UNDERSTANDING THE PHILOSOPHICAL SCHOLARSHIPS, PEDAGOGY AND PARADIGM ASSOCIATED WITH EFFECTIVE TEACHING OF CHEMISTRY AT THE UNIVERSITY OF NAMIBIA

A PORTFOLIO SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR THE
POSTGRADUATE DIPLOMA IN HIGHER EDUCATION
OF
THE UNIVERSITY OF NAMIBIA

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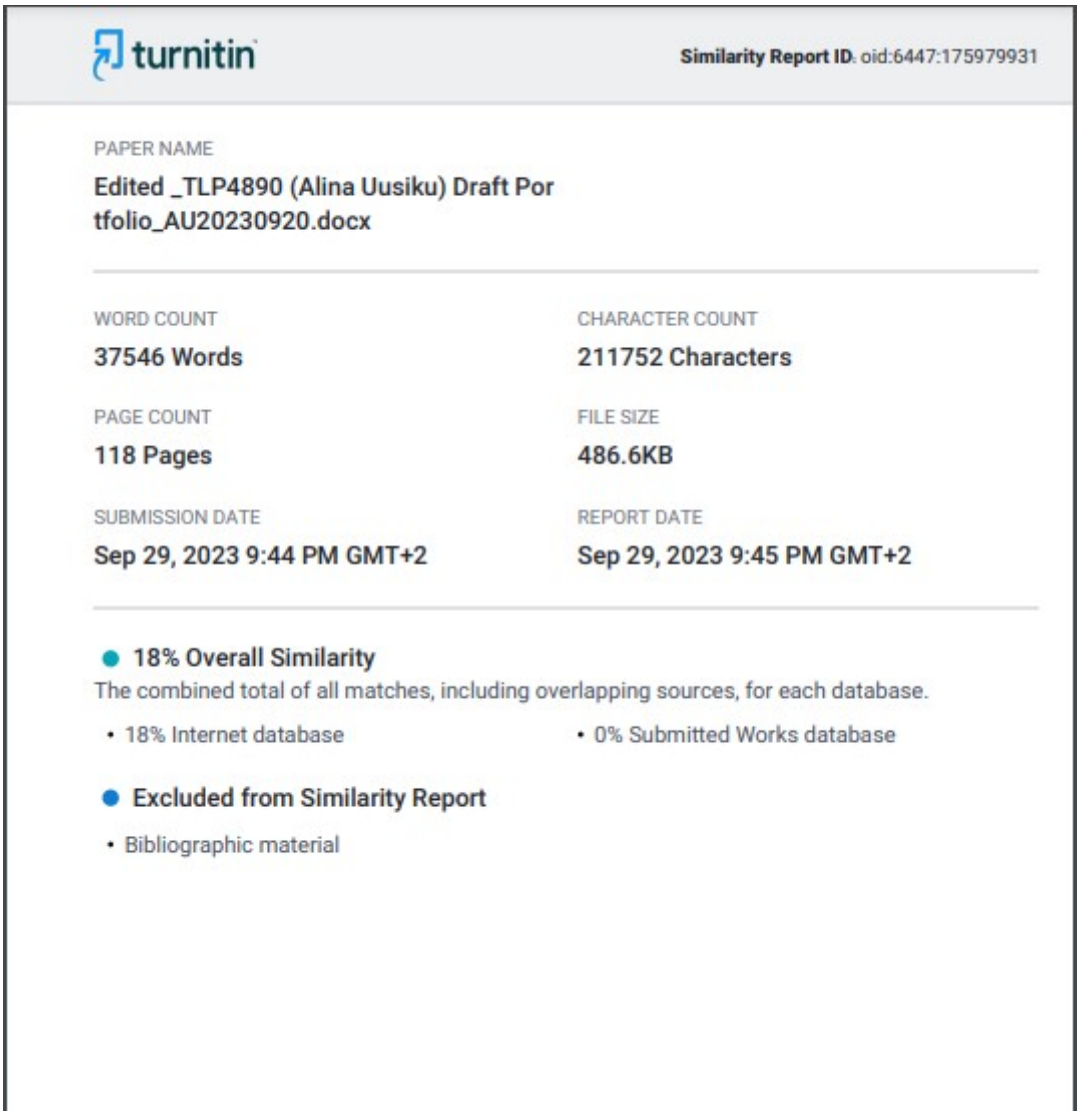

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I, **Alina Uusiku**, hereby declare that this portfolio is my own work and a true reflection of my study and that this work, or any part thereof, has not been submitted for a qualification at any other institution.

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ABBREVIATIONS, SYMBOLS AND ACRONYMS

HE	Higher Education
UNAM	University of Namibia
CGMRM	Centre for Grant Management and Resources Mobilisation
PGDHE	Post Graduate Diploma in High Education
Cu	Copper
Zn	Zinc
Cd	Cadmium
Co	Cobalt
Ni	Nickel
Fe	Iron
Mg	Magnesium
N	Nitrogen
S	Sulphur
EA	Elemental Analysis
FT-IR	Fourier Transform Infrared
1HNMR	Hydrogen Nuclear Magnetic Resonance
MPM	Molecular Precursor Method
LD	Lecturer Development
NQA	Namibia Qualification Authority
NTA	Namibia Training Authority
NCHE	National Council of Higher Education
CLT	Communicative Language Teaching
HES	Higher Education Studies
HEIs	High Education Institutions
PBL	Problem-Based Learning
HoD	Head of Department

4IR	4th Industrial Revolution
5IR	5th Industrial Revolution
NQF	Namibian Qualification Framework
MHETI	Ministry of Higher Education Training and Innovation
SAQA	South African Qualification Authority
ELCIN	Evangelical Lutheran Church in Namibia
NRA	Norm-Referenced Assessment
CRA	Criterion-Referenced Assessment
RPL	Recognition of Prior Learning
ERT&L	Emergency Remote Teaching and Learning
CA	Constructive Alignment
SR	Social Realism
SWOT	Strength, Weakness, Opportunities and Threats
GRN	Government Republic of Namibia
XRD	X-Ray Diffractometer
SEM	Scanning Electron Microscopy
MRS	Multidisciplinary Research Services
SANUMARC	Sam Nujoma Marine and Coastal Resources Research Centre
AD	Associate Dean
ED	Executive Dean
NCRST	National Council on Research Science and Technology
CHM	Chemistry
BSI	British Standard Institution
NSSC	Namibia Senior Secondary Certificate
FAENS	Agriculture, Engineering and Natural Science
NSFAF	Namibian Student Financial Assistance Fund

PMS	Performance Management System
QA	Quality Assurance
AJOL	African Journal online
CEQUAM	Centre for Quality Assurance Management
NIP	National Institute of Pathology
NSI	Namibia Standard Institute
SoTL	Scholarship of Teaching and Learning
OER	Open Education Resources
ODeL	Open, Distance and eLearning
PDCF	Professional Digital Competence Framework
PDC	Professional Digital Competence
CILT	Centre for Innovation in Learning and Teaching

1. CHAPTER 1: BACKGROUNDS AND OVERVIEW

1.1 Introduction

"Student success does not arise by chance, nor does substantial improvement in institutional student retention and graduation rates. It is intentional, structured and proactive actions and policies directed towards the success of all students" (Tinto, 2012, p. 117). It is purposely for such context to note and understand the level of all contextual factors involved in providing quality education in institutions of higher learning. Across all institutions of higher learning in Namibia, the curriculum is similar because it is informed, controlled and guided by the same regulatory body. It gives higher education students flexibility and opportunities to study at their institution and course of choice. It is noted that an institution's internal policies guide the assessment of students.

Assessing student learning is vital because it directly contributes to an institution's academic progression and graduation rate. The University of Namibia (UNAM) has student assessment policies to enable smooth facilitation of teaching and learning. Inclusivity in higher education (HE) also plays a crucial role in educating students of various needs. Since the needs of students are never the same, it becomes necessary to design and implement strategies or teaching methods that cater for all students in their diversity. One of the practices that allow inclusion of all students during teaching and learning is the development of a student profile. The profiling of students distinguishes each student's needs and requirements for their learning and helps the educator prepare teaching lessons and methods accordingly.

Most students' success is based on academic subjects and research, which embodies a lecturer, institutional governance, curriculum, and social and institutional support. In other words, the right level of support from the lecturer and the institution will likely equip the student to handle the ever-changing societal demands. Therefore, the development of coherent, structured plans in curriculum and research is required for student success and future progression in academia.

1.2 My personal and academic journey

I believe it is important for my students that I share my journey with them for motivational reasons, which might help them achieve success, as well as for my continuous growth in academia. Some of the students I taught tend to be inspired by the leader standing before them. This encourages them to work hard to become well-educated for personal and societal development. It also aspires them to be responsible citizens who take up important roles in the nation toward improving and developing communities and the country at large. I also believe that sharing educational and personal experiences with my students will further motivate them to ease interaction with me, that is, to break the hard social distance between students and the teacher.

1.2.1 Personal background

As listed on the portfolio cover, my name is Alina Uusiku. I enrolled at the University of Namibia in 2005 as a Bachelor of Science student majoring in Chemistry, Molecular and Physiological Biology under the Faculty of Science, currently known as the Faculty of Agriculture, Engineering and Natural Science. In 2013, I became an academic staff member as a laboratory technologist for inorganic and analytical chemistry modules. I worked in the Department of Chemistry and Biochemistry under the same faculty, currently known as the Department of Physics, Chemistry and Material Science.

I hold a postgraduate degree in applied chemistry and chemical engineering from Kogakuin University in Tokyo, and I have an MSc and a BSc in chemistry from UNAM. I am employed by UNAM as a staff member at the Centre for Grant Management and Resource Mobilisation (CGMRM), where I coordinate and manage grants and/or projects. I am also a part-time lecturer on a no–cost implications basis and assist at the Department of Physics, Chemistry and Material Science. I teach and co-supervise a limited number of 4th-year and MSc Chemistry research students.

As an educator in my field of study, I encounter various challenges during teaching. Most of them arise from my teaching skills, strategies and methods. Students sometimes struggle to grasp the delivered content due to my teaching style. For example, when solving and balancing chemical equations, only specific whole numbers are applied to solving them based on the molar mass of the involved element.

Hence, explaining to students, especially first-year ones who will attempt any number to solve the questions, can sometimes be challenging without giving them the exact answer. My knowledge of Chemistry is very strong in my teaching; however, sometimes the deliverance methods are not always clearly understood by students. This is because even though I am an educator, I am not trained. For some of the latter reason, I decided to join the Post Graduate Diploma in High Education (PGDHE) program to fully professionally equip myself with knowledge and skills on pedagogical content knowledge.

