants were thanked for participating in the study. There were occasions during the interview where participants requested the recording to stop due to the nature of what was being shared. In those instances, the participants' requests were granted. The interview was two-way, if clarity was needed it was offered (either the participant or the researcher), and sometimes follow-up questions were probed by the researcher to understand the phenomenon better. Of importance, was the positive feedback received from participants and their willingness to share information.

#### **4.12 THEORETICAL SAMPLING**

Charmaz (2014: 192) explains theoretical sampling as 'seeking pertinent data to develop your emerging theory'. Theoretical sampling is done to develop categories until no new categories can be developed additionally. Initial sampling Charmaz (2014: 197) allowed the researcher to identify participants for the study, participants that would be able to respond to the question of multimodal WIL assessments in their departments and decisions on how data would be sought were made during the initial sampling. The researcher made a decision that academics involved in WIL assessments will be of benefit to the study's aim. Academics that did not have a WIL component were also included during data collection to gather knowledge of what other forms of WIL are offered to DUT students and how these are assessed.

Due to DUT requirements, the researcher was advised to employ a statistician for data analysis. Though a statistician was employed for data analysis as required by the institution, all data collection was done by the researcher, and all interviews were recorded with permission from the participants and notes were written for all the interviews conducted. The researcher believes theoretical sampling was employed in her study since she participated in social worlds of how other academics in DUT conducted WIL assessments and forwarded with the opportunity of developing the P3 multimodal framework. In retrospect, the gaps that the researcher would like to fill are about the types of multimodal assessments and how these impact on the students. Another gap would be academics embracing online WIL assessments as well as multimodal preparedness on academics and students.

#### **4.13 THEORETICAL SATURATION**

According to Charmaz (2014: 213) theoretical saturation happens when data gathered stops to bring new theoretical insights or new properties. The current study reached theoretical saturation when no new concepts, themes emerged from the data and data collection was then stopped.

#### **4.14 MEMOING**

According to Charmaz (2014:162), grounded theory researchers are admonished to pay attention to memo writing because it is an important step during data collection, as it serves as a methodological journal. Chametzky (2016: 164) adds that memos are written down connections between incidents, codes and categories. The researcher made detailed notes/memos during each interview completed. The memos provided the researcher with insight into the data collected even before data analysis was conducted. Though the researcher did not analyse the data herself, having the memos assisted her when doing the final write-up of this study. The researcher did keep a methodological journal where she recorded dilemmas and decisions during the study this helped the researcher to engage in reflexivity and being able to identify her own learning gaps as a novice grounded theory researcher. During the interviews, the researcher made notes on the discussions, and the memos assisted her to ask for clarity on aspects that were not clear. Through memos the researcher was able to see the direction of the proposed framework. The first draft of the framework was hand drawn during memo writing before employing the use of technology assisted drawing.

#### **4.15 INITIAL CODING USE OF NVIVO SOFTWARE**

At the core of grounded theory is the need to adopt manual data analysis immediately after data collection. This is important to help the researcher navigate the challenges of data saturation. Other authors advocate using software packages to assist with data analysis especially if grounded theory is used for one's studies. The researcher was torn between the two streams of data analysis and tried to incorporate both, but because GT was used for her PhD studies, she decided to incorporate the use of Nvivo software as advised by her supervisors. The researcher then employed the use of a

statistician as guided by the Research Office of DUT. The analyst did the coding and analysis for the study. The analysis is presented in chapter five of this thesis.

#### **4.16 CORE CATEGORY INTEGRATION**

The last part of the representation of grounded theory is the development of the theory and then the literature review. The researcher developed the P3 multimodal framework for WIL assessments eliminating the data that was collected during the interviews. The framework is presented in detail in Chapter 7 of this report.

#### **4.17 CHALLENGES**

During data collection, the researcher experienced challenges that she feels should be noted in the report. Some were:

- The DUT website provided contact details of HoDs but in some cases, the HoD had either left DUT or was no longer an HoD (since the position of HoD is on a contract basis) but the details were not changed on the DUT website.
- Some HoDs did not respond to emails even after numerous requests, and other HoDs promised to respond but never did.
- Sometimes the office telephone numbers listed on the website were not functional thus making it difficult for the researcher to communicate with the department.

Though there were challenges experienced, it should be noted that some HoDs went beyond their call of duty to assist the researcher with her data collection. In one department, the HoD decided to be the participant. In another department, the Executive Dean provided the researcher with the list of all the departments with contact details of the academics that the researcher should communicate with.

#### **4.18 DATA MANAGEMENT**

As per the researcher's research proposal and ethics checklist, data will be stored securely for five (5) years and disposed of thereafter. All data will be shredded in the presence of the supervisor and co-supervisor. Confidentiality of participants was respected. In cases where confidentiality was compromised, the researcher made sure that individuals were unidentifiable, as their names and departments were not mentioned.

#### **4.19 SUMMARY**

Chapter Four presented the research methodology followed in conducting this study. This chapter followed the guidelines adopted by Charmaz (2014) and Chun-Tie (2019) as presented in Figure 2.1. Included in this chapter is the discussion on the research paradigms, research gap, and researcher interest. Moreover, recruitment of participants, data collection, and analysis were also discussed. Chapter five presents the findings of the study as received from the statistician.

## CHAPTER FIVE

### FINDINGS

#### 5.1 INTRODUCTION

The previous chapter outlined the research methodology for this study. This chapter presents an outline of the data analysis conducted for the study which aimed to develop a multimodal framework for the work-integrated learning (WIL) assessments at the Durban University of Technology. The researcher employed interviews to gather participants' opinions on work-integrated learning (WIL) assessments at the DUT.

The study set out to achieve three objectives. The first objective was to explore the use of multimodal platforms in assessing work-integrated learning. The second objective sought to determine the use of technology in multimodal work-integrated learning assessments. The third objective sought to develop a multimodal theory for effective and efficient work-integrated learning assessments. The interviews were conducted face-to-face, generating electronic voice recordings that were later used for transcription and analysis. This approach ensured the integrity, trustworthiness, and quality of the data. Thematic analysis, facilitated by NVivo, was chosen as the methodology due to its systematic nature, adaptability, and capability to categorize data into meaningful themes and subthemes.

The transcriptions were then imported into QSR NVivo 12 software to facilitate the analysis process. The software aided the organisation of the coded data into themes and subthemes derived from the interview guide, allowing for a manageable grouping of the data. The analysis process involved making objective comparisons of the data in line with the study's focus. The chosen approach adhered to Spencer's (2011) recommendation for qualitative research, which emphasizes finding a balance between letting the data speak for itself and structuring it according to theoretical models and concepts. Additionally, Saldaña (2015) suggested that a provisional list of codes should be determined in advance to align with the study's conceptual framework. Consequently, the study's themes

were predetermined deductively for data collection and analysis purposes, while the subthemes were identified inductively.

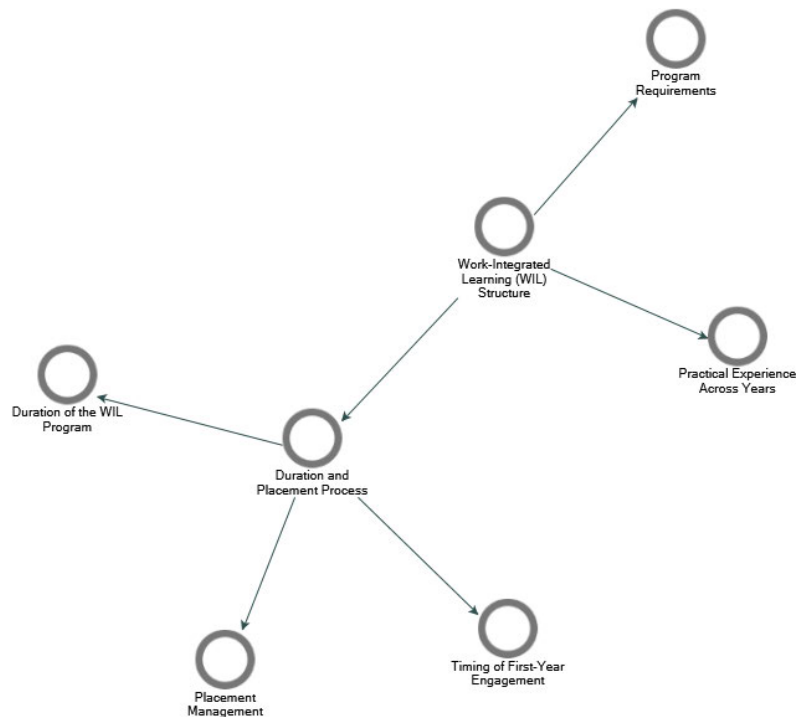
## **5.2 EMERGING THEMES AND SUBTHEMES**

The interview was conducted with nine participants drawn from different faculties to share their experiences and opinions on WIL. The transcribed data was used verbatim during the interpretation and supported by relevant literature. In keeping with the confidentiality agreement, the participants were anonymised. The data was interpreted and analysed to address the research questions below. Overall, five themes emerged from the analysed data, and each of the five themes further has sub-themes. The main five themes that emerged were:

- [Theme 1] Work-integrated learning structure
- [Theme 2] Work-integrated learning modalities
- [Theme 3] Leveraging technology for enhanced learning and industry applications
- [Theme 4] Challenges and innovations in assessment
- [Theme 5] Benefits and challenges in work-integrated learning

### **THEME 1: WORK-INTEGRATED LEARNING (WIL) STRUCTURE**

Theme 1 explores the structure of WIL illustrated in Figure 5.1.



**Figure 5.1: Components of Theme 1**

## **SUBTHEME 1.1: DURATION AND PLACEMENT PROCESS**

This subtheme explores the structure and logistics of the work-integrated learning (WIL) programme, focusing on its duration, the placement process, and the variability in student experiences. This discussion highlights the significance of these elements in shaping students' practical experiences and readiness for the workforce.

- **DURATION OF THE WIL PROGRAMME**

The WIL programme spans two years and encompasses students in their third and fourth years of study, as noted by Participant 9. This extended duration is beneficial as it allows students to develop a deeper understanding of their field through prolonged exposure to real-world settings. Research indicates that longer WIL placements may not lead to enhanced learning outcomes, students, however, have more opportunities to apply theoretical knowledge and build essential skills (Ngonda et al., 2023: 42).

*“Ours is two years. It’s both third and fourth year.” (Participant 9)*

Participant 5's mention of a four-month placement suggests that these experiences are not only significant in length but also critical in providing comprehensive exposure to practical applications of their studies. The ability to engage in sustained placements fosters a more profound learning experience, as students can connect classroom concepts with practical realities.

*Four months." (Participant 5)*

- **PLACEMENT MANAGEMENT**

The placement process, as managed by the Faculty, emphasizes the role of academic institutions in facilitating these critical experiences. Participant 9's comments highlight the collaborative efforts between Faculty and the WIL coordinators to ensure that students are placed in suitable training units, primarily public hospitals. This structured approach can enhance the quality of placements, as Faculty members can leverage their industry connections to secure meaningful opportunities for students (Immerstein et al., 2020).

*"We place our students, myself and the WIL." (Participant 9)*

However, variability in the sourcing of placements, as indicated by Participant 4, suggests that some students may take a more proactive role in seeking opportunities. This mixed approach can lead to diverse experiences among students, with some benefiting from Faculty-led placements while others navigate the placement process independently. Such variability can impact the perceived quality of the WIL experience and highlights the need for a more standardized approach to ensure equitable access to opportunities (Valencia-Forrester, 2020).