1.2.2 Academic and research background

Previous research I conducted for my MSc in Chemistry focused on synthesising and characterising metal complexes of Cu, Zn, Cd, Co, Ni, Fe, and Mg, among others. Furthermore, the study examined the metals' corresponding ligands of 2-benzylpyradine and di-2-pyradyl ketone derived from *s*-methyldithiosemicarbazate fragment as well as their applications to biological activities towards Plasmodium *Falciparum*. The ligands were synthesized using the acid-catalysed condensation reaction method, and their reaction with metal ions produced solid metal complexes.

The chemical and physical properties of the synthesized metal complexes were also studied. The ligands and their corresponding metal complexes were characterized by Elemental Analysis (EA),

Fourier Transform Infrared (FT-IR) spectroscopy, and Hydrogen Nuclear Magnetic Resonance (1HNMR) spectroscopy. Ligands coordinated in their deprotonated form through one of the pyridine nitrogen atoms, the azomethine nitrogen atom and the thiolate sulphur atom. Thus, HL1 and HL2 behaved as tridentate N, N, S chelate with all coordinated respective metal ions centres. Conclusively, the study revealed that ligands were more biologically active toward the NF54 strain of P. *Falciparum* than their corresponding metal complexes.

In March 2020, I completed a postgraduate degree in Applied Chemistry and Chemical Engineering focused on thin film nanotechnology and functional materials. The research investigated the Low-temperature fabrication of functional thin films of copper oxide and metallic copper *via* spray coating. The study findings contributed to developing some effective use of locally produced copper in Namibia. Copper-based thin films have energy-requiring applications such as electrical, optical, magnetic, antibacterial, and recently reported antiviral. The Cu-based thin films were formed using the Molecular Precursor Method (MPM), which is a wet chemical process for the formation of thin films of various metal oxides, metal and phosphate compounds by coating a precursor solution in which a metal complex is dissolved onto a substrate followed by heat treatment.

Essentially, the MPM is based on the design of metal complexes in a coating solution engineered to achieve excellent stability, homogeneity, miscibility and high compatibility. As a result, photocatalytic Cu_2O under visible light irradiation and conductive metallic copper thin films were fabricated by spraying molecular precursor solutions prepared by a typical chemical synthesis and electrochemical process. Using a simple airbrush, this was then subjected to a quartz glass substrate at 180º in air. The copper-based and metal oxides fabricated were all electrically conductive. The purpose of the study was to contribute to the industrialisation of Namibian raw materials and metals through the effective utilization of copper metal, one of the country's main mineral resources. Two journal articles were published based on the study findings.

1.3 The reasons for pursuing a Postgraduate Diploma in Higher Education

I decided to join the postgraduate diploma program in higher education to gain more insights and pedagogical competencies and improve my teaching and learning experiences. In addition, it will enhance my ability to efficiently and effectively deliver knowledge and impart skills to students. Also, I desired to be fully equipped with techniques for professionally handling all classroom-related issues and effectively interacting with other lecturers and staff members at the institution.

It should also be noted that enrolling in the course is an expected rewarding decision because the curriculum advances the professional development of lecturers within higher education institutions. Notably, it is important to keep up with teaching competences if one is a coordinator or lecturer in

higher education institutions. According to Kneebone (2002), higher education academics and researchers should keep current on matters in their respective disciplines. Hence, I joined the program for further Lecturer Development (LD) to improve my teaching career.

1.4 The Structure of the Portfolio

The portfolio is divided into seven chapters. Chapter one describes a general portfolio introduction and a brief background on my personal and academic journey. It also considers my motivations to pursue a Postgraduate Diploma in Higher Education. Chapter two focuses on my pedagogic approach in the context of HE, the principle of adult learning, inclusive education, student profiling, teaching and learning methods, theories and practices, and assessment practices.

Chapter three focuses on inclusivity and the agential perspective of student supervision in HE. It addresses the inclusivity of students at UNAM. A study was conducted among students and a few management staff members to measure the inclusivity indicators, such as inclusive culture, policies, and practices at UNAM. The chapter also outlines the pressing inclusivity issues affecting student learning during my teaching and how they can be addressed. Chapter four details the context of my institution to curriculum transformation and development, the style of my curriculum design and its guiding structures, Curriculum paradigms and influencing culture on its development, driving \agents of curriculum transformation contrasted with what it was during the colonial period. Also included in the chapter are curriculum development practices, agent roles and documentation.

Chapter Five discusses the assessment of and for student learning in HE. It covers the importance of assessment, its policies, criteria, methods and strategies. It also deals with factors compromising assessment, roles of components of social realism theory in assessment and reflection of analysed case studies for understanding assessment in HE. Chapter Six interpreted social realism in relation to quality education at national and institutional levels. Chapter seven narrates technology usage in HE and analyses the blended online learning strategy.

1.5 Conclusion

The Post Graduate Diploma in Higher Education (PGDHE) study was conducted for two academic years under the Department of Higher Education and Lifelong Learning (DHEaLL) at UNAM. During the first year of the study, the following course modules were offered: Teaching and Learning (TLL 4800), Curriculum Development in Higher Education &Training (TLC 4800), and Assessment OF and FOR Student Learning (TLA 4800). In the last year of the study program, the modules covered were Quality Assurance and Evaluation in Higher Education (TLQ 4800), Technology for Teaching and Learning in Higher Education (TLT 4800), and Student Supervision in Research (TLS 4800). The developed portfolio is presented as a result of the course modules taught.

2. CHAPTER 2: UNDERSTANDING SCHOLARSHIP OF TEACHING AND LEARNING IN HIGHER EDUCATION

2.1 Introduction

This chapter covers the context of higher education in Namibia, contextual factors that influence teaching and learning, the role of Realism Social Theory in HE, the principle of adult learning in HE, criticality and reflectivity praxis in teaching and learning, and the development of student profiling instruments. Also presented and discussed are guidance on learning theories, teaching methods, and assessment practices for teaching and learning. These aspects are presented and discussed in turn in the following sections.

2.2 The context of education in Namibian institutions of high learning

All the institutions of higher learning in Namibia are regulated by the same bodies, namely the Namibia Qualification Authority (NQA) and the National Council of Higher Education (NCHE). However, the teaching and learning in the individual institutions differ depending on the institution's focus.

Higher education is prone to constant changes due to evolving circumstances in a country. Josua et al. (2022) clearly explained that Namibia's education system evolved from what it was during the colonial era to the present time. The authors pointed out two key characteristics of the education system during the colonial period in Namibia as follows: (i) the Eurocentric education system introduced by missionary educators aiming to convert Indigenous Africans and their knowledge to Christianity and the Western way of life, and (ii) the education system was designed to produce cheap labourers to serve their colonial masters in low entry paying jobs during extractions of Namibian natural resources.

It can be seen that the colonial education system compromised the promotion of social cohesion and solidarity among members of communal living of "Ubuntu" among the indigenous Namibians. A close look at the education system today in Namibia reveals that it still has some adverse colonial legacies that require curriculum transformation to improve teaching and learning, especially in higher learning institutions. Furthermore, it is equally important to consider the colonial education legacy issues in the development of student profiles because of the combined effect of historical and contemporary dimensions of teaching and learning.

2.3 Contextual factors influencing teaching and learning approaches

Contextual factors are an important aspect of higher education. It is seen as a way to categorize the outside effects, which are attributes of the community, the students and the school that are bound to affect teaching and learning processes. Several contextual factors affect learning and teaching in

higher education, including globalization, massification, information and communication technologies, and the knowledge economy phenomenon.

2.3.1 My teaching method in relation to teaching and learning context

Teachers in various contexts worldwide are sometimes unfairly criticized for not putting teaching methods developed for the well-resourced classrooms of Western countries into practice. Factors such as the teachers' "misconceptualisations" of "imported" methods, including Communicative Language Teaching (CLT), are often cited as aspects that create misalignment. It is also noted that challenges imposed by "contextual demands," such as large class sizes, are sometimes recognized as factors that reduce the quality of teaching and learning (Walsh & Wyatt, 2014, p. 693).

The other inherent factor is the individual differences among the lecturers, where each lecturer may have unique teaching styles and create an environment for learning. Based on my experience in teaching over the years, this includes knowing my students better, which tends to attract their learning attention to the subject matter. Also, interaction with students strongly informs relevant teaching delivery approaches. The already set-out-in-context interaction, principles, and methods of lecturers with students are slowly becoming ineffective in the changing and accelerating development resulting from technologies, easy access to information, travelling, and the adaption of modern behaviours.

2.3.2 Considered effective teaching and learning in my discipline and institution

Even though there are no universally accepted definitions of effective teaching and learning, Devlin and Samarawickrema (2010) believe that it is one oriented to and focused on creating learning experiences for students' attainment of quality education. There are two commonly agreed characteristics of effective university teaching: it requires a set of particular skills and practices identified by research (Penny, 2003) and meets the requirements of the context in which it occurs. In my case, this relates to the lecturer having requisite teaching qualifications to impart knowledge and skills to the students competently.

The criteria for effective teaching in higher education are generally understood to comprise specific skills and practices applied within particular contexts (Devlin & Samarawickrema, 2010). The author further explains that the criteria for effective teaching in higher education are about meeting the requirements of the context. Thus, acquiring relevant knowledge and skills through formal training and projects is crucial for students' and lecturers' success. This is one of the reasons why I decided to enrol in the study program to acquire professional teaching qualifications for higher education.

Regarding UNAM, the context is critical, noting that the educational system is adversely affected by many factors like the fact that Namibia gained its independence late, poverty level is high in the country, corruption is rampant, restricted university entry points, limited access to education financial assistance, and the economy is struggling. Thus, these factors tend to compromise teaching and

learning. Even though UNAM is a public university whose establishment is guided by the University of Namibia Act of 1992 (Government of the Republic of Namibia, 1992), the institution only started operating in 1993, two years after the country's independence.

2.3.3 Context of my institutional profile for student enrolment and learning

The University's current institutional profile describes UNAM as one of the institutions of high learning in the country. It is a public teaching and research university, the largest in Namibia, with 12 campuses, including its main campus in Windhoek. The main campus is the biggest, with about 9,000 students, 740 administrative staff and 1 067 academic staff. Out of the 9000 students, 53 students are living with disabilities.

As per the Namibia Act of 1992 (Government of the Republic of Namibia, 1992), the main purpose of the university is to provide quality higher education through teaching, research and advisory services to its clients. The university aims to produce productive and competitive human resources capable of driving public and private institutions towards a knowledge-based economy, economic growth, and improved quality of life.

UNAM is also desirous of being a beacon of excellence and innovation in teaching, research, and extension services. It can be summarized that UNAM is mandated to undertake research, advance and disseminate knowledge, provide extension services, promote social and economic growth and nurture Namibians' cultural expressions. In addition, the university seeks to foster partnerships with like-minded institutions in the country, region, and globally.

The institution transformed from its apartheid-led academy known as the Academy of Tertiary Education, which later became Polytechnic of Namibia and Namibia University of Science and Technology in progressive years. From the early 1990s, a limited number of people in the country had a chance to further their education at the university level. In recent years, the number of students enrolled in the universities has steadily increased.

2.4 Role of Realism Social Theory in Higher Education: Structure, Culture and Agency

In Higher Education Studies (HES), the sociological framework of critical realism of Bhaskar (1978, 1979) (Bhaskar, 1998) and Archer's Social Realism theories (1995, 1996, 1998) (Archer, 2003) has been used to interrogate the interactions of structure, culture and agency in institutions of higher education (IHE) (Shalyefu, 2017). Realist Social Theory states that there must be internal consistency between social ontology, explanatory methodology and practical social theorizing. The theory further highlights that idealizing any social ontology adopted has implications for the explanatory methodology endorsed, and in turn, this methodology has implications for the guidelines for practical social theorizing (Zeuner, 1999).

While the Critical Realism theory is directed toward a philosophical perspective of reality human knowledge (Archer, Bhaskar, Collier, & Norrie, 1998), the idealisation of reality exists independent of human conception and perception. This theory also points out that reality must not be conflated with experience and that there is a difference between what is and what can be known. Essentially, the theory embraces the idea that our knowledge of reality is subject to various historical and other influences. Furthermore, the theory highlights that situational logic in a particular social context significantly examines the possibilities for holding or changing structural routes or shapes. Importantly, it focuses on a concern for social consciousness and justice. In other words, it is developed as a reaction against idealism and exposes the deterioration and realities of contemporary life (Archer, Bhaskar, Collier, & Norrie, 1998).

2.4.1 The practicality of structure, culture and agency in my institutional context

Concerning the above-described theories, structure, culture and agency (Shalyefu, 2017) further explains that social structure, culture and human agency have been utilized as learning lenses. To illustrate, data is practically based on empirical experiences and observations (culture), the regulations and policies of HEIs (structure) and document analysis by an academic developer (human agent). Based on my understanding of the latter author and Social Realism Theory, structures are a port of law and legislation, and culture is beliefs, systems, thinking and values. In these interdependent relations, it is clear that human agents practice the culture, which in turn influences the style of teaching and learning in a given society.

My experience with social realism through teaching and learning is as follows: an institutional organization such as UNAM, in accordance with its legislation and laws, always urges for the submission of continuous assessment, industrial and practical and examination marks, and assessment question papers before certain set institutional deadlines and due dates. The same structure has also allocated me a class timetable full of lessons for the whole day and week. There is a contradiction in the duty assignment to the people or me as human agents by the structure, and this is a culture among many institutions and organizations that, in return, contradicts the meaning of Archer's Realist Social Theory.

Hence, the ideal teaching and learning strategies or practices should be guided by amendable legislation and laws (structure). As a result, it allows for flexibility in executing all assigned duties to the agent or teacher, assuming the structure believes all duties are equally important. If all teaching activities and institutional services run parallel and enable such amendments, this can lead to a different culture of deliveries within my institution.

2.5 Understanding the principle of adult learning in HE

There are theories guiding learning in adult education, and they provide insights into how adults learn and can assist a lecturer or instructor in becoming more effective in their practice, especially in responding to the needs of their students (Corley, 2011). Corley (2011) further urges that no specific learning theory applies to all adults. The author states that the more adult educators are familiar with the knowledge base of models, sets of assumptions and principles, theories and explanations, the more effective and responsive their teaching practice becomes to the needs of adult students.

The distinctions between andragogy (adult teaching) and pedagogy (teaching of young people) help to understand facilitating factors in achieving effective adult teaching and learning. The adult student and the lecturer often take disproportionally more time to understand each other than when dealing with young students. Teaching adult students without knowing their student profile is sometimes not worthwhile.

Adult students have multiple daily responsibilities that implicate their learning styles. Most of my Chemistry classes deal with demanding family issues like pregnancy and other family obligations. In the case of pregnancy, the pregnant students do not attend chemical laboratory sessions because the chemical environment is not conducive for pregnant women owing to chemical fumes emitted during experiments. Students with family errands or responsibilities find it difficult to attend the chemical laboratory practical sessions because they are scheduled for afternoons when the adult students have to pick up their children from school and further care for them.

Most of them have to care for their children mainly because they do not have financial resources for after-school daycare or to hire a nanny. Experiencing such scenarios among some of my adult students enabled me to pay more attention to all types of students in my classes. It has also allowed me to be considerate and accommodating to all students.

2.6 Criticality, reflectivity and praxis in teaching and learning

2.6.1 The practical experience of criticality writing in teaching and assessment

Quinn and Vorster (2016) narrate that pedagogic processes and strategies are useful for ensuring that writing focuses on the writing to learn and the learning to write. Thus, criticality, reflectivity and praxis are crucial for students to apply in their written assignments.

Criticality, reflectivity and praxis are three essential elements of the writing that lecturers must grasp (Stierer, 2008). Criticality is understood as a distinctive orientation to ideas and approaches. This implies that a lecturer should go beyond description to include criticizing through applying clarification through elements of comparison, contrast, distil and discussion while analysing different theories under study (Stierer, 2008).

The practicals of criticality from my teaching experience and interaction with students have revealed that engaging in positive criticism and not fault-finding helps create a conducive learning environment. In most of my teaching experience, I have observed that I am more negative in giving feedback to students than I should be providing balanced critique during classroom teaching and assessment reporting. It is an element that is hardly recognizable, and I hope to address it after completing the current course under study.

2.6.2 The practical personal experience of reflectivity writing

According to Stierer (2008), reflection and reflective practice are key pieces of educational code. This is because they are based on the idea that personal effectiveness is an essential component of professional effectiveness, thus challenging the traditional notion of what it means to be a teacher, which emphasises the knowledge of their subject and hardly acknowledges the role of the person being taught. Reflectivity assists us in gaining greater awareness and understanding of ourselves as professionals, as well as how and why we act, respond, and feel the way we do in different work situations. The latter scenario is better explained by Magesa and Josua (2022), who argue that using reflexive practices enables self-understating and awareness and facilitates professional learning and communication during the teaching process.

Concrete reflection forms a basis for further improvement between students and lecturers. In my case, I reflect by writing on ways to improve my teaching through student performance by following the different types of assessments provided and assessed. For example, if many students are performing well in certain topics taught, that means that the teaching methods used were effective and that I should continue to use them. If the student performs poorly in an assessed topic taught via a quiz, assignment, or test, my teaching method must be improved.

I consider several reflective questions to improve teaching methods, such as: was the time allocation for the specific topic taught sufficient? Did all the students attend the class? How was the weather that week? Was there a university function happening that week? Furthermore, was the chapter taught during the first or last week of school opening? These reflective questions can lead to potential solutions in solving, creating new teaching methods and timing toward improving student performance in the next years.

2.6.3 The practical personal experience of praxis writing

Praxis requires an effective command and potential integration of both criticality and reflectivity. It includes expectations that a lecturer will demonstrate that they can use conceptual ideas to promote a deeper understanding of their teaching and apply their teaching experience to evaluate ideas used (Stierer, 2008). The personal experience of praxis encountered during my teaching was that when writing to my students, either giving instructions, assignments, or tests, I try to at least stick to using

my own words and paraphrasing to simplify the matter without compromising the original meaning or intent. I encourage students to use their own words in their academic writing works. Where formulas and chemical equations apply, especially common in Chemistry modules that I teach, I encourage my students to understand the meaning and impact of their products rather than their symbols. It is nomenclatures, routes, and mechanisms that are mostly tested and rated.

2.7 Development of Student Profiling Instruments for High Education

To guarantee teaching and learning success in higher education, the HE requires curriculum transformation routes involving all stakeholders, including students' representatives, teachers, parents' representatives, university partners, and community members, to inform teaching practices and policies. Curriculum transformation will also enable student learning in HE to respond innovatively to their personal, mental, and societal needs.

Thus, addressing student learning to change their community whose transferable challenges can be identified through student profiling. A student profile is usually developed to help the lecturer know their student better regarding social, educational, and mental aspects. It is a tool that enables and assists a lecturer to fully understand their students so that they can effectively develop lesson plans and deliver responsively.

2.7.1 Importance of Profiling My Students

It is important to consider factors like student background when profiling students in the specific subject course that I teach, such as chemistry. Mostly, students can change courses more than three times due to the lack of profiling in their previously quitted course of studies. In other universities in the world, like Turkey, students must take a national entrance exam to enrol. The entrance exam measures the candidate's basic knowledge of social and technical high school courses and the composite scores used for the final selection (Durcan, 2012).

At UNAM, the university entrance examination or prerequisite is administered for courses like engineering, medicine, and law. If such student profiling starts at the university entrance examination, students will be fully inducted on their interests and best-performing course of study, increasing the likelihood of completion within the stipulated study duration. Other issues involved in the student profiling process for teaching and learning in HE and adult education are classroom management beliefs and practices (Garrett, 2008).

For example, do teachers teach according to the results of their profiled students? Over the decades, the understanding of classroom management was rooted in behavioural theories of teaching and learning in HE, and the emphasis was on bringing students' behaviour under stimulus control (Garrett, 2008). Such controls are consistent with the traditional or transmission approach to instruction that has shifted with educators now encouraged to implement an instructional approach based on

constructivist learning principles (Garrett, 2008). Even though the teacher's approaches may reflect the principle of good classroom management, educators can still use student-centred instructions if well supported by the institution's administrative processes. In most cases, shifting from the traditional way of instruction is largely informed by the results of student profiling. The reform means one has to shift the lesson deliverance method to suit the specific profiled student.

2.7.2 Student profiling questionnaire used for most students

Table 2.6 on the next page illustrates an example of a student profile in a questionnaire format for my students. One way to gain a deeper understanding of students and learn the profiling data is to analyse and understand it properly, and data analytics should be applied. According to Li et al. (2019), data analytics is achieved by harnessing and extracting meaningful insights from data by allowing students to interact with the university and leave a digital footprint. The footprints and the student's background supplied during admission are valuable data that can be effectively used for modelling and predicting student behavioural performance. Therefore, data analytics can be a valuable tool for student profiling for UNAM.

In today's world, humanity is facing many challenges, like health pandemics and wars. For instance, COVID-19 and wars in Ukraine and Sudan are vivid challenges that are causing untold suffering of people. In the case of the war in Ukraine, the conflict has driven up prices of food commodities and education. The learning can be extremely challenging when students attend classes online through various eLearning platforms such as UNAM Moodle.

In addition, working students are not able to attend day classes. The adult students also have family commitments that can disrupt their regular class attendance. Hence, students' information can be captured with data analytics for profiling by their lectures, and they will be provided with better teaching and learning methods that suit their lifestyles and mental spaces.

When dealing with student profiling, it is important to look at the local needs of the students, which in many cases correspond to the appropriate teaching methods for the students. Student profiling reveals important dimensions that enable or hinder learning and teaching in HE. At UNAM, preferred student teaching strategies were conducted in the recent study by Shipena et al. (2022), which revealed that collected student information such as gender, marital status, ethnicity, age, and educational background was directly linked to the student's participation, motivation, support required, performance, and behavioural tendencies.