*"It varies. Some would approach the companies themselves." (Participant 4)*

- **TIMING OF FIRST-YEAR ENGAGEMENT**

The staggered introduction of WIL for first-year students, who begin placements in the second half of the academic year, reflects a gradual integration of practical experiences into their education. Participant 2's description of six to seven weeks of placement highlights the importance of early exposure to industry settings, even for

first-year students. Early engagement in WIL can enhance students' motivation and clarify their career goals, setting a solid foundation for their subsequent studies (Clements, 2019).

*"First years... will only start going after June... it's about six to seven weeks depending on the holidays." (Participant 2)*

### **SUBTHEME 1.2: PRACTICAL EXPERIENCE ACROSS YEARS**

Subtheme 1.2 examines the structured integration of practical experiences throughout students' academic journeys, emphasizing the role of clinical work and industry exposure in developing essential skills and competencies. This discussion highlights how progressive responsibilities contribute to students' readiness for professional practice. Participants noted that students engage in clinic work and industry placements from their first and second years. Participant 2's observation underscores the importance of early and continuous exposure to practical environments, which allows students to apply theoretical concepts in real-world settings. Research indicates that integrating clinical practice with academic learning enhances students' critical thinking and problem-solving abilities, making them better prepared for their future careers (Zhang et al., 2020).

*"First year and second year they'll be working in the clinic... but they still go to industry." (Participant 2)*

The dual engagement in both clinical and industry contexts provides students with a holistic understanding of their field. By alternating between these settings, students can observe different aspects of healthcare delivery, gaining insights into both patient care and industry practices. This comprehensive exposure is crucial for fostering adaptability and ensuring that students can navigate diverse work environments (Fleming and Pretti, 2019).

### **SUBTHEME 1.3: PROGRAMME REQUIREMENTS**

The transition from a National Diploma to a Bachelor's Degree, as discussed by Participant 7, reflects an evolving educational landscape that increasingly emphasizes the need for work-integrated learning (WIL). This shift indicates a recognition of the

importance of aligning academic programmes with industry demands and standards. The phasing out of the National Diploma in favour of a more comprehensive bachelor's programme can provide students with enhanced learning opportunities and better prepare them for the complexities of modern healthcare environments.

*"We are in the last bit of phasing out [the National Diploma]... we still have a few students... that requires work-integrated learning." (Participant 7).*

Incorporating WIL requirements into the curriculum not only ensures that students meet industry standards but also fosters collaboration between academic institutions and industry partners. This collaboration can enhance the relevance of academic programs and improve students' employability upon graduation (Ngonda et al., 2023).

### 5.3 OBJECTIVE ONE: TO EXPLORE THE USE OF MULTIMODAL PLATFORMS IN ASSESSING WORK-INTEGRATED LEARNING

#### THEME 2: WORK-INTEGRATED LEARNING (WIL) MODALITIES

Table 1 summarises the emerging themes and subthemes on the use of multimodal platforms for assessing WIL. This theme addresses the research objective which sought to determine the use of multimodal platforms in assessing WIL at DUT.

**Table 5.1: Data from participants on the use of multimodal platforms in assessing work-integrated learning**

Research Inquiry	Illustrative Quotes	Keynotes	Codes	Frequency	Subthemes
Use of multimodal platforms in assessing WIL	There is this thing called <b>multimodal teaching, multimodal assessments</b> , whereby we use online and we use, you know, print (logbook) but then it's a variation --- (Participant 4)	multimodal teaching and assessment	Multimodality	1	Multimodal Teaching and Assessment Methods
	We have got two different programs... Besides the <b>simulation</b> that we do in classrooms sometimes...we have resulted to is to have <b>guest lecturers who come with knowledge from the industry</b> (Participant 3)	Simulation and industrial experts		2	Experiential Learning and Expert Engagement
	So basically, Industry Practice 1 is their full <b>assessment by the supervisors</b> and their proposal. In the workplace. And Industry Practice 2 is <b>their presentation, which gets judged</b> (Participant 7).	Assessment supervision		1	Assessment and Presentations
	My view is that firstly, the training has to be done <b>physically</b> , which means the person has to be in the workplace. The assessment, I think, can be done <b>online</b> .	Work preparedness		1	Blended Learning and Workforce Readiness
First years, can be assessed on basic things like hand washing, patients' bed setting, etc. They start doing <b>specialised imaging (x-ray)</b> in the second year, in the third year <b>rotating specialised areas</b> , and also in the fourth year	Specialized imaging, rotated		1		

	<p><i>then we start assessing them differently (based on complex cases) (Participant 2).</i></p> <p><i>...the program does not do any online assessments. <b>They are face-to-face. All are face-to-face.</b> Okay. Only first-year and second-year students can do it. But third-year and fourth-year, I don't think they can...</i></p>	<p><i>specialised areas.</i></p> <p><i>Face-to-face assessment</i></p>		<p>1</p>	<p><i>Multi-faceted assessment</i></p> <p><i>Practical Learning in Real-World Contexts.</i></p>
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Source: Field data, 2024

## **SUBTHEME 2.1: MULTIMODAL TEACHING AND ASSESSMENT METHODS**

Hewitt, Owens, and Stewart (2018) and Hay (2020) defined work-integrated learning as a universal term used to describe diverse learning experiences. Going by this definition, many platforms have been used to assess WIL at various levels, especially in higher education. Participant 4 alludes to the fact that multimodal platforms (prints and online) are being used to achieve WIL in the department in DUT.

*There is this thing called multimodal teaching, multimodal assessments, whereby we use online and we use print (logbook)... (Participant 4)*

The participant highlights that multimodal teaching and assessment is a way in which students tend to achieve some level of theoretical and practical knowledge in their respective fields of study. This, in turn, helps to ensure students are well-equipped with requisite skills through WIL. This is consistent with the findings of McNamara (2013) which alludes to the fact that WIL learning activities such as assessments and placements are relevant to the development of professional competence. As Participant 4 highlights "We use online and we use print (logbook)" " It further lays credence to the diverse nature of assessing WIL. This is corroborated by Nouri (2019: 685) that multimodal perspectives include modes such as gestures, audio, video, and images coupled with different affordances and potentials for making meaning. This helps to increase the student's self-confidence and expertise in their fields of study.

## **SUBTHEME 2.2: EXPERIENTIAL LEARNING AND EXPERT ENGAGEMENT**

Simulation and invitation of experts is another means through which departments in DUT assess WIL. Participant 3 reiterates the fact that the lecturers who are experts in their field engage the students in practical training, to equip them with skills needed to excel in their courses. This is in line with the statutory duties of the institution of learning (DUT in this case) to ensure the students are well-trained to face the challenges and reach new heights in their profession. Corroborating this, the findings of Dwesini (2017) asserted that it is the responsibility of higher education institutions to equip students with disciplinary knowledge and generic employability skills for the workplace. As highlighted by the participant,

we have resulted to have the guest lecturers who come with that knowledge from industry",

This shows a sense of priority by the department to go the extra mile to equip students with practical skills.

*We have got two different programs... Besides the simulation that we do in classrooms sometimes...we have resulted in having guest lecturers who come with that knowledge from industry (Participant 3).*

Resonating further, participant 1, indicated that they employ the simulation method most times when a hands-on expert is not available or accessible. Though not often as required due to unforeseen constraints, the academics still ensure it is imbibed somehow. This is a way of using the online system to augment the physical classes.

*Project-based learning, simulated, stuff like that. So, within the degree, there's a limited amount of that (Participant 1).*

This finding is very important and disagrees with the views of Rook and McManus (2020) which points out that though online teaching was not a new mode of teaching for other institutions of higher learning, shifting to solely online teaching, learning and assessment was a steep learning curve. This implies that there is a disparity in realities between this current study and the past study, alluding to a shift in preferences by the higher institution of learning. Also, WIL, being a very important policy in the South

African education system is a veritable tool to equip students with practical knowledge. Dwesini (2017) further supports this view by stating that work-integrated learning must be integrated into all academic programmes, which is good proof that WIL is very important and must be engaged in a learner-friendly manner.

### **SUBTHEME 2.3: ASSESSMENT AND PRESENTATIONS**

Participant 7 highlighted that assessment and presentations were another diverse way to assess WIL. This assessment varied depending on the year of study and the industrial practice expected from the students. This lays credence to the fact that WIL is important and involves a variety of ways of learning. In agreement, Khampirat, Pop, and Bandaranaike (2019) stated that work-integrated learning is a widely accepted effective pedagogic method used to support a smooth transition from institutions of higher learning to the world of work. Assessing WIL through this means is very germane as it involves the supervisors of the students going through their industrial training proposals, and thereafter asking students to present their experience to an audience that has other students and industry (where possible).

*So basically, Industry Practice 1 is their full assessment by the supervisors and their proposal. In the workplace. And Industry Practice 2 is their presentation, which gets judged (Participant 7).*

This finding agrees with past research that students need to be assessed by their trainers and tutors to achieve academic success. The grading of assessment and presentation helps to quantify the level of expertise accrued by the students in their practical learning. This is consistent with the findings of Hodges, Eames, and Coll (2014) who indicated that there are two folds of assessment in WIL (classroom or workplace) and can help quantify both the hard and soft skills of the students. Through this assessment, presentation, and grading of skills, students are better off for it and WIL is well accomplished in students for their overall development.

Furthermore, capstone and design projects are integral components of work-integrated learning (WIL), providing students with opportunities to engage in real-world problem-solving that enhances both their creativity and practical skills. These projects often serve as a culmination of students' learning experiences, allowing them to apply

theoretical knowledge in practical contexts. The incorporation of such projects within academic curricula aligns with the objectives of WIL, which seeks to bridge the gap between education and industry.

As noted by Participant 1, capstone projects often entail students designing solutions to specific problems, which requires them to engage deeply with the subject matter and develop innovative approaches. This hands-on experience is critical as it not only fosters creativity but also encourages collaboration among peers, simulating a professional environment where teamwork is essential. The literature supports this notion, indicating that project-based learning enhances critical thinking and problem-solving skills (Thomas, 2000; Barron et al., 1998). These skills are invaluable in today's job market, where employers seek candidates who can navigate complex challenges.

*"In the degree, it's called research and design... they have to design a solution." (Participant 1).*

*"Some of the guys, we obviously, they're building a robot. We can't build a whole robot." (Participant 1)*

Furthermore, the structured nature of these projects, as described by Participant 7, ensures that students are not only fulfilling their academic requirements but are also directly contributing to their workplaces. This dual focus on education and industry engagement is emphasized in WIL literature, which suggests that such synergies create a more meaningful learning experience for students (Ferns & Zegwaard, 2014).

*"In addition to their daily duties... they need to carry out this project." (Participant 7).*

Participant 6's comments highlight the relationship between academic projects and industry practice. By aligning project work with real-world scenarios—such as those experienced at Unilever—students gain practical insights that enhance their learning. This integration is significant because it reinforces the applicability of their academic training to real-world situations. As articulated by Lian (2018), such experiential learning opportunities contribute to the development of essential employability skills, including adaptability and industry knowledge.

*"If I have a student at Unilever... they wrote in the student and it forms part of their project." (Participant 6)*

The requirement for students to write proposals and receive assessments from supervisors, as mentioned by Participant 6, underscores the importance of accountability and feedback in the learning process. This aligns with the principles of formative assessment, which aim to improve student learning through ongoing feedback (Rakoczy et al., 2018). By engaging in this reflective practice, students can refine their projects and learn to articulate their ideas effectively, further preparing them for future professional endeavors.