The studies revealed that student profiling can be used to make wide recommendations to the school of nursing and the entire institution. It will also vary based on what was evaluated and scored on every aspect for each student. The scores help reach an informed decision on the preferred teaching and learning strategies for all the students. The table below illustrates some factors to consider when

developing a student profile instrument for my chemistry students. The following is an example of a student profile in a questionnaire format developed for profiling my students. See Table 2.1 below.

Table 2-1. Example of a student profile questionnaire used for my students

STUDENT PROFILE QUESTIONNAIRE*	
DEMOGRAPHIC	
Gender	
Age	
Home Language	
Marital Status	
Siblings	
Course of study	
Current residence/ hostel accommodation	
Why do you choose the course?	
What are your course gain expectations and targets?	
What are your extensive skills in presentation, Microsoft Word, research projects, field trips and group works	
Do you prefer working individually or in a group?	
VARK assessmenT (http://vark-learn.com/the-vark-questionnaire/)	
What is your online learning experience?	
Future plans/ career	
Previously obtained qualification	
Hometown	
When I am learning, I a. like to talk things through. b. sees patterns in things. c. use examples and applications. d. read books, articles and handouts	
When learning from the Internet, I like: a. videos showing how to do or make things. b. interesting design and visual features. c. interesting written descriptions, lists and explanations. d. audio channels where I can listen to podcasts or interviews	
I prefer a presenter or a teacher who uses: a. demonstrations, models or practical sessions. b. question and answer, talk, group discussion, or guest speakers. c. handouts, books, or readings. d. diagrams, charts, maps or graphs	

2.8 Guidance of learning theories to teaching methods and open, distance and e-learning

Learning theories are defined as principles underlying how learning takes place, and they guide teaching at all levels of learning, including institutions of higher learning. These theories are behaviourism and constructivism, which are either cognitive or social. While behaviourism theory is over-interpreted, giving rise to an authoritarian, teacher-centred and outcome-based view of learning, the teacher came to be seen as the owner of knowledge controller of the learning environment, with students as passive recipients portrayed as empty vessels to be filled with knowledge (Stewart, 2012).

Cognitive and constructivist theories have a major contribution to the influence of student learning, which is that students are not passive, uniform, empty vessels into which lecturers can pour second-hand knowledge. These theories validate effective learning by students when they actively get involved in the primary construction of knowledge, even though the constructivists do not reject behaviourist theories, arguing that association is only an isolated part of a more general learning process (Stewart, 2012).

2.8.1 Open and Distance Learning Method

While HE has many forms and teaching methods, not all are appropriate for all times and student audiences. Given the technological advancement today, teaching methods, strategies, and practices require changes and upgrades to adopt information and communication technology in teaching and learning. Lecturers use various teaching methods, practices, and strategies in the open and distance learning processes, guided by a common interest, to achieve transformation and transfer of knowledge between themselves and their students.

My teaching methods are largely guided by social theory. According to Stewart (2012), the originator of social constructivism is Vygotsky, who highlighted the social origin of thinking through the influence of language, culture and other social interventions. Vygotsky also emphasised the critical role of teachers in extending the potential of individual learning. He further states that students learn best by identifying the Zone of Proximal Development and working with them to accomplish tasks beyond it. The author demonstrated that students could get so far with problem-solving but, with scaffolding support from a teacher, could achieve more. See Figure 1 below.

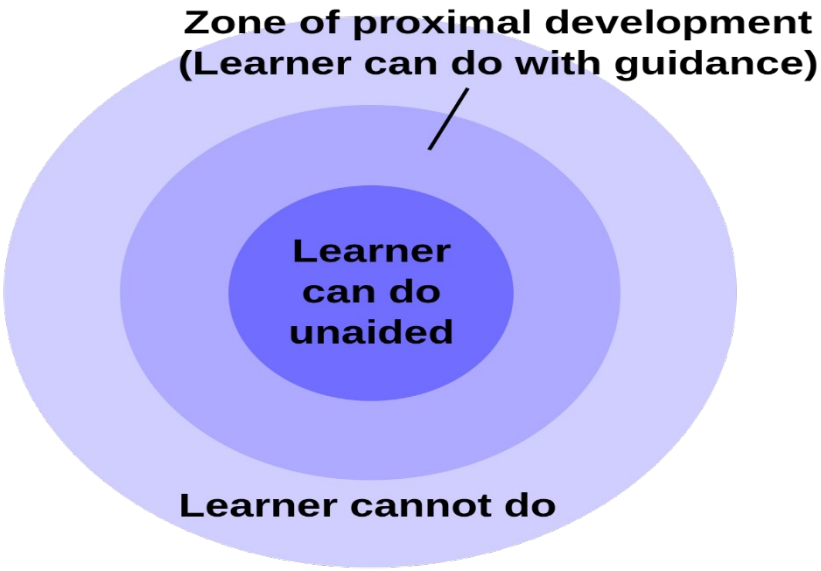

Figure 1. Zone of Proximal Development (ZPD) (Levy Vygotsky (1896 – 1934)

My teaching methods include discussion/ debates, cooperative teaching, collaborative work, Problem-Based Learning (PBL), heuristic method, practical and laboratory methods coupled with explanatory, Cooperative teaching, collaborative work, and e-learning. While discussion is the most widely used teaching method, it greatly increases the quality of student involvement in class activities, developing their reasoning skills and validating their ideas. During my teaching, I mostly use the discussion method instantly after presenting my main lecture to students. In most cases, I encountered lecture-participating students remaining the same throughout the lesson, a significant concern that jeopardises all of my students' success.

2.8.2 Comparisons of various teaching methods and strategies in my discipline

Cooperative teaching and collaborative work allow students to work in groups and help each other master the knowledge or concepts under consideration. I use these methods in my teaching, especially in students' group work. I always find all students participating because they learn in smaller, controlled groups. Most of my students are not shy about participating in group work, including solving scientific problems such as balancing chemical equations, solving chemical formulas, or calculating various chemical entities. The students widely discuss, sometimes even laugh and joke with one another, which encourages a safe and enjoyable learning environment. I find most of the work presented by cooperative teaching and collaborative work more effective and efficient than individual work.

Problem-based learning, which uses concrete problems to gain new knowledge and integrate processes, is also used in my teaching. This is because Chemistry, especially industrial CHM, is a very practical subject where a student is required to solve step-by-step chemical reactions and

complete reaction mechanisms. Furthermore, PBL always seems the best way to get through chemical-related problem-solving processes.

The heuristic method is a step-by-step independent fixing of facts in solving problems and identifying ties between problems. I use the heuristic method at least twice a month by quizzing the students and writing the test. I use this method at a minimum because it is limited to bringing out the student's full potential during learning since students are not allowed to share and discuss their ideas and only get validation at the final processing and acceptance of the correct answers.

I also use practical and laboratory methods as well as explanatory, written, analytical, practical, and activity-oriented teaching methods. It is the nature of Chemistry to impart knowledge and skills through testing and teaching to complete the student assessment of their course. I found the latter method to work best in the following order: explanatory, written, analytical laboratory and practical, activity-oriented teaching. These processes can start in the classroom and always end in the laboratory, where students conduct their Chemistry practical work and finalise their experimental reports. In most cases, students work in a group of two students. Thus, cooperative teaching and collaborative work are applied.

Students assist one another in mixing chemical reagents, handling chemicals and equipment, and measuring and recording data. Cooperative teaching and collaborative work are always appropriate for my Chemistry classes as they promote safety when students assist one another in handling dangerous, toxic and corrosive chemicals used in the chemical laboratories. During industrial Chemistry experiments, students rely solely on the effect of their actions (i.e., how they experiment – mixing of chemical appropriate amounts and type of chemical reagents), experimental findings to inform them of what they do (For example, such as obtaining practical data to calculate chemical entities further to come to an experimental conclusion).

The latter two teaching and learning scenarios/ events are fully supported by social learning theory that demonstrates that much learning occurs by observing and imitating the behaviours of surrounding people. In this regard, students learn by assimilating other people's experiences into their development of understanding. Hence, growing evidence shows that learning has more durable retention when taught using active and constructivist methods (Stewart, 2012).

2.8.3 The Process and Experience of E-learning duringCOVID–19 in My Discipline

E-learning is learning through the internet and various forms of multimedia through which one's teaching content methods are delivered. I used E-learning during COVID–19 (2020 – 2022), which was initially unexpected. Students and lecturers were, therefore, allowed to continue the teaching and learning processes.

I encountered various challenges during e-teaching and learning, such as limited participation of students during class, reduced student attendance as some students do not have electronic means of attending online lessons, and student copying during test and examination writing. I could also not use some online communication platforms, including lecture video creation for my students. I realized that there was more time spent by both me and students learning how to use e-learning platforms than learning and teaching the module content.

During COVID-19, the challenges encountered decreased as we learned to live with the pandemic. It is, therefore, justifiable in Biggs (1999), who believes that the use of e-learning needs to be embedded in a theory of learning on the one hand and the facts of students' digital sophistication on the other hand. Thus, they open out pedagogies that need rethinking (Biggs, 1999). Additionally, it is observed that technology can be used in conversations between students, teachers and machines to advance high-level and creative thinking (Biggs, 1999). Open and distance learning are cheaper, and the learning is friendly, unlike e-learning. Nevertheless, a shift or incorporation of e-learning into the UNAM learning processes and curriculum will continue to position the institution to keep up with the global changing teaching and learning environment.

2.9 Assessment practices for teaching and learning

After teaching using the above-discussed methods, assessment is often conducted using the following assessment practices and techniques. A lecture is a creative process in which both lecturer and student partake, intending to ensure that students comprehend the major notions of the subject. Seminars, presented as reports, presentations, and essays, are discussed, and supervisors make conclusions. It allows for deepening knowledge learned by students in lectures. Laboratory training is a practice that enables students to learn how to conduct experiments, handle, regulate, and fix equipment. In the process, they consolidate theoretical knowledge gained in a lecture with practical experience.

Practical training is a gradual learning of the theoretical material through solving concrete problems by making sketches, drafts, and schemes using appropriate techniques and calculations. Furthermore, a field study assists students in consolidating the acquired theoretical knowledge and transferring it to practical ones.

Project/ course paper is also a creative process whereby the student carries out a course project by applying graphical data under the guidance of their supervisor. A bachelor, master and doctoral theses aims at systematizing the theoretical and practical knowledge students learn to achieve a substantiated solution of concrete scientific, technical, economic and industrial problems.

In the past, when university classes contained highly selected students, the traditional lecture was followed by tutorial sessions, which seemed to work well then. Educators must consider the changes

in time, technological advancement, innovation, and development, which tend to drive the shift in higher education assessment, teaching, and learning practices.

2.10 Chapter Summary

Incorporating structure, culture and human agents in my daily teaching is very important as it allows for full evaluation and critical reflection of progress in the students' learning, content delivery, and lecturer learning. Developed student profiles will enable students to learn effectively, allowing teaching and learning based on their existing personal and academic circumstances. In the past and during my teaching history, I never developed a student profile instrument. Having student profiles would have resulted in effective communication between lecturer and student.

High education across the world is undergoing major changes which bring institutions of higher education into challenging relationships with the stakeholders in the education sector (Barnett, 2004). The changes come about through unexpected circumstances like the COVID-19 pandemic that started in November 2019, forcing students and lecturers to engage in online teaching and learning platforms unexpectedly.

Even though I use learning theories such as social constructivism in my online teaching to guide, delivery methods like discussion/ debates, cooperative teaching, collaborative work, PBL, heuristic method, explanatory, and cooperative teaching were used. However, restrictions to my teaching methods were observed in practical and laboratory methods that could not be conducted because they are only possible through the physical presence of both students and teachers. This is one of the shortcomings of online teaching and learning because it limits practical teaching and learning. Nevertheless, students' success remains my priority during teaching and learning. Thus, applying social learning theory in my teaching methods for both e-learning and open and distance learning has been crucial.

3. CHAPTER 3: AGENTIAL PERSPECTIVE OF INCLUSIVITY AND STUDENT RESEARCH SUPERVISION IN HIGHER EDUCATION

3.1 Inclusivity in HE

For me to understand the context of inclusive education in higher education students, a study was conducted whereby data were collected from UNAM students, analyzed, and interpreted, and conclusions and recommendations were made based on the findings. The study aimed to gather the views of students and selected management of UNAM on the extent of inclusive education at the institution. Inclusivity in HE is generally understood as the fundamental right of all children and adults to fully participate and contribute to all aspects of the life and culture of an institution without restriction or threat of marginalization (Shipena et al., 2022).

Thus, inclusive education is often associated with students with impairments of one type or another or special education needs. There is an inclusivity index, which measures inclusivity, detailing an examination of how barriers to learning and participation can be reduced for any student (Booth & Ainscow, 2002). According to Biggs (2003), teaching and learning is a holistic art or science which embraces classroom, departmental and institutional levels. He further stated that a poor educational system does not incorporate inclusivity and or reduces integrated support for high-level learning (Biggs, 2003).

3.1.1 UNAM as an Institution of choice in assessing the inclusivity of students in HE

The University of Namibia was chosen as an institution of choice for the analysis of inclusivity in HE as it currently (2023) has about 53 students with disabilities. As per the 1992 University Act of Namibia (GRN, 1992), the institution aims to provide all clients with quality higher education through teaching, research and advisory services.

UNAM is the largest public teaching and research university in the country. It has 12 campuses, including its main campus in Windhoek. The main campus is the biggest, with about 9000 students, 740 administrative and 1067 academic staff by 2023. Out of the 9000 students, 53 students are disabled and in need of assistance to navigate their movement around campus during their time of studies main campus. Currently, these students are coping, mostly being assisted by other students and sometimes staff members to navigate campuses.

The main campus, being the largest campus, is also hugely affected by a lack of health facilities such as ambulances, wheelchairs, mobile clinics, buses and pumpers to cater for its diverse population. UNAM has been a reliable partner to the Namibian Government in addressing social and health-related challenges like those experienced during COVID-19 for all its students and staff members. The institution has pursued various initiatives towards achieving inclusivity for effective learning and

teaching. Such initiatives include UNAM health care that provides free COVID-19 vaccinations across UNAM campuses in the country and the provision of oxygen tanks to UNAM clinics and outside hospitals. A COVID-19 testing centre was also established by the Bio-medical and Diagnostic Laboratory at UNAM School of Medicine and Hage Geingob campus. The centre tested for COVID-19 for UNAM staff, students and members of communities at large.

3.1.2 The actual study: Inclusivity of students and management at UNAM

The study was conducted to assess the level of inclusivity in access and sharing of information by the diversity of students in relation to their educational needs. The information and parameters used varied from gender, home location, cultural differences, home language, impairment type, school policies, inclusive practices, availability of special needs for deaf, blind and partially sighted students, and exposure to discrimination. In the assessment of learning management, I considered cultural differences and responsiveness, accessibility of information, the inclusion of diverse students, setting of students with special needs in classes, behavioural support of students, and support policies to inclusive practices and strategies.

3.1.3 Research procedures used to conduct the study

A quantitative research approach was applied using a survey questionnaire. A simple random sampling method was used to select the questionnaire respondents among the student population, and the survey questionnaire was emailed to 66 selected respondents. The data obtained from the students and management were analyzed based on the three main domains of an inclusive index. Two survey questionnaires presented in Appendix One and Two that assess the inclusivity of university students and management were developed via online Google form using the Microsoft Office 365 software. The student and management responses to the survey questionnaire are interpreted in section 3.1.4 below using the inclusivity parameters.

The questionnaires were also developed based on the three main inclusive indexes and parameters in HE, namely (a) Creating Inclusive Cultures, (b) Producing Inclusive Policies, and (c) Evolving Inclusive Practices (Booth & Ainscow, 2002). The survey questionnaires were distributed to students and management staff via online Google Forms. Both students and management staff returned their completed through the designated online platform. Also, all the respondents consented to participate in the research, and the students and management gave 98% and 100% of the affirmations to participate in the study, respectively. The data were collected over one month from students and management, which was deemed sufficient time for the respondents to complete the questionnaire.

3.2 Interpretation of the study findings using inclusivity parameters

The data obtained through the inclusivity questionnaires (Appendices 1 and 2) were evaluated using the inclusivity parameters. About 54 out of the approached 56 students participated in the research and provided responses on their understanding of inclusivity in HE. Contrarily, only 2 management staff members participated in the research, out of the approached 4. Of the 66 students who responded to the study, 82% were female, while 18% were male. As for management staff, there was one male and one female participant. The research results are analysed in the following sections, which include the three main domains of an inclusive index.

3.3 Creating inclusive cultures within UNAM community

According to Booth and Ainscow (2002), creating an inclusive culture involves building a community and establishing inclusive values. Booth and Ainscow (2002) further state that building a community involves making everyone feel welcome and students assisting each other. The authors further state that in an inclusive environment, staff collaborate, staff and students treat one another with respect and dignity, there is a partnership between staff and parents/guardians, staff and governors work well together, and all local communities are involved in the school. The students' responses showed that about 95% responded that there is an increase in cultural diversity in the local communities in the institution.

There were 0 responses on the following inclusive issues: Either practitioners' attempts to avoid conflicts between culture in the setting and homes of students; If information is accessible to all irrespective of their home language or impairment; If students who are categorized as having special educational needs seen as individual with differing interest, If behaviour support address barriers to learning and participation in school policies and culture and practice. Zero responses to such important research questions provide no room for improvement of such inclusive indicators by institutional governance.

It is also valuable to emphasise developing students' social skills through various strategies, such as classroom and community-building meetings (Garrett, 2008). About 30 participating students agreed that lecturers and administration staff members understand and respect cultural differences, while 20 strongly agree, 3 disagree, and 4 strongly disagree. The latter provides continuous evidence that students are improving their social interaction with their peers and enables their improved constant learning via the conducive learning environment they create for themselves and their peers.

On the other hand, one of the two management staff responded that staff members attempt to avoid conflicts between cultures in the institution and students' homes and that the information is accessible to all, irrespective of their home language or impairment. In addition, there is an increase in the diversity of students from the local communities within the university. The management also

responded to the issues of students categorized as having special educational needs, even if they are seen as individuals with different interests. The findings show that there is no form of discrimination at the institution, and if anyone discriminates against anyone, appropriate actions are taken in accordance with the policies and procedures of the university. Generally, I believe that it is important for lecturers and administration staff members to understand and respect cultural differences within the institution. It improves students' social interaction and promotes a conducive learning environment. It also enhances efforts to create an inclusive culture in the HEIs.

3.4 Development of Inclusive Policies

Inclusive policies are characterized by inclusive indicators of developing the school for all and organizing support for diversity (Booth & Ainscow, 2002). All the participating students responded on how the support policies are coordinated in a strategy for increasing the school's capacity to respond to diversity, areas of strength around inclusive practice, and how helpful students promote culturally responsive practice.

The supporting policies are coordinated to increase the institution's capacity to respond to its diverse agents. Regarding the areas of strength around inclusive practice, the findings revealed that the institution has strong enrolment policies for students and staff. It also measures how helpful students are in promoting culturally responsive practices.

Both management members who participated in the study indicated that there is behavioural support that addresses barriers to learning and participation in school policies, culture, and practice. Additionally, detailed notes indicated that all support policies coordinated in a strategy for increasing the school's capacity to respond to diversity. They further acknowledged that management had recently developed a disability policy and procedures that considered the strategy and all forms of support to students. Such a strategy aims to provide the required service and increase diversity among the student community in the institution.

Even though only two management members participated in the study, their views were very insightful regarding how UNAM policies reflect the inclusivity of all students as measured by the index parameter of the policy dimension.

3.5 Evolving Inclusive Practices at UNAM

Evolving inclusive practices are measured based on inclusive indicators, namely “orchestrating learning” and “mobilizing resources” (Booth & Ainscow, 2002). The responses to the inclusivity questionnaire further revealed that there were zero responses by students in their area of strength around inclusive practice among and with other students. However, when asked if the institution has a well-functioning induction programme for students and their families at the start of the academic

school year at UNAM, 75% and 25% responded yes and no, respectively. 61% and 39% of the students responded that there is a need for deaf, blind and partially sighted people, and people with physical impairment to be considered and included in the school building and grounds decision-making. Thus, it is clear that students value each other in terms of inclusivity. However, a significant proportion of the respondents (39%) still think that the inclusivity of students will not contribute to their learning interests.

This is backed up by a previous study on student profiling at UNAM by Shipena et al. (2022). The study discovered that most students generally do not depend on their friends for their academic needs, suggesting they get support from their parents or teachers. Asked if students avoid racist, sexist, homophobic discrimination and other forms of discriminatory name-calling or if students with impairments are equally welcome just like the ones without impairments, about 90% of the students responded yes, while 10% responded no. Significantly, it indicates respect amongst the students, contributing to their effective learning progression.

About 68% of students also said yes to the first UNAM contact; for example, the reception had a friendly and welcoming atmosphere, while only 32% responded no. It indicates that the institution's practices show a strong interaction between all students and institutional management or staff members. In addition, this situation creates a better understanding of student needs and promotes learning improvement supported by institutional progressive corporate governance practices.

Additionally, regarding the views of the management staff on the issue of promoting culturally responsive practices and how helpful their colleagues' ideas for improving their practices, they all responded that they did not know. When asked about areas of strength around inclusive practice, 100% responded that the institution has a knowledgeable and supportive workforce. It encourages the institution to have cultural policies to ensure the dimension of culture and that its practices are well incorporated into the teaching and learning processes.