*"In addition to those... they also write a proposal." "So basically, industry practice one is their four assessments by the supervisors and their proposal." (Participant 6)*

#### **SUBTHEME 2.4: BLENDED LEARNING AND WORKFORCE READINESS**

Blended WIL assessments are assessments that are conducted both physically and online (hybrid). Participant 5 agreed that students in the participant's department are assessed in the workplace and online. This provides for a flexible means of learning, with little or no restrictions due to location and/or background. This agrees with past research (Wood, Zegwaard, and Fox-Turnbull 2020; Rasalam and Bandaranaike 2020) that advocated for a flexible method for students to gain both theoretical and practical experiences in their respective fields of study to improve their overall competence.

*My view is that firstly, the training has to be done physically, which means the person has to be in the workplace. The assessment, I think, can be done online. But that would not also preclude a visit to the workplace (Participant 5).*

This finding also resonates with the thoughts of Ross, Curwood, and Bell (2020), who asserted that Higher education institutions (HEIs) have traditionally assessed students either orally or written and the paradigm shift especially during COVID-19 forced

academics to embrace online assessments tapping into multimodal and collaborative compositions. The mention of COVID-19 (a major 21st-century pandemic) is a good reason for the adoption of this method of WIL assessment. It alludes to the fact that such unpredictable happenstances can cause a shift in the pattern of learning, hence echoing the diverse modes of assessing WIL. As the participant highlights, "But that would not also preclude a visit to the workplace", which is indicative that using the online assessment can also, in important scenarios, involve a visit to the site to obtain first-hand information. This makes the learning process and outcomes very robust, conducive, and enjoyable.

### **SUBTHEME 2.5: MULTI-FACETED ASSESSMENT**

This is an assessment from multiple fronts and can be sequential upon the year of study of the student. Participant 2, in a medical department at DUT, indicated that there is a progressive level of assessment for the students in their department, going from easy tasks to complex ones. This method of assessment is critical, especially in a strategic sector like the health sector, and helps to continually improve the students' hands-on experience in their profession.

*First years, can be assessed on basic things like hand washing, patients' bed setting, etc. They start doing specialised imaging (x-ray) in the second year, in the third year rotating specialised areas, and also in the fourth year then we start assessing them differently (based on complex cases) (Participant 2).*

This is consistent with the findings of Hodges, Eames, and Coll (2014) who state that formative assessments help students to improve as they work and assist the students in making evaluative judgments about the level of achievement at the end. This type of assessment is key to boosting the professional competence of the student even for greater challenges in the field. As highlighted by Participant 2,

*then we start assessing them differently (based on complex cases)"*

This illustrates that the assessment does not end with the basics, but continues with even greater tasks. This implies that WIL is a good contributor to the basic knowledge acquisition by students, and using this multidimensional approach is an enrichment to their practical learning.

## **SUBTHEME 2.6: PRACTICAL LEARNING IN REAL-WORLD CONTEXTS**

This method of assessing WIL seems to be the crude way of practically engaging the students for experience purposes. It can be said to be the traditional way of learning whereby the trainers/tutors and students are physically present to give and receive the knowledge respectively. Participant 9 highlights this as thus:

*...the program does not do any online assessments. They are face-to-face. All are face-to-face. Okay. Only first-year and second-year students can do it. But third-year and fourth-year, I don't think they can... (Participant 9)*

Similarly, it was revealed by Participant 4 that practical application is facilitated through case studies, allowing students to engage with realistic scenarios.

*"We give them a live scenario... they can see, oh, there's a high risk in this kind of situation." (Participant 3).*

This finding is in contrast with that of Malczyk (2018) which states that though there are benefits to multimodal instruction for higher education institutions, pedagogical and technological innovations need to be considered, and calls for the examination of also the challenges of multimodal instruction for both students and academics. The offline WIL comes with a lot of inadequacies such as location barriers, more resource consumption, and more burden for the trainer in terms of logistics. In as much as the multimodal has its challenges, its benefits are greater, though Participant 9 was indicative of the lack of online WIL because of some precarious circumstances, for example, problems with connectivity, load shedding (electricity) and some students not having appropriate ICT skills.

#### **5.4 OBJECTIVE 2. TO DETERMINE THE USE OF TECHNOLOGY IN MULTIMODAL WORK-INTEGRATED LEARNING ASSESSMENTS.**

##### **THEME 3: LEVERAGING TECHNOLOGY FOR ENHANCED LEARNING AND INDUSTRY APPLICATIONS**

Table 5.2 summarises the emerging themes and subthemes on the use of technology in multimodal work-integrated learning assessments. This theme addresses research objective two which sought to determine the use of technology in multimodal work-integrated learning assessments at DUT.

**Table 5.2: Data from participants on the use of technology in multimodal work-integrated learning assessments**

This table presents data from participants on their use of technology in multimodal work-integrated learning.

Theme	Direct statement	Keywords	Codes	Number of times	Category
Use of technology in multimodal WIL assessment	So, we use what you call <b>nesting software</b> , which is if a guy's going to cut stuff on a laser cutting machine, it will, using <b>AR</b> , figure out the best configuration to use the least amount of material (Participant 1).	Software	AR	1	Augmented reality
	We've got advanced imaging which we call CT or <b>computer tomography</b> , a CT scanner. But our first years had a <b>virtual software called Skeletics</b> . (Participant 2).	Virtual software		1	Computer tomography
	They're going to do some 3D printing. They're going to use <b>CNC routers</b> , all, again, using the <b>software they would use in the industry</b> (Participant 1).	CNC routers		1	3D printing
	Yeah, but do we integrate <b>e-multimodal learning</b> into our teaching? Yes, we do, because we have a <b>Teams platform</b> (Participant 4)	Teams' platform		1	Integration of E-Multimodal Platforms in Teaching
	I know you have mentioned <b>Moodle</b> ... Oh, the only use we have is to do a <b>custom lecture</b> as well while using <b>Zoom</b> (Participant 9)	Moodle and Zoom		1	

Source: Field data, 2024

### **SUBTHEME 3.1: DEDICATED SOFTWARE FOR ENGINEERING**

The use of specialized software in engineering courses plays a critical role in enhancing the learning experience for students. This subtheme underscores the importance of integrating technological tools that are relevant to the field, thereby equipping students with the skills they will encounter in their professional environments.

As highlighted by Participant 1, the combination of freeware and licensed software provides students with access to a diverse range of tools necessary for their studies. The incorporation of specialized software not only facilitates practical learning but also helps students develop proficiency in using industry-standard tools. This aligns with findings from the literature that emphasize the need for technical competence in engineering education (Boelt et al 2022; Wesolowski 2022). Students who are adept at using dedicated software are better prepared to enter the workforce, as they can readily adapt to the technological demands of their roles.

*"There's a combination... We'll use some freeware and some licensed."  
(Participant 1)*

Participant 1's mention of software that calculates flow rates in pumps exemplifies the application of theoretical knowledge to practical engineering problems. This type of software enables students to simulate real-world scenarios and analyze data effectively, thereby bridging the gap between theory and practice. Research indicates that the use of simulation software in engineering education fosters a deeper understanding of complex concepts and enhances students' problem-solving skills (Tudón-Martínez et al., 2020). By working with such tools, students can experiment with various parameters and see the direct impact of their decisions, which reinforces their learning.

*"We found a decent software that allows us to calculate flow rate in pumps."  
(Participant 1).*

The emphasis on utilizing both freeware and licensed software also reflects a pragmatic approach to education. While licensed software often provides more

comprehensive features, freeware can serve as an accessible alternative for students. This dual approach ensures that students are familiar with a variety of tools, which is crucial in a rapidly evolving field like engineering. The literature supports this notion, suggesting that exposure to various software options prepares students to be adaptable and resourceful in their future careers (Huang, 2019).

### **SUBTHEME 3.2: SPECIALIZED SOFTWARE FOR PRACTICAL AND INDUSTRIAL TRAINING**

This subtheme emphasizes the use of advanced and industry-relevant software, including AR for material efficiency, virtual medical imaging tools, and 3D printing/CNC routing, to provide practical and hands-on training in various fields. These are specialized software packages that students in one of the departments are using in industry and some of the packages are available in the department (DUT) for students to use.

- **AUGMENTED REALITY**

The use of augmented reality (AR) is a ‘virtual technology that transforms learning to be interactive’ (Gong et al. 2024). Participant 1 reported that the department utilizes AR technology in their WIL programme in DUT. There is an array of technologies that Naaji et al. (2015) indicated may include blogs, microblogs, social networks, Learning Management Systems (LMSs), and the virtual world.

*So we use what you call nesting software, which is if a guy's going to cut stuff on a laser cutting machine, it will, using AR, figure out the best configuration to use the least amount of material (Participant 1).*

This finding is consistent with past studies (Mabalane 2021; Rasalam and Bandaranaike 2020) which suggest that a tilt towards the adoption of technology can boost and improve academics’ performance with assessments. As highlighted by the participant,

*...figure out the best configuration to use the least amount of material.*

This proves that technology has a way of optimizing resources, hence improving performance and achieving efficiency. Alammary (2024) states that blended learning allows students to have both face-to-face and online learning.

- **COMPUTER TOMOGRAPHY**

Participant 2 highlights the use of CT technology in their medical field of study by students and staff. This technology has the huge benefit of making scans of the physiological makeup of the body system easier and faster. Given that the medical sector is very critical, such technologies are very important to ensure better safety, efficiency, and reduced risks.

*We've got advanced imaging which we call CT or computer tomography, a CT scanner. But our first years had a virtual software called Skeletics. (Participant 2).*

This finding is consistent with that of Naaji et al, (2015) which indicates that technological advancement has further allowed new ways of using technologies to boost activity outcomes. Hence, it is indicative to imbibe such in the activities of the medical sector for optimal performance.

- **3D PRINTING**

Participant 1 also indicated that some software is peculiar to certain industries. These software are also used by some departments of DUT to equip its students with requisite practical and theoretical skills for effective performance in their various fields.

*They're going to do some 3D printing. They're going to use CNC routers, all, again, using the software they would use in the industry (Participant 1).*

The software mentioned (CNC router) is a good addition to the learning resources for students in WIL and consistent with the findings of past studies which indicate that software, technologies, and technical know-how are good inclusions in any human activities, especially in any academic setting. Furthermore, the findings of this study corroborate that of Jackson (2013) which notes that WIL helps students to apply their graduate disciplinary knowledge and skills in industry and allows them to reflect on

their learning. The peculiarity and industry-specific nature of this software as highlighted by the participant,

using the software, they would use in the industry

The knowledge of the latest technologies in this department contributes to the student's professional development because when the students are employed, they will be able to use the technology in industry due to their exposure in the university.

### **SUBTHEME 3.3: INTEGRATION OF MULTIMODAL PLATFORMS IN TEACHING**

Participant 4 highlights this learning method for assessing WIL as a diversified online mechanism that helps connect learners and trainers to engage in practical experiences. This view is corroborated by Archer (2017) who states that through digital technology, students are now able to create and distribute multimodal work. This is supportive of the fact that this department at DUT uses a digital platform known as Teams Platform to interact, learn, and give feedback based on their learning outcomes. Participant 4 puts it this way:

*Yeah, but we do integrate e-multimodal learning in our teaching. Yes, we do, because we have a Teams platform (Participant 4).*

The integration of this platform in the scheme of things at the department is in line with the findings of Malcyk (2018) which indicates that higher education institutions need to put systems in place to monitor, track, and support students in multimodal education as well as to provide the necessary hardware and software. With this in place, WIL can be better accomplished by the institution, equipping the students with the requisite knowledge needed to excel in their fields of study.

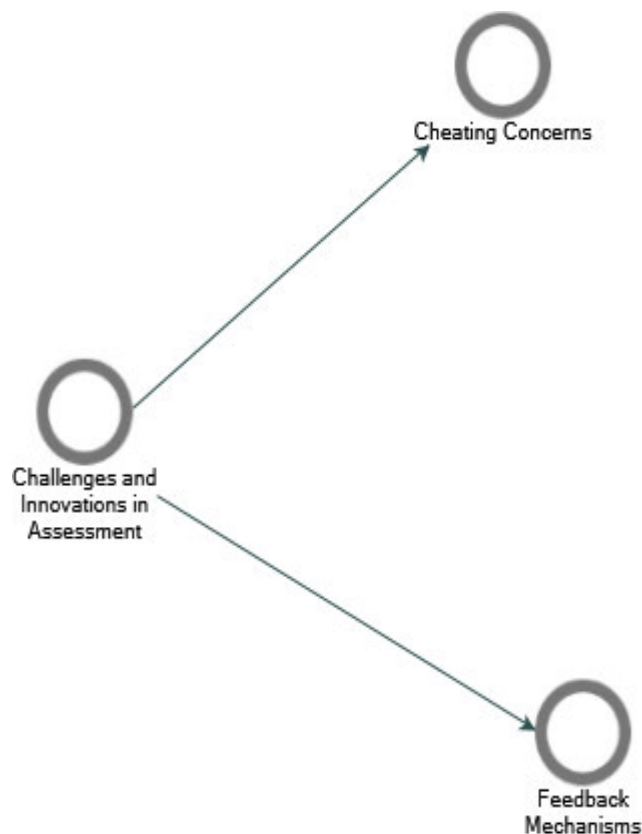
Apart from TEAMS, there are other virtually customized lectures such as MOODLE and ZOOM. This method of using technologies to assess WIL is unique because it is only associated with a particular lecture or course. Participant 9 highlights that platforms such as Moodle and Zoom are being utilized in his department to ease things and make learning conducive for all. This is supported by past studies that reiterated that digital and virtual platforms can assist people most especially in the learning setting.

*I know you have mentioned Moodle... Oh, the only use we have is to do a custom lecture as well while using Zoom (Participant 9)*

This finding also corroborates that of Schuster and Glavas (2018) who affirm that the use of technology may allow WIL experiences to happen within digital spaces rather than a physical space thus coining a new term ‘blended WIL’ explained as a WIL experience delivered in online and face-to-face environments. The use of these platforms shows a diverse learning system that incorporates all the needed modules for an effective learning system. This points to the fact that Technology has come to stay for the effective assessment of WIL and will be further advanced as the year rolls by.

#### **THEME 4: CHALLENGES AND INNOVATIONS IN ASSESSMENT**

The theme reveals the complexities involved in effectively integrating practical experiences within academic programmes. It highlights the necessity for continuous adaptation and improvement of assessment strategies to better align theoretical learning with industry demands. This is further illustrated in Figure 4.2.



**Figure 5.2: Component of theme 2.**

#### **SUBTHEME 4.1: CHEATING CONCERNS**

The concern over cheating, particularly in online assessments, reflects broader challenges faced by educational institutions in maintaining academic integrity. Participants 1 and 3's statements about students cheating and the quality of assessment underscore a prevalent issue in many educational contexts, especially as assessments increasingly move online. Research indicates that the shift to online learning environments can exacerbate cheating due to reduced oversight (Baker et al., 2022). Consequently, there is a growing need for controlled assessment environments to deter dishonest practices.

*"The challenge is... the students cheating." (Participant 1).*

*"We were worried about the quality of assessment... why so much so good." (Participant 3).*

Innovations in technology can provide solutions to mitigate these concerns. For instance, employing proctoring software or developing assessments that require higher-order thinking can help ensure that evaluations reflect genuine student understanding. Participant 3's observation about changing question formats and durations suggests a proactive approach to maintaining assessment quality, which aligns with literature advocating for diversified assessment methods to reduce opportunities for cheating (Killam et al., 2021).

*"We have some version and the students can write." (Participant 3).*

#### **SUBTHEME 4.2: FEEDBACK MECHANISMS**

The emphasis on ongoing feedback throughout project work is essential for fostering student development. Participant 1 highlights the significance of feedback, particularly for major projects, which aligns with educational theories emphasizing formative assessment as a tool to improve students' performance (Black and Wiliam, 1998). Immediate feedback allows students to refine their skills and better understand expectations, which is crucial for their academic growth.

*"They get feedback, especially for the major ones, as they go along."*  
(Participant 1).

*"Feedback is generally immediately after the assessment."* (Participant 2).

The structured approach to feedback, involving regular meetings with mentors, as mentioned by Participant 1, further supports the importance of mentorship in the learning process. This approach not only reinforces accountability but also provides students with continuous support, enabling them to address challenges as they arise (Hattie and Timperley, 2007).

*"They have to have a certain number of meetings with the mentors where they get feedback."* (Participant 1).

However, a notable gap exists in the feedback provided by the academic department. Participant 5's comment about marking the POEs (Portfolios of Evidence) without subsequent feedback raises concerns about the effectiveness of assessment strategies. Timely and constructive feedback is vital for students to understand their performance and make necessary improvements. Research emphasizes the need for a feedback loop that involves both formative and summative assessments to enhance learning outcomes (Sadler, 1989).

*"No, we just mark the POEs and we never go back to the students and say, this is how you've done it."* (Participant 5).

The interest in incorporating industry assessments, as noted by Participant 3, is a positive step towards ensuring that students are adequately prepared for professional standards. This integration not only validates the relevance of academic assessments but also aligns educational outcomes with industry expectations, thereby enhancing students' employability (Crawford et al., 2020).

## **THEME 5: BENEFITS AND CHALLENGES IN WORK-INTEGRATED LEARNING (WIL)**

Theme 5 explores the dual nature of work-integrated learning (WIL), emphasizing both its benefits to students and the challenges they face. The insights from participants illustrate a complex interplay between practical experience and the realities of student life in a WIL context.

### **SUBTHEME 5.1: BENEFITS TO STUDENTS**

The primary advantage of WIL is the opportunity it provides for students to apply theoretical knowledge in practical settings. Participant 2's observation that students get to "practice what they see" underlines the importance of experiential learning in enhancing understanding and retention. This aligns with Kolb's (2014) experiential learning theory, which posits that knowledge is created through the transformation of experience. WIL enables students to bridge the gap between theory and practice, resulting in a more comprehensive learning experience.

*Our students get to practice what they see... by the time they come back from the hospital, they've already seen it." (Participant 2)*

Research supports the notion that WIL enhances student engagement and employability. A study by Jackson (2018) found that students who participated in WIL programmes reported higher confidence in their skills and better preparedness for the workforce. This practical exposure not only reinforces academic learning but also equips students with the competencies that employers value, thereby improving their career prospects (Billett, 2014).

## **SUBTHEME 5.2: CHALLENGES TO STUDENTS**

- **STUDENT CONCERNS**

Despite the benefits, students often find WIL burdensome due to the time demands it imposes. Participant 2's remark about students not liking WIL reflects a common concern regarding the balance between academic commitments and practical experience. This sentiment is echoed in the literature, which indicates that the workload associated with WIL can lead to stress and fatigue among students (Crisp & Swinburne, 2018).

*"Students don't like WIL... because our students don't get to stop WIL."(Participant 2)*

Moreover, the continuous nature of WIL may overwhelm students, particularly if they are managing other academic responsibilities. As highlighted by King et al. (2019), supervisors need to be mindful of these pressures and strive to create more manageable WIL structures that support student well-being while maximizing learning outcomes.

- **FINDING PLACEMENTS**

Securing placements for all students is a significant challenge, especially in light of disruptions caused by the COVID-19 pandemic. Participant 2's comments indicate that the demand for placements can outstrip availability, complicating the WIL experience. Hay and Fleming (2021: 541) allude to the fact that academics responsible for WIL placements must develop strategies to lessen the risks that students may face in industry (financial, jeopardizing future employment, and failing a module.

*"Finding placements for all the students is quite a challenge." (Participant 2).*

Effective partnerships between educational institutions and industry stakeholders are essential to address these placement challenges. As suggested by Zuchowski et al. (2020), fostering strong connections can help create more placement opportunities, ultimately enhancing the WIL experience for students.

- **FINANCIAL CONSTRAINTS**

Financial barriers present another significant obstacle for students participating in WIL. Participant 5's observation about students lacking funds for travel and stipends highlights a critical issue that can limit access to valuable experiential learning opportunities. Research indicates that financial constraints can disproportionately affect students from lower socioeconomic backgrounds, hindering their ability to engage in WIL programs (Jessup et al., 2022).

*"They don't have the funds for that...the companies are not giving them the basic stipend." (Participant 5).*

- **STUDENT PERFORMANCE IN INDUSTRY**

Concerns about students not meeting workplace expectations can negatively impact their performance evaluations. Participant 5's comment about students acting contrary to instructions points to a gap between academic preparation and workplace readiness. This concern is supported by literature that highlights the need for clear communication between educators and industry professionals regarding expectations (Jackson, 2016).

*"Some would do the complete opposite of what you have instructed them." (Participant 5).*

### **SUBTHEME 5.3: CHALLENGES DURING COVID-19**

The COVID-19 pandemic profoundly affected Work-Integrated Learning (WIL) experiences, particularly in securing placements for students. Participant 6's comments reflect the widespread disruptions faced by educational programs and training units, emphasizing the urgent need for adaptive strategies during this unprecedented time.

*"That was a big challenge. All training units were not happy." (Participant 6)*

The lockdown imposed during the pandemic created significant barriers to traditional placement opportunities, as many organizations were unable or unwilling to accept students for on-site training. Participant 6's observation that "all training units were not happy" highlights the frustration and logistical challenges faced by both educational institutions and industry partners. The inability to place students not only affected their learning experiences but also raised concerns about meeting accreditation and program requirements, potentially delaying graduation and professional entry (Havergal, 2020).

This disruption is consistent with findings from various studies that document the impact of COVID-19 on experiential learning. For instance, a report by the Higher Education Policy Institute (2021) noted that many institutions struggled to maintain the integrity of WIL programs due to restrictions on physical interactions, leading to a decline in placement opportunities.

In response to these challenges, the decision to apply for a reduction in clinical hours indicates a proactive approach by the program to accommodate the realities imposed by the pandemic. Participant 6's statement about applying to the council for adjustments illustrates how educational institutions sought to maintain program continuity while prioritizing student safety and compliance with health guidelines. This adaptive strategy is supported by literature that emphasizes the importance of flexibility in educational practices during crises (Baker et al., 2021).

*"We applied to our council to reduce the clinical hours in 2020." (Participant 6).*

The reduction of clinical hours may have allowed students to complete their programs despite the constraints posed by the pandemic. However, this adjustment also raises questions about the adequacy of preparation for students entering the workforce with potentially less hands-on experience. A study by Bennett et al. (2021) emphasized that while adjustments were necessary, they should be carefully considered to ensure that students still acquire the essential skills and competencies expected by employers.





## 5.6 ANALYTICAL CONCLUSIONS OF THE FINDINGS

The extracts from the participants were presented as is, and grammar errors were not corrected so that the essence of the participants' views would not be lost. Reflecting on this chapter, the researcher's opinion is that had the institution not recommended the use of a statistician, the presentation of this chapter might have been better because NVivo would not have been used.