3.5.1 Pressing Inclusivity Issues Affecting My Student Learning

There are various pressing issues I am currently facing in my teaching. The challenges are outlined in Table 3.1 below.

Table 3-2. My shortcomings on inclusive Teaching Affecting student learning

Challenges	How challenges are addressed	Other possible ways to address the challenges
A student coming to the lecturer	I usually gave students extra work to	Possibly ignore and accept their

late.	do after class as part of their punishment to learn more extra information they missed	apologies.
Students submit their assignments late.	I usually do nothing to them except accept their late handed-in tasks.	I could potentially deduct a few percentages from their handed task.
Students stealing examinations or tests.	This is a very strict and dangerous route to go down along with in academia. I always report these cases to my Head of Department (HoD)	A student can potentially be warned and given a second or third chance.
Not speaking as leniently as my student will prefer	I usually try to motivate them and encourage them that good things are not easily attached	Becoming less strict can be an option
When I sometimes do not know the answer to some questions, my student asks	I usually give such questions as homework to my students while I look for answers, and it is always the first topic of discussion in the next class lesson.	One can say they do not know and allow the students or themselves more time to research such answers.
When my student fails an examination	I usually give them a second chance through summer school or a supplementary examination if they qualify.	Based on university laws and legislation, students can also appeal for a second chance at the examination if they qualify.
When my student fails a test	I usually give a minimum of one make-up test.	One can also count on the failed test in calculating continuous assessment marks.
When I sometimes submit the test marks or test papers back to students	I encourage them to view it as a human error, which all human does even if it is not acceptable and ask for their forgiveness	One could as well ignore it since he/ she is the lecturer

3.5.2 A reflective summary of inclusivity in HE

The inclusivity study does not sufficiently provide evidence for all the factors researched, mostly at the management level, as only two of the four staff members participated. In addition, the study data indicate zero responses in important indicators of building community and establishing inclusive values within the dimension of creating inclusive cultures. I think the lack of information provision by students hinders the improvement required by institutional governance to ensure that the institution achieves an inclusive culture.

It is, therefore, recommended that the questionnaires be considered for resubmission to the same or different participating students and management to analyse the same inclusivity indicators. The study reveals that about 60% of students know all three main dimensions of inclusivity and their measurable indicators.

Based on my experience as a UNAM member since 2005, when I joined as a student and now as a staff member, I believe the institution has come a long way in putting together a conducive and inclusive environment. For example, in accommodating impaired students, especially in the campus infrastructure, many areas in the university are remodelled to accommodate students travelling in wheelchairs.

Additionally, in terms of policies, the institution has developed the student code of conduct and student accommodation policies, which also encourage inclusivity of all students in their teaching, learning and accommodation environment. For example, one of the objectives of student accommodation policy states that it is to provide clear procedures for allocation. Vulnerable and marginalized students will receive preferential treatment (UNAM Accommodation Policy, 2022).

The policy also further states in its hostel admission placement criteria that preferences are given based on the diversity factor and that Students who need financial support in the form of bursaries or scholarships qualify for such support based on set qualifying criteria. Students from marginalized communities and students with disabilities are considered a priority during their admission. Hence, the institution provides students with inclusivity regarding dimensional diversity, inclusive policies, and evolving inclusive practice parameters.

3.6 Agential challenges and analysis of student supervision in research

Research as the pursuit of the unknown is not merely the quest for knowledge and understanding, intellectual stimulation or academic scholarship and advancement (UNAM Guidelines and Regulations for Research, 2015) but rather intended for solutions to problems, innovation and development of necessary and recommended programs for quality national livelihoods. The University of Namibia Act, Act 18 of 1992, mandates the university to provide higher education, undertake research, and advance and disseminate knowledge (GRN, 1992).

In light of these mandates, UNAM research plays a great role as it is envisaged to contribute to achieving institutional strategic and objective goals. According to the university Strategic plan (UNAM Strategic Plan, 2020), one of its themes on research innovation and excellence aims at achieving strategic objectives through improving and increasing (a) stakeholder satisfaction, (b) community service and impact, (c) funding for research and innovation (d) research and innovation

outputs and (e) research and innovation capabilities. Hence, the university needs to safeguard its student supervision in research to ensure its institutional objectives are achieved in the research aspects. To ensure such objectives are achieved and that research is conducted at a high integrity level, UNAM has established policies and guidelines that inform how research should be conducted. Such policies include research policy, research guidelines and regulations, research ethics policy, higher degree policy, academic integrity policy, and policy for teaching and learning.

Various challenges are experienced in student supervision at higher education institutions (HEIs). The challenges emanated from both the supervisor and the supervisee. Ezebilo (2012) explained that the success of research students largely depends on their relationship with supervisors. The author's analysis was conducted on Swedish doctoral students and revealed challenges such as limited access to sources of information, culture shock, and limited confidence of female students in presenting their research results (Ezebilo, 2012). These challenges, among others, affect many postgraduate students at most HEIs. The following sections describe such challenges in more detail.

3.6.1 Personal experience with postgraduate research supervision

Regarding student supervision, no students have yet studied and conducted research under my supervision. Accordingly, the student supervision context will be explained from the perspective I supervised during the recent PHD research studies. The research was conducted at a Japanese University, and its titled thesis was "Low-Temperature Fabrication of Functional Thin Films of Copper Oxides and Metallic Copper via Spray Coating: Study on Effective Use of Locally Produced Copper in Namibia". The research study was 100% laboratory experimental, informed by various analysing and characterizing instruments, machines and scientific software were used. All the instrumentations and manual documents were in Japanese language.

An opportunity to learn the Japanese language was also granted in the first year, but the study period was insufficient to master the language for its intensive usage in research. While the study was conducted in English, language differences were one of the main challenges experienced during research, as the instrumentation instructions manuals were in Japanese. Only two out of seven postgraduate students can slightly express themselves in English. As a postgraduate student, expectations to learn from fellow research students in the laboratory were very high and crucial as the supervisor was mostly absent.

All presentations, research seminars, and conferences on other students' research findings were also presented in Japanese. Hence, learning from other researchers whose research areas and similar themes were limited. Ezebilo (2012) states that cultural shock and confidence in presenting research work to the scientific community are key success factors. Confidence regarding having what it takes to complete the studies and language difference, among other challenges, also played a big role during

the research process. Despite the challenges, the supervisor was available for consultations every Tuesday and during seminars every Thursday.

The beginning of my PhD research was difficult. However, as time progressed, the challenges were reduced. This was due to adaption to the physical environment, being able to communicate more with other research students and supervisors in both English and basic Japanese language and participation in more research seminars and international conferences.

Adaption to the culture also enabled smooth communication with the non-English speaking students, and greater learning was achieved, especially in the operation of analysing machines such as the X-ray diffractometer (XRD), Scanning Electron Microscopy (SEM), Raman Spectroscopy and electrical conductivity for the thin film's characterizations and analysis. More planning and evaluation of results outcomes were performed regularly.

The adoption of spending long hours at the laboratory, as it used to be 10:00 am to 10:00 pm from Monday to Saturday, also greatly improved my experimental knowledge and research output. As a result, two scientific articles were published in the research area within 3 years following completion of the study. Mouton's (2011) book chapter of "*How to Succeed in your master's and doctoral studies*" features real-life activities that students undertake to produce a final research product. The activities include preparation, process and research outputs, and resources that research students require during the research process (Mouton, 2011). The resources include books, computers, publications, conferences, and funds.

3.6.2 Roles and challenges of supervisors and supervisees in HEIs

As a part-time lecturer, I have not yet achieved supervision at the current academic stage. Learning from other supervisors at UNAM, it is important to consider the following during student supervision. I have managed several student supervision sessions, which should not exceed five students for undergraduate, master, and PhD supervisees. This is because student research supervisors have other workloads within the institution.

The other workload includes teaching courses, administrative work, research, community services, involvement in institutional committees, and other academic work like curriculum development and laboratory certification. Depending on the supervisors' workload, it is, therefore, important to consider a small number of students for sufficient allocation of student consultation time and effective supervision. Also, according to Donnelly (2013), who developed a model for blended postgraduate research supervision in Irish higher education, conducting student supervision in a more collaborative and connected way is manageable to cope with the expanding student numbers. Hence, the ratio of a supervisor to students is diminished.

It is important for the supervisor to also guide and coach their supervisee toward independent academic literacy. The challenges that affect many students, even those from other universities in Africa, as explained by Mhlahlo (2020), is that students from disadvantaged academic backgrounds, such as rural areas, are mostly unfamiliar with the discourse used in the research and academic community. Tapp (2015) also confirmed that deficient academic literacy can be a barrier to accessing academic research, resulting in the exclusion of understanding participation in academic disciplinary discourse.

In the case of supervising Chemistry discipline-related research, the supervisor needs to consider assigning students to research groups. That way, students can research well in the laboratory in groups as they will discuss their experimental plans, design, and structures, report together, and assist each other during laboratory practical work. Sustainable group research work is important to build research capacity and promote the value of group feedback in the supervision process. The group work approach conflates the link between feedforward and feedback amongst research students and supervisors in more progressive conduction of research (Donnelly, 2013).

The supervisor is expected to be present for students in all the stages of the research work. According to Shikalepo (2020), the literature review is one of the important stages. The supervisor should review the research literature by tracing, examining, critiquing, evaluating and eventually recommending various forms of content based on relevance, correctness and appropriateness to the research intent. This could also apply to the supervisor in the Chemistry discipline research. It should also be noted that supervisors are crucial in analysing experimental results, their interpretation and application, and their transformation into a final thesis or dissertation and publishable articles in a reputable scientific journal.

Therefore, the supervisor and supervisee need regular and adequate face-to-face access to plan regular meetings, research-related workshops, and conferences (Mhlahlo, 2020). Regular meetings with a supervisor will also enhance the positive research relationship between the supervisor and the supervisee. As Ezebilo (2012) outlined, student research success largely depends on their relationship with their supervisor. Hence, if the student encounters problems that are not resolved, it may hinder their research progress and academic performance (Ezebilo, 2012).

Most students enrolling in postgraduate research programs such as PhD and master's degrees are older. In most cases, they are parents and work with numerous family responsibilities. Some students require part-time or distance learning modes to conduct their research. Therefore, the supervisor and supervisee must have a flexible working schedule and research relationship. The flexibility in supervising postgraduate students in distance education enables them to balance their studies alongside their demanding and family responsibilities (Mahlangu, 2021).

Some supervisors did not have training in research supervision but rather experts with specialization in the supervisee's research area. It is noted that for successful research supervision, the supervisor should hand-hold the supervisee along the critical research stages like:

a) development of synopsis and research proposal,
b) collection of data or laboratory experimental work,
c) interpretation of data and writing thesis skills
d) submission of a thesis (Saleem & Mehmood, 2018).