The themes that emerged from the study supported the development of the multimodal WIL assessment framework. The themes were multimodal framework for effect WIL, WIL challenges and benefits, challenges and innovations in assessment, integration of multimodal platforms in teaching and specialized software for practical and industry training. Some DUT departments were taking initiatives introducing students to work-related technologies either on campus or WIL placements in industry.

Feedback was a common feature in all WIL assessments at DUT. Feedback was offered in lectures, emails, Ms Teams or on Moodle. Constructive feedback was offered to allow students' development of skills within their respective disciplines. Academic workload and WIL related activities posed a challenge for academics that have WIL as part of their workloads. For most, WIL included preparation (teaching), placement (finding placements for students or students finding their own) and assessments.

A number of academic programmes have a WIL component, and it is credit bearing and assessed by both academic and industry representatives. The study proposes an introduction of blended WIL assessments in DUT.

During COVID-19, most WIL programmes could not be offered and departments requiring accreditation from professional bodies had to request or were exempted from WIL. Post-COVID, academics departments returned to their 'old ways' of assessments by favoring and using traditional assessment methods more than online assessments. Academics seemed reluctant to have all WIL assessments online, with a few opting for hybrid or blended WIL assessments. Multimodal assessments are yet to be included in the pedagogy of work-integrated learning in a university of technology.

There is room for future research and benchmarking of WIL assessment both nationally and internationally. The discussions during interviews revealed that technology for WIL assessments is underutilized at DUT. Exposure and training to

ICTs that can enhance WIL teaching, learning and assessments are needed. Simulations were used in other programmes where WIL was not offered. This framework can be adapted and adopted by any programme that has WIL. The framework allows inclusivity of any forms of multimodal WIL assessments that can be tailor made to suit any discipline/programme.

**Closed ended questions were included in the interviews. These questions were:**

- Is WIL credit bearing? Yes/No
- If yes, what is the credit?
- Are WIL assessments summative or formative or both. Academics had to elaborate on their choices.
- Does industry assess students? Yes/No
- If yes, when does industry assess?
- Types of WIL assessments conducted by industry
- Does industry mark contribute to the final mark? Yes/No

Yet again, the researcher revisited her memos since none of these answers were captured in the analysis that was done on behalf of the researcher by the statistician due to DUT requirements for qualification purposes. Reflexivity allowed the research to scrutinize, reflect and notice faults with the analysis. However, the lesson is that if a researcher is doing interviews, it is advisable that you keep memos as it is with grounded theory research. The researcher was able to report on the closed ended questions because she went back to her memos. In a nutshell, most DUT programmes have credit bearing WIL and unfortunately none of the participants knew the credit value. The participants promised to send this information, therefore the credit values are unknown.

Most WIL assessments were summative providing the students with opportunities to improve. One department reported that formative assessments were also used in their WIL programme. Once again, industry does assess students at varied points of the WIL programme. In most cases, industry assess during the students' placement in the workplace, and industry hosts do assess students once their WIL placements have been completed. A handful of industry marks contributed to the students' final mark.

## **5.7 SUMMARY**

This chapter presented the analysis of data collected through semi-structured interviews with DUT academics to develop a multimodal WIL assessment framework. It also presented the themes that emerged from data analysis. An analytic discussion of the findings is presented in order to sum up the analyzed data. Chapter six presents the discussion based on the findings of this study.

## **CHAPTER SIX**

### **DISCUSSION**

#### **6.1 INTRODUCTION**

The previous chapter presented the analysis gathered from the data that was first transcribed and then analysed using NVivo 12. This chapter presents the discussion drawn from the analysis. The *P3 multimodal WIL assessment framework* is presented and discussed. Drawing from the thematic analysis and the narrative described in Chapter 5, a multimodal framework for effective WIL implementation is suggested. Key components of the multimodal framework include:

#### **6.2 ASSESSMENT MODALITIES**

From the study narrative, it was found that both formative and summative assessments have been implied as assessment strategies during WIL. Formative assessment is continuous assessment methods such as journals, portfolios, and self-reflections that allow students to document their learning journey and receive ongoing feedback. Summative assessments, on the other hand, are a comprehensive evaluation at the end of the WIL experience, including projects, presentations, and formal reports that demonstrate students' overall competencies and learning outcomes.

In addition to the above, peer assessments involving peers in the evaluation process should be encouraged to provide different perspectives on collaboration, teamwork, and professional behaviour. Given the critical roles industry supervisors play in WIL, incorporating evaluations from industry supervisors and mentors is vital to assess how well students meet professional standards and expectations.

From the memos that the researcher prepared during the interviews, it has come to light that there are varied WIL assessments that participants use as presented in Table 6.1. Some of these assessments may either be used during preparation or placements (industry) or post-WIL (when students return to the institution).

Logbooks	Presentations
Portfolios of Evidence (PoEs)	Assignments
Reflective essays/ reflective diaries	Tests
Examinations	Projects
Case studies	WIL forms

**Table 6.1: common WIL assessments at DUT**

### **6.3 ALIGNMENT WITH LEARNING OUTCOMES**

The model proposed that learning outcomes are aligned with both academic goals and industry needs. Each assessment modality should map to specific outcomes, ensuring that students demonstrate the required competencies. This should be regularly reviewed and updated learning outcomes in collaboration with industry partners to reflect changing demands and best practices. McNamara (2013: 187) affirms the significance of alignment of learning outcomes even in WIL programmes.

### **6.4 INTEGRATION OF TECHNOLOGY**

Part of the finding is that there is a shift to the digital environment and leveraging of technology in teaching and learning. Hence, utilising digital platforms for assessments, such as TEAMS, MOODLE, and online submission systems could help streamline the evaluation process and facilitate timely feedback. Employing simulation tools and virtual environments to assess students' practical skills in a controlled setting, can supplement traditional placements. Technology in higher education is supported by (Naaji et al. 2015: 106) since the use of technology in teaching and learning allows students to learn anywhere they may be (physical location).

### **6.5 COLLABORATIVE ASSESSMENT DESIGN**

Part of the finding is that students at WIL do different things contrary to instructions from the institution. As such, engaging faculty, industry partners, and students in the development of assessment criteria and processes to ensure relevance and clarity. Promoting co-assessment practices, where industry professionals and educators

collaboratively evaluate student performance based on shared criteria. Hodges, Eames, and Coll (2014: 189) agree to collaborative assessment in work-integrated learning programmes. Students are assessed by both the academic and industry hosts.

## **6.6 FEEDBACK**

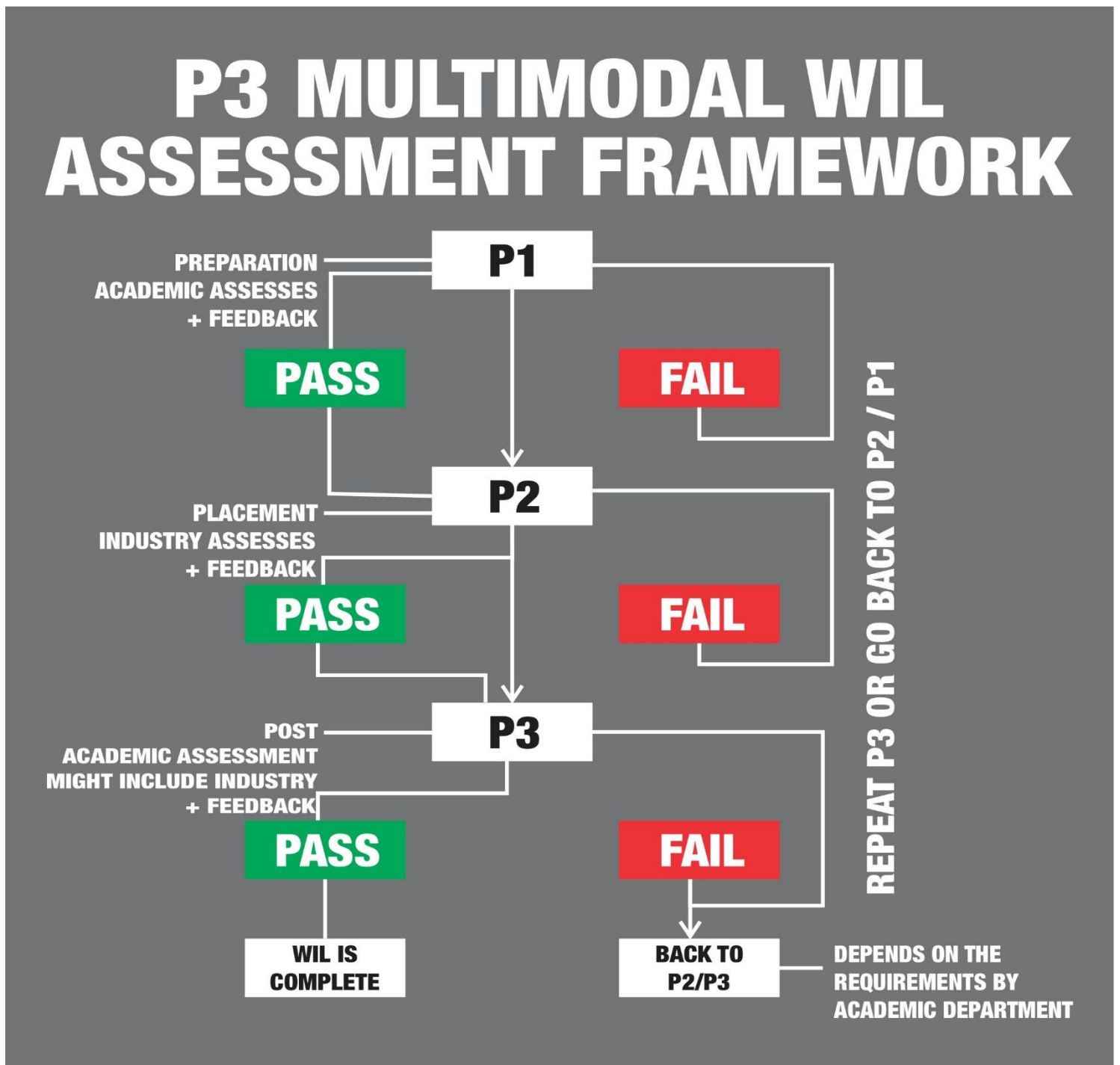
Finally, a timely feedback mechanism is crucial in WIL. Hence, the study proposed establishing structured feedback mechanisms that provide students with timely, constructive, and actionable feedback throughout their WIL experience. Encouraging reflection and dialogue between students and assessors to foster a deeper understanding of performance and areas for improvement. Establish a cycle of evaluation and refinement of assessment practices based on student outcomes, stakeholder feedback, and emerging trends in education and industry. Conduct regular reviews of assessment strategies to ensure they remain aligned with best practices and stakeholder expectations.

Overall, the complexity in the grounded theory is a good ground that supports the multimodal assessment of effective WIL. This is indicative that for WIL to be effective, efficient, and viable, it must be borne out of the mind as well as the thinking faculty of students, all of which the grounded theory alludes to. This is further supported by the findings of Richardson et al. (2009: 340) which believe that WIL assessments should include critical reflection because critical thinking encourages students to justify and validate their learning.

From the literature, there are numerous digital technologies that academics in DUT can use to assess WIL. Further research and collaboration within and outside DUT to learn of multimodal WIL assessments.

- Presenting at the 2025 LIASA conference of the findings.
- Sharing the findings of the study with my study participants: call for a forum or a Teams Meeting, the theory developed.
- Writing journal articles for publishing in accredited journals.