Training supervisors to effectively manage or balance their teaching and research supervision time is necessary to improve supervision quality (Saleem and Mehmood, 2018). Additionally, Cornell, Doorsamy, and Padayachee (2022) point out that the supervisor is also expected to provide an enabling and supportive environment and opportunities to transition the supervisee into a research-thinking student.

Even though I only have practical experience as a supervisee based on my golden thread, I have previously and directly worked with students at the student research assistant level during my PhD studies. I assisted my PhD main supervisor with some of his students' research work by teaching and demonstrating laboratory experiments. The challenges experienced while assisting the students include difficulty designing consultation timetables that suit the students, the main supervisor and myself. Students had different course timetables, so each was assigned a consultation schedule.

Furthermore, it was always difficult for me to finish reading, marking, and giving timely feedback to student research due to other research work for my studies. Another difficulty was that some students failed to attend laboratory research work or consultation sessions. These challenges negatively affected students' research progress, especially regarding laboratory practical results.

During COVID-19, challenges were experienced by both research supervisor and supervisee. Students were mostly physically unreachable due to COVID–19. In the case of chemistry-related research work, where student researchers are required to conduct laboratory experiments to produce research data and results for their final reports and article publication, this became exceedingly difficult to achieve as face-to-face learning was banned.

Hence, the supervisor had to find alternative online research methods, such as desktop research and review. Such online experimental review enabled students to acquire research data for assessment tasks and grading their final theses. Also, the lack of technological gadgets and internet connection required to conduct research online and to communicate with supervisors was a challenge for most students who could not afford to purchase and keep up with the connection costs.

Similarly, the outcomes of such unforeseen development in the HEIs imply future changes in teaching and learning and research supervision. The COVID–19 pandemic and rapidly evolving technological

landscape have accelerated the shift toward an era of super complexity, with new skills and competency requirements that are constantly emerging to prepare postgraduate graduates for current and future societal needs (Cornell, Doorsamy & Padayachee, 2022).

3.6.3 Institutional Guiding Policies for Student Supervision in Research at UNAM.

The University of Namibia's postgraduate research and student supervision is at both the level of faculties and research centres. UNAM has four faculties and two research centres: Multidisciplinary Research Services (MRS) and Sam Nujoma Marine and Coastal Resources Research Centre (SANUMARC). Student supervision occurs across all UNAM research establishments, and there are guidelines for guiding supervision at the faculty, school, and departmental levels.

Under the UNAM School of Science, where my Master of Science in Chemistry was supervised, a research committee was established to oversee the research activities, from supervisor allocation to the student examination or final viva voce research presentation. The committee is a representation of experts and lecturers from different departments within the School of Science and reports to the Head of Department (HoDs), Associate Dean (AD) and Executive Dean (ED) of research and supervision progress. Some school of science members form part of the postgraduate research committee. The postgraduate committee, hosted at the postgraduate unit of the research innovation and development division, is where the student research proposals are discussed, further recommended, and approved or rejected. The UNAM postgraduate unit and its committee serve the entire university and researchers at faculties, schools, campuses and centres involved in the postgraduate studies.

Several policies, such as the UNAM Higher Degree Policy, guide the research committees. The students considered higher degree students are those registered for Master's and PhD programs and conducting research on such study levels. The UNAM Higher Degree Policy informs the entire phases of supervision of higher degree students. Its information from the:

a) Appointment of the supervisor,
b) Responsibilities of supervisors (main and Co-supervisor),
c) Remuneration of supervisors,
d) Responsibility of students enrolled for higher degree programmes,
e) Approval of research proposals,
f) Submission of thesis and dissertations for examinations,
g) Examination of submitted theses or dissertations,
h) Publication of thesis and dissertations,
i) Viva Voce examination for students,
j) Approval of examination reports and graduation,
k) Remuneration of examiners and submission of final bound thesis or dissertations (UNAM Higher Degree Policy, Procedures, Rules and Regulations, 2023).

The higher degree policy was only approved at the end of December 2022, whilst the research policy has been in use and whose purpose is to promote excellence in research and development, innovation and dissemination of research results and ensure proper and efficient coordination and management of research related activities at UNAM (UNAM Research Policy, 2013). The research policy also facilitates and guides the research conducted by undergraduate final-year students. The research and higher degree policy make it smooth for the conduction of quality research and ensure research outputs and institutional research strategic objectives are achieved.

Even though these policies ensure the quality of research for UNAM, they are also associated with constraints and disadvantages to students as agents of research supervision. Many students complain that the policy has many steps, from allocating supervisors to starting research. For example, the UNAM Higher Degree Policy (2023) states that; "for master by coursework program provision allocation of supervisor shall be done at the end of the first academic year by the department through admission and examination board and approved in the following academic year within three weeks after student registration."

This makes it difficult for the students to concentrate on the schoolwork of the current year and start developing the research topic and proposal. In addition, the students often complain about non-approval or no feedback on the research topic they would have proposed the previous year. The timeframe also affects the students' registration as they must register on time for their proposed research topic to be approved.

Another national institutional structure around research supervision that hinders student progress is obtaining a research ethics letter from the National Council on Research Science and Technology (NCRST). NCRST is a government commission through the Ministry of Higher Education Innovation and Technology that oversees the proper conduct of research in the Namibia HEIs. NCRST provides ethical clearance letters for students before they start conducting their research.

Research Students tend to complain that this process also takes too long, delays their research as planned, or changes the entire research structure, as they will not commence on time. Mouton (2011) reminds students of the importance of understanding the nature and structure of research proposals through practical suggestions, planning, nature of research design, types of research design, process and structure of research proposal.

The Research Ethics Policy also guides student supervision at UNAM. The purpose is to establish fundamental principles of research ethics and scientific integrity, forming the foundations of all research activities conducted at UNAM (UNAM Research Ethic Policy, Regulations and Guidelines, 2019). The policy is used together with the UNAM Academic Integrity Policy, Procedures and

Guidelines (2023), whose goal is to promote higher quality scholarship through a high level of integrity in all academic activities for both students, researchers and staff members as agents of UNAM, for example holding all agents to a high standard of academic conduct.

While both agents of academic practices are encouraged to familiarize themselves with these policies as they are made available during their admission and staff appointment stages, both policies assist all agents, and UNAM upholds accountability for best research practice. During disciplinary hearings, these policies are the guiding tool toward resolving the research misconduct between all agents.

3.6.4 Social realism in relation to student supervision in research at UNAM

In the usage of the philosophical tradition of Bhaskar's Critical Realism and related framework of social realism in attempting to understand the postgraduate supervision and potential changes (Cornell et al., 2022), it is important to consider the real and actual institutional scenarios occurring on the ground. In HEIs, the critical realist strata of the real, actual and empirical have provided mechanisms through which events, practices and changes can be understood and useful philosophical and analytical frameworks for examining supervision interaction (Cornell, Doorsamy & Padayachee, 2022). This sociology and contextual framework explain the interrelations of social structure, culture, and human agency (Shalyefu, 2017) to understand and explain the analysis of any HEI context, including student supervision in research.

The actual legislation and policies of HEIs are the **structures** (Shalyefu, 2017). In applying social realism to postgraduate supervision at UNAM, institutional policies, guidelines, procedures and regulations can influence research supervision, especially in postgraduate research work. In the case of UNAM, such policies include a Higher Degree Policy, Research Policy and Research Ethic Policy to ensure smooth research and supervision conduct. The policies enable quality student supervision by facilitating research work and all agents involved in student supervision.

Other policies, such as the Policy for Student Learning and Teaching, Assessment and Award Policy, and Academic Integrity Policy, are also used with research policies to enable effective student supervision. However, such policies require an amendment to suit and benefit the students more than the supervisor. This is mainly because students are institutional clients and are the reason for the university's existence. Policies favouring more students in research also allow quality money for clients (students) and service providers (institutions).

Culture is based on the empirical experience and observation (Shalyefu, 2017). The empirical experience and observations toward the effective supervision of students at UNAM is the correct

usage or timely implementation of the institutional guiding research policies. The research documents required are not issued on time; that is, the ethics clearance letter. The policy states that the centre's director for research and publication shall be responsible and accountable for overseeing ethical clearance matters.

At the same time, the supervisor must submit the student research ethical approval checklists and review the research's scientific merit (UNAM Research Ethic Policy, Regulations and Guidelines, 2019). The policy does not indicate how the director will be held accountable if late research ethics clearance checklists and letters are released. In that case, these policies favour the management staff and supervisors more than the supervisee. The policy does not clearly state how to take the supervisor accountable for revoking research ethics between him/her and the supervisee.

In addition, it is not clear how to ensure that the supervisor conducts and releases timely research feedback and feedback to students. Some supervisors release student research feedback and marks on time, while others do not. The current policies have no stipulated consequences for uncooperative parties, constraining student supervision.

Human Agents analyse the documents as academic developers (Shalyefu, 2017), lecturers, students and community members. Students are the human agents that mostly suffer during supervision. Their complaints towards their supervisors include the unavailability of the supervisors for research consultations. Another issue is that sexual harassment by supervisors is not taken seriously and sometimes not even addressed. Such scenarios lead to student failure as some do not continue the research. Students are forced to work independently, from developing research proposals to conducting research in the case of unavailable supervisors.

While the supervisors or lecturers only assign the research topics and continue to check the students' progress during the research process and writing of research manuscripts. Even though it is supposed to be a full-time job and commitment from both parties, sometimes human behaviour goes in the way of the desired progress. Both the supervisor and students benefit from research results, which sometimes can lead to outputs such as publications of research papers. When supervision is successful, it enables the student to graduate and contributes to the supervisor's promotion in his institution to the next promotional ranks, depending on the number of supervised postgraduate students and published articles.

Additionally, the purposely failure of students to keep working on contract renewals by some foreign supervisors is an unfortunate constraint in student supervision at UNAM. Foreign professors or supervisors on working contracts ensure that they have active students under their supervision so that

they can use them as a motivation to renew their UNAM working contracts. Based on the structural policies of the professor/ supervisor, the contract can be renewed for more years if they have active students they are supervising. Hence, such supervisors fail students to ensure they keep their jobs.

3.6.5 Summary of Student Supervision in HE

Research supervision can be critical and difficult for both agent parties involved if proper research planning, design and experimental laboratory schedule are not in place before the commencement of research. In the case of conducting research in Chemistry, the discipline where I am involved, researchers are expected to carry out laboratory experiments for data and results findings. Such research experiments require specific consumables and analysing machines and equipment. Funding for such experiments must be available in the school or faculty to sponsor the students.

The roles and challenges in research supervision can also be minimized in various ways. Such ways include a good professional relationship between the supervisor and the supervisee. It is also important for the supervisor to have regular research consultation meetings with the students to improve and enhance the progress of the results. This will allow the student to acquire enhanced academic rigour and flexibility in completing the research, dissemination of research outputs through article publication, and timely graduation.