Figure 6.1: P3 multimodal framework for WIL assessments



### 6.6.1 DISCUSSION OF THE P3 MULTIMODAL WIL ASSESSMENT FRAMEWORK

The ***P3 multimodal WIL assessment framework*** was developed from the analysis of data from DUT academics who participated in this study. This framework aims to guide academics on WIL assessments in three important P's. The framework may be adopted and adapted by any department as a guide to future WIL assessments. It does not claim to be prescriptive. The three P's are assessments before WIL, during WIL placement, and after WIL placement. The three P's therefore stand for:

- **P1:** Preparation: assessment tasks given during preparation, before students are placed and these assessments are conducted by academics on campus;
- **P2:** Placements: assessment tasks given to students during the WIL placement these are conducted by host supervisors; and
- **P3:** Post WIL: assessment tasks given after WIL placement has been completed and these are mainly conducted by academics but in rare occasions, industry hosts might be involved.

**Feedback:** revealed through literature consulted after analysis that in assessments, feedback to students is crucial more so since most assessments in WIL tend to be formative, that is, developmental.

### 6.6.2 FINDINGS ON WIL ASSESSMENTS: GOING BACK TO MEMOS WRITTEN

What came out of the interviews regarding assessments was:

- It is good to note that most academic departments in DUT that WIL and WIL programmes were credit-bearing.
- In other departments, students embarked on WIL as early as the first year of their studies.
- In some departments, the mark from the host supervisor did not contribute to the final mark of the student.
- In some cases, host supervisors sent to the academic department a confidential report that did not carry any mark allocation.
- In a few instances, host supervisors were invited to the students' final presentations.

- Some WIL assessments were both summative and formative.
- Notable WIL assessment strategies in DUT were: logbooks, portfolio of evidence (PoE), reflective reports/reflective journals; tests; presentations, assignments, research projects (individual or group), progress reports, (one department did voice-over presentations), online quizzes and virtual presentations. One department had a final examination.
- A number of academics felt that there was no adequate training when DUT had to move online, but appreciated the fact that online webinars were provided and some learned from colleagues.
- Other staff members were not affected when DUT moved its teaching, learning, and assessments online as they were familiar with technology.
- DUT academics who participated in this study did not see their WIL assessments being strictly online. Most academics preferred the traditional assessment methods. Some were open to the idea of blended assessments.
- Due to COVID-19, some programmes could not have WIL placements, and assessments had to be changed to accommodate the online space of that time. Some academics are still using some online technologies even currently, for example, MS Teams, ThinkLearnZone, and WhatsApp.
- Other academics continued with the use of online technologies even after COVID-19 and some preferred online than print.

## **6.7 TRANSCRIPTION**

As guided by the supervisors for this study and a DUT requirement, a statistician had to be employed for data coding and analysis.

A free Google AI software, TurboScribe was used to transcribe the recordings to text that were then sent to the statistician.

- Looking back, technology failed me in some instances because some of the recordings were lost. TurboScribe did not do justice to the transcriptions as I realised that there was information missing since I wrote down the whole interview.

- The study was conducted with a few departments, and further research is to be done with the outstanding departments to get a holistic figure of WIL assessments in DUT.
- Further research: testing the framework internationally.
- Commonly used assessments: individual presentations, and reflective essays.

## **6.8 SUMMARY**

Chapter six presented the framework and a discussion on the framework is also provided. Findings from the researcher's memos were presented in this chapter. The next chapter concludes the study.

## CHAPTER SEVEN

### CONCLUSION

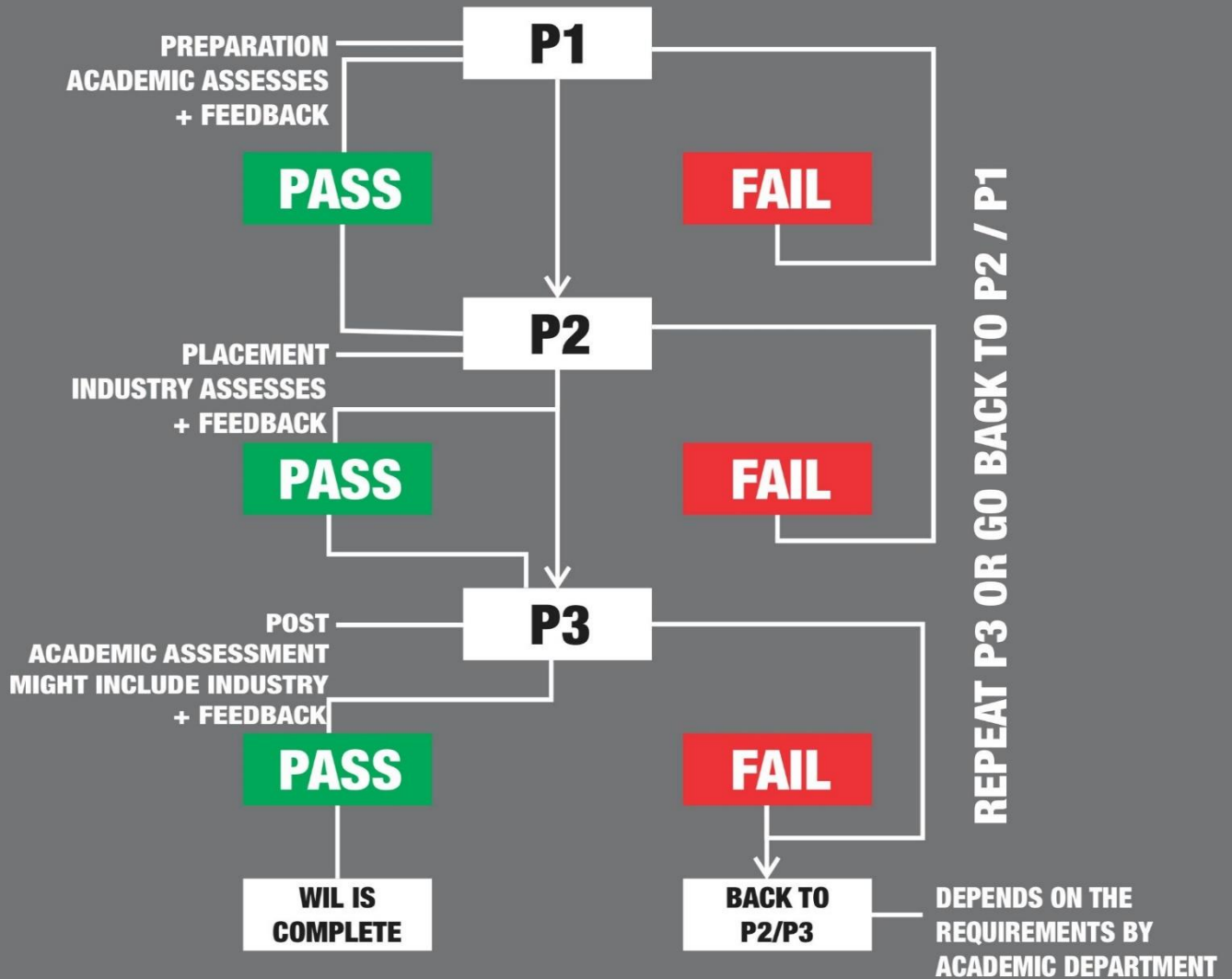
#### 7.1 INTRODUCTION

Chapter six presented the findings of the study. Chapter seven is the last chapter of this thesis, and it aims to present the limitations and strengths of the research process conducted for this study by revisiting the aim and objective of the study. A discussion on the evaluation criteria by Charmaz (2014: 336) is provided.

#### 7.2 AIM OF THE STUDY REVISITED

The study aimed to develop a multimodal framework for the work-integrated learning (WIL) assessments at the Durban University of Technology. Constructivist grounded theory was selected as a theoretical framework underpinning this study. The researcher selected this theory because she wanted to develop a multimodal framework for WIL assessments grounded in the data (Charmaz 2014: 1). Data was collected through semi-structured interviews from academics who were involved with WIL at the Durban University of Technology (DUT). The findings informed the development of the *P3 multimodal WIL assessment framework* (introduced and presented in Chapter 6).

# P3 MULTIMODAL WIL ASSESSMENT FRAMEWORK



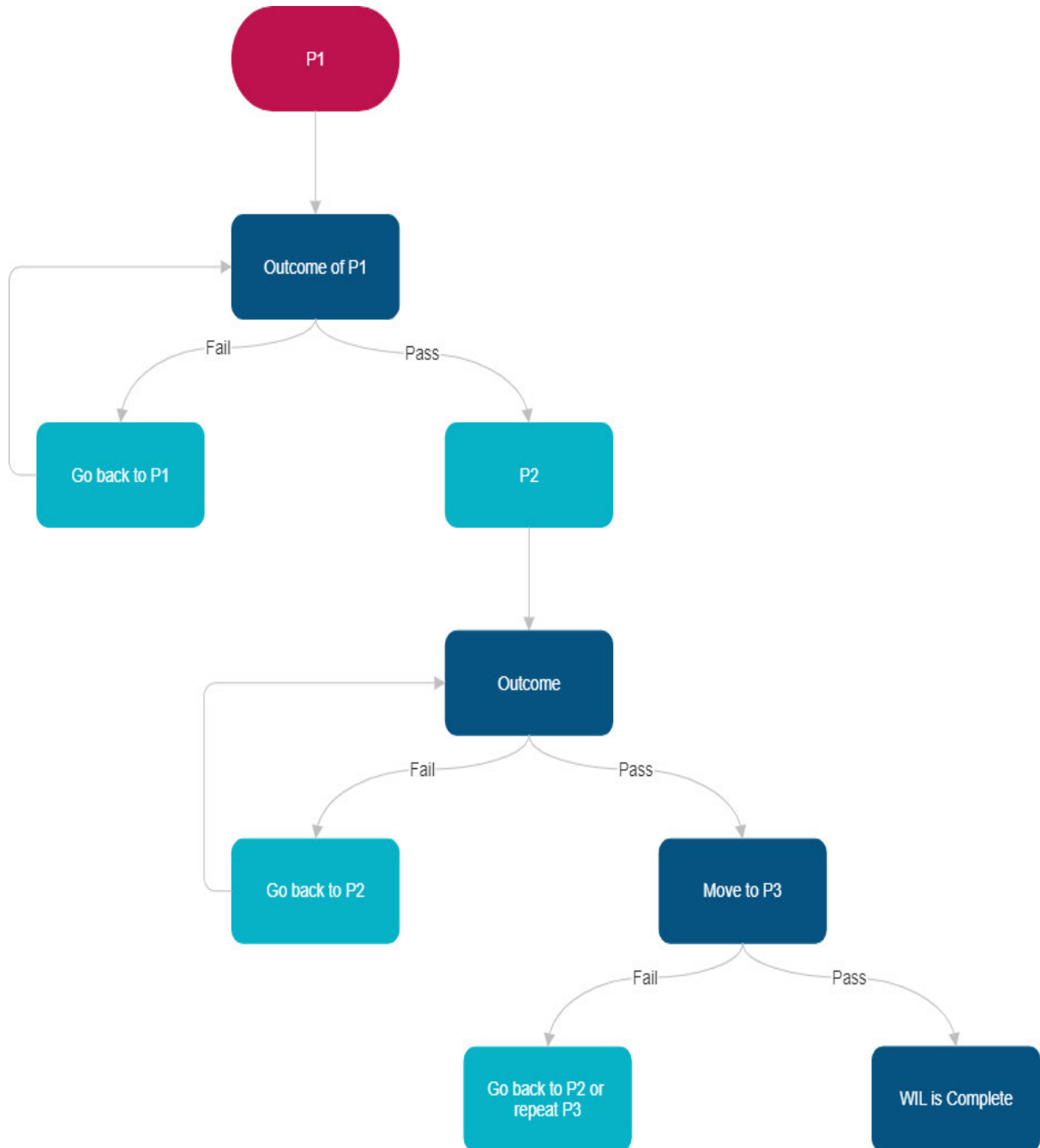
### 7.3.1 DISCUSSION OF THE P3 MULTIMODAL WIL ASSESSMENT FRAMEWORK

The *P3 multimodal WIL assessment framework* was developed from the analysis of data from DUT academics who participated in this study. This framework aims to guide academics on WIL assessments in three important P's. The framework may be adopted and adapted by any department as a guide to future WIL assessments. It does not claim to be prescriptive. The three P's are assessments before WIL, during WIL placement, and after WIL placement. The three P's therefore stand for:

- **P1:** Preparation: assessment tasks given during preparation, before students are placed and these assessments are conducted by academics on campus;
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**Feedback:** revealed through literature consulted after analysis that in assessments, feedback to students is crucial more so since most assessments in WIL tend to be formative, that is, developmental.

**FIGURE 7.2: FIRST P3 MULTIMODAL WIL ASSESSMENT FRAMEWORK SUBMITTED FOR EVALUATION**



## 7.4 EVALUATION OF THE THEORY

Since the researcher followed Charmaz's (2014)'s constructivist grounded theory, she presents four criteria for evaluating GT studies, namely: credibility, originality, resonance, and usefulness (Charmaz 2014: 337). The criteria are presented in Table 7.1. The researcher used the four criteria to evaluate the current study. Figure 7.2 above is the initial P3 model that was sent for evaluation using Charmaz's criteria. The feedback from the evaluations prompted the researcher to redesign and give a narrative for each of the Ps.

Credibility	<ul style="list-style-type: none"><li>• Has the research achieved intimate familiarity with the setting or topic?</li><li>• Are data sufficient to merit the claims?</li></ul>
Originality	<ul style="list-style-type: none"><li>• Are the categories fresh? Do they offer new insights?</li></ul>
Resonance	<ul style="list-style-type: none"><li>• Does the theory make sense to the participants or people who share their circumstances?</li></ul>
Usefulness	<ul style="list-style-type: none"><li>• Does the current research spark further research in other substantive areas?</li><li>• Does the current research contribute to knowledge?</li></ul>

**Table 7.1: Charmaz's evaluation criteria**

### 7.4.1 CREDIBILITY

Responding to this criterion, the researcher strongly believes that she was familiar with the topic at hand, that is, work-integrated learning assessments. The researcher has been a lecturer in the Library and Information Studies Programme at DUT for the past 21 years and a work-integrated learning coordinator for 17 years. As a WIL coordinator, she was involved with WIL assessments for third-year LIS students. Based on this narrative, she believes that she has familiarity with WIL and assessments.

The researcher collected the data herself through semi-structured interviews. This allowed the researcher to physically see the participants' reactions to all the questions posed. The interviews allowed conversations to happen between the researcher and the participants and sometimes a feeling of 'familiarity' with the concepts and challenges arose with the researcher.

#### **7.4.2 ORIGINALITY**

The *P3 multimodal WIL assessment framework* is indeed the researcher's original work and it stems from the data that was collected from the participants. In conjunction with the write-up, the researcher is preparing a paper '*P3 multimodal WIL assessment framework*'. The researcher sent the *P3 multimodal WIL assessment framework* together with the four criteria for evaluation to three academics who participated in the study requesting their evaluation and comments. The results of this will be in the paper as it is being prepared. Using GT allowed the researcher to come out of her comfort zone and learn about this qualitative method in research. There are not many studies that have used GT to present WIL assessments.

#### **7.4.3 RESONANCE**

As a novice researcher in GT, the researcher presented the draft framework to the supervisor to gather his thoughts about the *P3 multimodal WIL assessment framework*. The comments given during the initial discussion were implemented when the framework was being developed.

#### **7.4.4 USEFULNESS**

The researcher was new to GTM and she had to learn as she went along. Reading the classical GT of Strauss and Glaser; Strauss and Corbin and later discovering Charmaz, made her appreciate being introduced to grounded theory research. Difficult as it was in the beginning, it was a learning curve and she hopes to spark interest in LIS students about GT methods. The researcher believes there is room for further research in WIL assessments within the DUT and abroad. The researcher believes that this research will evidence the different WIL assessment practices in DUT. One academic stated that they will be bringing WIL back into their academic programme, therefore, the framework might become their guide for WIL assessments. The researcher hopes to write journal articles reflecting on her experiences regarding grounded theory research, probably creating lessons for novice researchers who might be scared to use GT.

## 7.5 APPLICATION OF THE EVALUATION CRITERIA TO THE P3 FRAMEWORK

After the development of the P3 framework, the evaluation criteria by Charmaz (2014: 337) presented in Table 7.1, were emailed to three WIL participants to (evaluators) evaluate the framework. Emails were sent on the 27<sup>th</sup> of November 2024. Tables 7.2, 7.3, and 7.4 present the comments from the evaluators. The comments are presented as received by the researcher.

<b>Participant 1</b>	
Credibility	<ul style="list-style-type: none"> <li>• <b>Has the research achieved intimate familiarity with the setting or topic?</b> P1 generally assesses the student's work ethic lab skills (for Biotechnology) and workplace skills (for Food Science students). P2 assesses the report writing and presentation skills. The student is attached to a work supervisor to work closely on a project that is related to the qualification and has some impact on the industry itself.</li> <li>• <b>Are data sufficient to merit the claims?</b> The project undertaken requires analytical thinking and support. Reiterating the fact that the project conducted must be an impactful one that will assist the company going forward or that the supervisor has indicated a gap in the system and now needs data to remedy this issue.</li> </ul>
Originality	<ul style="list-style-type: none"> <li>• <b>Are the categories fresh? Do they offer new insights?</b> Projects conducted have stemmed from an issue in the system within the company or from an innovative design that the company wants to verify for implementation.</li> </ul>
Resonance	<ul style="list-style-type: none"> <li>• <b>Does the theory make sense to the participants or people who share their circumstances?</b> Students placed for P1 and P2 must have passed all theory modules and this provides the groundwork for the students when placed in the working world. This theory must provide the principles behind the techniques and equipment that are used in industry. They should also be able to provide new fresh ideas for smoother operative techniques to be implemented.</li> </ul>
Usefulness	<ul style="list-style-type: none"> <li>• <b>Does the current research spark further research in other substantive areas?</b> Yes, no research occurs in a silo. There are many interdisciplinary opportunities for research and thus should not be limited for the full potential outcomes of the current research to be realised.</li> </ul>

	<ul style="list-style-type: none"> <li>• <b>Does the current research contribute to knowledge?</b></li> <li>• All research contributes to the knowledge systems and this is what allows a researcher to identify the gap in the knowledge systems and thus be able to evaluate further.</li> </ul>
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Table 7.2 Participant 1

<b>Participant 2</b>	
Credibility	<ul style="list-style-type: none"> <li>• <b>Has the research achieved intimate familiarity with the setting or topic?</b></li> </ul> Yes <ul style="list-style-type: none"> <li>• Are data sufficient to merit the claims?</li> </ul>
Originality	<ul style="list-style-type: none"> <li>• Are the categories fresh? Do they offer new insights?</li> </ul>
Resonance	<ul style="list-style-type: none"> <li>• Does the theory make sense to the participants or people who share their circumstances?</li> </ul> Yes
Usefulness	<ul style="list-style-type: none"> <li>• Does the current research spark further research in other substantive areas?</li> </ul> Yes, this will assist both students, stakeholders as well as lecturers to understand that WIL is crucial in this ever-changing world. <ul style="list-style-type: none"> <li>• Does the current research contribute to knowledge? Yes</li> </ul>

Table 7.3 Participant 2

<b>Participant 3</b>	
Credibility	<ul style="list-style-type: none"> <li>• Has the research achieved intimate familiarity with the setting or topic? Yes...</li> <li>• Are data sufficient to merit the claims?</li> </ul> I think that it would be ideal to provide an explanation of the codes and an explanation of the diagram. Currently, it is not clear how the entire diagram links.
Originality	<ul style="list-style-type: none"> <li>• Are the categories fresh? Do they offer new insights?</li> </ul> Without a detailed explanation, it isn't easy to ascertain originality.
Resonance	<ul style="list-style-type: none"> <li>• Does the theory make sense to the participants or people who share their circumstances?</li> </ul> Not enough information to comment on this.
Usefulness	<ul style="list-style-type: none"> <li>• Does the current research spark further research in other substantive areas?</li> <li>• Does the current research contribute to knowledge?</li> </ul>

	To fully comment on these aspects, I would propose providing additional information on how these elements are linked.
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**Table 7.4 Participant 3**

## **7.6 DISCUSSION FROM EVALUATORS**

The valuable comments received from three evaluators allowed the researcher to elaborate on the Ps of the framework. Initially the P3 framework was just a diagram without any discussions provided. It made sense to the researcher, forgetting that it should make sense to the evaluators as well. The comments from the evaluators prompted the researcher to go back to her memos that she had made during interviews and put the comments into good use.

Of the three evaluators, participants 1 and 3 provided more information on the questions asked under each evaluation criterion. The bolded headings are the direct questions from Charmaz (2014: 337). However, participant 3 provided closed ended answers without providing a discussion. The answers were ‘Yes’ and some parts were not answered at all.

The latest model was from the comments received and the discussion explaining the 3Ps rouse from the evaluators’ comments. Indeed, reflexivity in grounded theory research assists researchers to reflect and question their decisions during the research process. If the first framework was not evaluated, it would have not been possible to develop the improved P3 multimodal WIL assessment framework.

## **7.7 FUTURE WORK**

Work-integrated learning allows students to ‘entering-the-job- running (Du Pre). A statement contained in the *Higher Education Qualifications Framework* No. 926 (2007: 9) is one of the reasons that fuelled the researcher with a passion to research WIL assessments where is employed. Under the heading ‘work-integrated learning’, it states that:

Some qualifications will be designed to incorporate periods of required work that integrate with classroom study. Where Work Integrated Learning (WIL) is a structured part of a qualification the volume of learning allocated to WIL should be appropriate to the purpose of the qualification and the cognitive demands of the learning outcome and assessment criteria contained in the appropriate level descriptors. It is the responsibility of institutions, which offer programmes requiring WIL credits to place students into WIL programmes. Such programmes must be appropriately structured, properly supervised, and assessed.

This study responded to the call made by the HEQF because it sought to delve into how DUT academics assessed their work-integrated learning programmes and the analysis resulted in the development of a framework.

## **7.8 RECOMMENDATIONS**

Looking back to the study, the recommendations coming through are:

- A formation of a WIL forum where academics with WIL programmes can meet to discuss WIL-related issues and challenges.
- WIL academics in DUT to introduce and embrace online/blended WIL and online/blended WIL assessments in the programmes.
- The workload of academics responsible for WIL is to be examined. For example, WIL includes preparation, placing students, monitoring students as well as assessments.
- Stipend for students undertaking WIL placements.

## **7.9 CHALLENGES**

There are limitations or challenges that the researcher experienced:

- The researcher had hoped that willingness to participate in the study would be high since we are colleagues, unfortunately, it was not. Academics would first agree to participate and a change of mind happened just before the interview took place.

## **7.10 THE STUDY STRENGTHS**

- The researcher believes that the completion of this study and the sharing of the findings will fill the gap in WIL assessments using a GT method.
- The study included departments that did not have work-integrated learning and the question to the participants in this category was “How do you link theory with practice?”

## **7.11 CONCLUSION**

As I close this thesis, I believe I have done all that I could to learn and develop a framework that can be adopted by academic departments in DUT. When all the processes of completion have been finalised, I wish to present to all my participants and introduce the P3 framework to them to gather comments and adaptations thus improving the current framework.

By sharing the findings and the challenges experienced as a novice GT researcher I hope to entice more researchers to try the GT method. It is complicated but rewarding once the basic concepts are understood. As highlighted by Charmaz (2014: 1) GT is systematic yet flexible. The hardest part was finding which GT method to adopt, that is, once that was clear, it became easier to follow.

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## Appendix A: Ethics Approval



Faculty Research Office  
Durban University of Technology  
26 August 2021

Student: Portia Rakoma  
Student Number: 19250917  
Degree: PhD: Library and Information Science  
Email: 19250917@dut4life.ac.za  
Supervisor: Dr N. Sentoo  
Supervisor email: sentoona@dut.ac.za

Dear Miss Rakoma

ETHICAL APPROVAL: LEVEL 2

I am pleased to inform you that the Faculty Research Ethics Committee (FREC) following feedback from two reviewers, has granted preliminary permission for you to conduct your research 'Towards a multimodal framework for work-integrated learning (WIL) assessments'.

You are required to present the letter at your research site(s) for permission to gather data. Please also note that your research instruments must be accompanied by the letter of information and the letter of consent for each participant, as per your research proposal.

This ethics clearance is valid from the date of provisional approval on this letter for one year. A student must apply for recertification 3 months before the date of this expiry.

Recertification is required every year until after corrections are made, after examination, and the thesis is submitted to the Faculty Registrar.

A summary of your key research findings must be submitted to the FRC on completion of your studies.

Kindest regards.

Yours sincerely

Dr Mogiveny Rajkoomar  
FREC Chair  
Faculty of Accounting and Informatics  
Durban University of Technology  
Ritson Campus  
Durban, South Africa  
4001

## Appendix B: Gatekeeper



*Directorate for Research and Postgraduate Support  
Durban University of Technology  
Tromso Annexe, Steve Biko Campus  
P.O. Box 1334, Durban 4000  
Tel.: 031-3732576/7  
Fax: 031-3732946*

10th September 2021  
Ms Pamela P Rakoma  
c/o Department of Information and Corporate Management  
Faculty of Accounting and Informatics  
Durban University of Technology

Dear Ms Rakoma

### **PERMISSION TO CONDUCT RESEARCH AT THE DUT**

Your email correspondence in respect of the above refers. I am pleased to inform you that the Institutional Research and Innovation Committee (IRIC) has granted **Full Permission** for you to conduct your research "Towards a multimodal framework for the work-integrated learning (WIL) assessments" at the Durban University of Technology.

The DUT may impose any other condition it deems appropriate in the circumstances having regard to nature and extent of access to and use of information requested.

We would be grateful if a summary of your key research findings would be submitted to the IRIC on completion of your studies.

Kindest regards.  
Yours sincerely

---

DR LINDA ZIKHONA LINGANISO  
DIRECTOR: RESEARCH AND POSTGRADUATE SUPPORT DIRECTORATE

## **Appendix C: INTERVIEW SCHEDULE FOR WORK-INTEGRATED LEARNING STAFF**

### **BIOGRAPHICAL DETAILS**

Department -----

Name of Programme -----

Designation -----

### **WORK-INTEGRATED LEARNING ASSESSMENTS AND MULTIMODALITY**

1. During Covid-19 we were thrown into unprecedented times, we did not know what to do, how did you handle WIL placements?
2. With the pandemic in 2020, what would you regard as the lessons learnt regarding WIL assessments and multimodality?
3. In your opinion, do you think DUT provided you with adequate training and support for remote teaching, learning and assessments? Please elaborate.
4. What are the benefits of multimodal assessments?
5. What are the challenges with multimodal assessments?
6. What did you do improve on the challenges?
7. The COVID-19 pandemic forced us to adopt the 'new normal', in your opinion, do you think paper-based assessments will come to an end?
8. Which online technologies do you use in your programme to assess work-integrated learning?
9. How do students receive feedback after their assessments?
10. How did students in your programme cope with multimodal assessments?
11. Any comments or suggestions that you have on WIL and multimodality?

Formative/summative or both for WIL assessments

Is WIL credit bearing? How much?

Challenges with WIL assessments. Benefits of WIL.

How is multimodality incorporated into WIL assessments?

Are students assessed **before, during** and **after** WIL? How are students assessed before WIL, during WIL and after WIL?

Do hosts assess? What do they assess? How do they assess? Do their marks contribute to the final mark? Moderation: how?

General comments



209 Chester House,  
Chester Road,  
Rondebosch, 7700  
Cape Town, South Africa.

# Triedstone Consulting

\* Copyediting \* Data Analysis \* Market/Social Research \* Digital Marketing

26 March 2025.


Ms Pamela Portia Thembeka Rakoma,  
Student Number: 19250917  
Faculty of Accounting and Informatics,  
Department of Information Systems,  
Durban University of Technology,  
South Africa.

## Editing Certificate

We hereby certify that the dissertation titled "***Towards a Multimodal Framework for Work-Integrated Learning Assessments***" was thoroughly proofread and edited for grammar, spelling, punctuation, and overall style. The editors ensured that the author's original intended meanings were preserved throughout the review process. All suggestions and amendments were tracked using the Microsoft Word "Track Changes" feature, allowing the author to review and decide on each modification.

Thank you for the opportunity to assist with this work.

Sincerely,

  
Joseph Olusegun Adebayo, PhD.

## APPENDIX E: TURNITIN REPORT

PRakoma1925917\_ChaptersOnlyReport\_31/03/2025

ORIGINALITY REPORT

PRIMARY SOURCES

Submitted to University of Reading

Student Paper

[briefly.co.za](http://briefly.co.za)

Internet Source

Mitchell, Paul. "Pathways and Preferences: Adolescent Offenders Help-Seeking Behaviour and Access to Mental Health Services in Custody.", The University of Manchester (United Kingdom), 2019

Publication

Littleford, Anne Runyan. "Principal leadership and its perceived influence on teacher morale in elementary schools", Proquest, 20111109

Publication

[waceinc.org](http://waceinc.org)

Internet Source

[www.yumpu.com](http://www.yumpu.com)

Internet Source

Mphahlele, Letebele Mary-Hellen. "A Framework for Developing Critical Thinking Skills for Accounting Students.", University of Johannesburg (South Africa)

Publication

[www.acds-tlcc.edu.au](http://www.acds-tlcc.edu.au)

Internet Source

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Mojtaba Khaghani Milani, Mahmoud Reza

Hashemi. "Extended grounded theory: a

methodology to combine multiple

disciplines", Information Systems and eBusiness Management, 2020

Publication

[scholar.ufs.ac.za](http://scholar.ufs.ac.za)

Internet Source

McNamara, Judith. "The challenge of

assessing professional competence in work

integrated learning", 'Informa UK Limited',

2013

Internet Source

[researchonline.jcu.edu.au](http://researchonline.jcu.edu.au)

Internet Source

[www.lis.uzulu.ac.za](http://www.lis.uzulu.ac.za)

Internet Source

Submitted to Durban University of

Technology

Student Paper

Tshabalala, Samantha. "Uj Humanities

Graduates Experiences of Participating in

Work Integrated Learning Programmes.",

University of Johannesburg (South Africa),

2024

Publication

uir.unisa.ac.za

Internet Source

www.researchgate.net

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files.eric.ed.gov

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Submitted to Mancosa

Student Paper

Submitted to Capella University

Student Paper

hal.archives-ouvertes.fr

Internet Source

ajiraforum.com

Internet Source

Kountouridou, Marilia Maria. "Brand building

in Higher Education: A Grounded Theory

Investigation of the Impact of a Positive

Visualisation Course in Brand Identity on

Freshmen Students' Perceptions of University

Brand Image", European University of Cyprus

(Cyprus), 2024

Publication

[eprints.qut.edu.au](http://eprints.qut.edu.au)

Internet Source

Submitted to University of Worcester

Student Paper

[repository.nwu.ac.za](http://repository.nwu.ac.za)

Internet Source

[www.dut.ac.za](http://www.dut.ac.za)

Internet Source

"Educators' Work Integrated Learning

Experiences", Springer Science and Business

Media LLC, 2024

Publication

[vital.seals.ac.za](http://vital.seals.ac.za)

Internet Source

[creativecommons.org](http://creativecommons.org)

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Student Paper

core.ac.uk

Internet Source

researchspace.ukzn.ac.za

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library.emas-online.org

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Iohan Gonçalves Vargas. "HomeSoS: a conceptual framework to support system of systems management", Universidade de São Paulo. Agência de Bibliotecas e Coleções Digitais, 2024

Publication

Ngubane, Zamabomvu Zevile. "Challenges Experienced by Bachelor of Social Work Graduates in Securing Employment", University of Johannesburg (South Africa), 2023

Publication

hdl.handle.net

Internet Source

v-des-dev-lnx1.nwu.ac.za

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Garey, Pamela. "How Unequipped Powerlifters Describe Using Selective

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Attention During Competitions: Qualitative  
Descriptive Study", Grand Canyon University,  
2023

Publication

[books.kdpublications.in](http://books.kdpublications.in)

Internet Source

[eprints.utas.edu.au](http://eprints.utas.edu.au)

Internet Source

[livrepository.liverpool.ac.uk](http://livrepository.liverpool.ac.uk)

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[research.acer.edu.au](http://research.acer.edu.au)

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[www.coursehero.com](http://www.coursehero.com)

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Mofokeng, G. L.. "Modelling Transformational  
and Transactional Leadership, Innovation and  
Performance in Selected South African  
Universities of Technology: A Balanced  
Scorecard Perspective", Vaal University of  
Technology (South Africa), 2024

Publication

[www.alzscot.org](http://www.alzscot.org)

Internet Source

[www.scielo.org.za](http://www.scielo.org.za)

Internet Source

Dr Neha Sharma, Durga Prasad Sharma, Parul  
Ranka, Sandeep Shinde, Manisha Patel.

"Strategic Academic and Industry  
Collaboration: Enhancing Innovation through  
MJRP University's Global Research and  
Industry Partnership (GRIP)", Open Science  
Framework, 2024

Publication

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Submitted to University of Liverpool

Student Paper

Submitted to Vatel Mauritius Campus

Student Paper

is.muni.cz

Internet Source

Submitted to 9422

Student Paper

Submitted to Bismarck State College

Student Paper

Submitted to Leeds Metropolitan University

Student Paper

Morgan, Anneline. "An Assessment of Youth

Development from the National Youth

Commission to the National Youth

Development Agency", University of the  
Witwatersrand, Johannesburg (South Africa),  
2025

Publication

Richie Moalosi, Paulson Letsholo, Botumile  
Matake, Mathews Olyn. "Enhancing Graduate  
Attributes through Work-Integrated Learning:  
Students' Perspective", International Journal  
of Educational Development in Africa, 2022

Publication

Submitted to University of KwaZulu-Natal

Student Paper

[hydra.hull.ac.uk](http://hydra.hull.ac.uk)

Internet Source

[www-nwu-ac-za.web.nwu.ac.za](http://www-nwu-ac-za.web.nwu.ac.za)

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