Therefore, it is recommended that the UNAM institutional guiding policies for student supervision in research be reviewed and improved. Some of the policies, such as the UNAM Research Policy, are ten years old, as research progresses and advances with the changing societal, world pandemic and technological online learning demands. The outdated research policy compromises the quality of research supervision and outputs. The policies also require reviewing to serve all agents involved in the research process. The functioning of the University will be improved when it adopts a culture of serving its clients (supervisors, students and other stakeholders) on time and according to the established structures.

4. CHAPTER 4: UNDERSTANDING SCHOLARSHIP OF CURRICULUM DEVELOPMENT IN HIGHER EDUCATION

4.1 Introduction

Curriculum design, development and review are consistent activities required by all parties to ensure sufficient and successful knowledge sharing within higher education institutions. Change in curriculum is market-driven and is a requirement; reviews and reforms are necessary. Designing a new curriculum to address accelerating disruptive changes and developments in industrial areas such as the 4th Industrial Revolution (4IR), 5th Industrial Revolution (5IR), COVID-19 - 19 and the war in Ukraine is important.

There are challenges facing the HE, such as risks, privacy and security, collaboration, integration, postponement and cancellation of module examination, lack of embracing education 4.0, and lack of security alignment resulting from online learning. If the curriculum challenges are resolved, it will enable a future smooth flow of knowledge deliverance and sharing in HE. Curriculum development is driven by various models and theories such us Luckett and epistemic models, bloom taxonomy and the continuously changing industrial revolution (Luckett, 2001).

Other factors influencing the establishment of a curriculum include its efficiency and horizontal and vertical knowledge required to produce a curriculum to address local and current societal needs. Policies and regulations are also required to safeguard the quality of the curriculum.

The already developed curriculum can be transformed in line evolution, constant remodelling, modification and restructuring necessary in the education sector. The purpose of the curriculum is informed by different philosophies such as methodology, epistemology, quality assurance for local and international, efficiency and effectiveness, inclusivity and internationalization, considering students from diverse curricula, such as international students.

The following sections of the chapter explore UNAM's institutional context, processes, principles, practices, documentation, incorporation of Indigenous knowledge, quality assurance in place, culture, structure, agencies and the challenges involved towards transforming and developing curriculum in HE.

4.2 UNAM context in relation to curriculum transformation

According to Nelson and Davies (1998), the curriculum encompasses content and the skills, procedures, and concepts required for mystery in a particular field of knowledge. They described how it is taught by implying the educational philosophy, methods of teaching and assessment and how a programme is organized. Nelson and Davies (1998) further urge that curriculum is understood to embrace the overall degree or diploma structure, whereas course design addresses the

conceptualization and arrangement of a particular unit of the broader curriculum. Curriculum development is viewed and mostly understood as the ongoing process of reviewing and modifying the curriculum. It is for the same reasons that the school of science at UNAM is still teaching and accommodating the concepts of the old curriculum while it is busy restructuring and transforming to the new one.

4.2.1 The style of my curriculum design and its guiding structures

I use the curriculum and /or course outline under the department of physics, Chemistry and material science in the school of science. As per the guiding document of the University of Namibia Act of 1992 (Namibia, 1992), the curriculum is divided into two types: (1) the old curriculum, which graduates students with a bachelor of science degree in Chemistry or physics. It is currently phasing out due to ongoing curriculum transformation, which started in 2020, and its qualification is evaluated at the Namibian Qualification Framework (NQF 7) by the NQA. (2)

The new curriculum, whereby student graduates with a bachelor of science in chemistry or honours degree in physics are evaluated at level NQF 8 by the NQA. Both curriculum programs are completed within a total study of 4 years. The faculty may also award undergraduate and postgraduate qualifications per its stipulated study numbers 4,2 or 3 years.

According to the curriculum under scrutiny, all Bachelor of Science Honors degree programmes cannot be completed in less than 4 years, and they must all be completed within 6 years of fulltime study. The study period can be extended if special permission is granted for the period to be exceeded (UNAM School of Science Prospectus, 2022). The permission to extend one's study is awarded based on the student's performance and social, mental, psychological and personal evaluation, usually done by the faculty in conjunction with the office of the dean of students and approved by the departmental and faculty committees.

The curriculum is also designed to incorporate the regulations of the faculty's general undergraduate and postgraduate studies. For example, undergraduate students have two modes of study for first-year mathematics, which is no longer available as of 2022 due to curriculum restructuring and transformation. Students cannot register for the slow-mode mathematics modules 2022 as they have been discontinued. Hence, students will have the option of choosing an advanced mathematics course supplementary to the phased-out course.

The curriculum also gives exemptions for equivalent courses taken at other tertiary institutions. However, the exemptions shall not exceed 50% of the Bachelor of Science degree programme. It is good that the curriculum accommodates such exemptions, as some of my students come from foreign countries like Zimbabwe, Botswana and South Africa. Such students have already done the subject content offered by the now phasing out old curriculum in the school of science.

My curriculum is also designed to handle the students' attendance to their classes very seriously and lawfully. To be admitted to the examinations, students must attend at least 80% of the lectures and complete the required elements that make up the continuous assessment mark. While the attendance of the courses and laboratory practicals of registered students are compulsory (UNAM School of Science Prospectus, 2022).

In my case, sometimes, students cannot attend laboratory practicals for various subjects due to certain medical conditions. Those conditions include allergies, inhalation problems, eye sensitivity to chemical infections or sometimes pregnancy, and proneness to chemical dangers and inhalations. In such cases, permission to exempt such students from laboratory practicals is also sought for approval from the departmental and faculty committee headed by HoD and the dean of faculty of the school of science.

The course credit is also one of the most important aspects of my curriculum, whereby one contact hour is equivalent to one lecture period on the student timetable within the faculty. While a full semester course carries 16 credits and is taught at four contact hours per week, over one semester is equivalent to 56 contact hours. The half-semester course carries 8 credits and is taught at 2 contact hours per week over one semester, equivalent to 28 contact hours per semester. A double course carries 32 credits and extends over one academic year at 4 weekly periods (UNAM School of Science Prospectus, 2022). Students who fail to attend their total contact hours for no valid reason must repeat the subject the following year. This means that they will not qualify to sit for examination.

4.2.2 Curriculum paradigms and influencing culture on its development

Curriculum design can be guided by paradigms, which are patterns or models used in shaping the curriculum and account for different ways educators can approach the process (Mckenna, 2002). In our curriculum, the course evaluations by staff and students also crosscut with the characterization of research into those paradigms. Mckenna (2002) believes educators must choose which paradigm works for their curriculum, institutional values, and ethical choices rather than the best paradigm.

During research critiques of curriculum design, the paradigms focus on distinguishing approaches that seek to predict (positivist paradigm), understand (interpretive), emancipate (critical) and deconstruct (post-structural paradigm) (Mckenna, 2002). In my case and at the time of UNAM curriculum transformation, this specific paradigm guide refers to students aiming to graduate and how they can be guided into it. Laws and regulations are established to control such markets or environments. Hence, the curriculum is designed to ensure the teachers and students interpretively understand the knowledge they are teaching or learning.

The knowledge is, therefore, shifted from generalization to interpretation and making of meaning so that students can relate and respond to societal problems and address them accordingly. As part of my

golden thread, this is now addressing the incorporation of emerging societal changes and adaptations like the 4IR, green H_2 economy, eLearning, COVID-19 and war in Ukraine. As a result, students are therefore prepared to enter the market. Overall, during curriculum development and /or transformation, the used paradigm should be meaningful, including enhancing learning outcomes across critical thinking and generating innovative ideas for the market.

In my institution, certain cultures, beliefs and values that influence curriculum development are those of individual agents who do not want to adapt to new changes. The agents, teachers and students want to continue practising the teaching and learning in the normally used traditional teaching and learning methods. Thus, the curriculum can be disconnected from reality without considering the emerging societal changes due to technological and health pandemics. For example, inhibitors such as difficulties in using eLearning protocols, eLearning equipment, and changes in assessment platforms remain challenges that constrain the transformation of the old curriculum to one that aims to serve societal needs.

The institutional structures such as the departmental, faculties, council and senate committees also have long procedural practices. Such practices and leadership support are required for curriculum development and/ or transformation. Of course, clear guidelines and procedures should be followed stepwise by the curriculum development committee members.

4.2.3 Driving agents for curriculum decolonization and transformation

From the current point of the curriculum transformation within my institution, it has been an ongoing activity for about 3 years since its inception in 2020. Decolonising the old curriculum might be one of the key factors leading to its transformation. However, the extent to which it should be transformed is still questionable. Even though curriculum decolonization began with the South African universities, students are still having problems with Western colonial statues in their institutions. The curriculum decolonization trend spread to other institutions in the region. It also responds to similar international practices strongly influencing the higher education curriculum. Hence, my university is acting accordingly to respond to global dynamics in the education sector.

Administrators oversee the implementation of the institution's policies and laws in my institution, and some of their positions are more prestigious than the ranks of some senior lecturers and professors. They interpret and construct the curriculum plans into actions and monitor and evaluate them regularly. Luckett (2001) noted that epistemic coloniality in my institution is still present. In this regard, the lecturers and the students remain key agents of the curriculum transformation. The agents, such as students, are called consumers of knowledge and customers in the colonized curriculum.

African studies are also not strongly incorporated into the curriculum transformation. As a chemistry teacher, I understand this case as science sometimes has nothing to do with indigenous knowledge

except in medicinal sciences. Thus, in agreement with Luckett (2001), who stated that curriculum transformation occurs most readily in response to major social changes and crises. The education regulatory institutions (NQA and NCHE) use their guiding policies approved by the country's Ministry of Higher Education Training and Innovation (MHETI) to enforce standards and education outcomes in higher education teaching and learning.

Policies and guidelines are relevant in assessing our institution's curriculum development and /or transformation. Thus, it is within the epistemological context for the national agencies to reform the curriculum structure in Namibia. It is also important to deal with major issues hindering HE curriculum development. The same is advised by Luckett (2001) in his address to the South African Qualification Authority (SAQA) regarding the implications of globalization in order to prevent further operationalization and marketization of knowledge with the curriculum in HE.

4.3 UNAM curriculum development/ transformation practices

4.3.1 Curriculum development practices, agent roles and Documentation

UNAM has adopted various curriculum developmental and transformation practices. Some of these practices involve the production of documentation and consideration of those who develop and approve the curriculum. Others review committees within the entire institution and across various fields of studies whose curriculum is restructured or transformed, including the real holders of knowledge in specific scientific subjects. For example, in the field and/ or science school where my curriculum is located, we have experts such as faculty professors, lecturers and senior lecturers. Personnel from the physics, chemistry, and material science departments are involved in both committees that produce the curriculum.

The documents for curriculum development include course outlines, subject notes, student evaluation forms, assessment forms, past tests, examination papers or quizzes, and institutional policies. Policies documents include examinations and academic and student policies. The ministry policies documents, stakeholders and regulatory bodies documents are also used during the curriculum development process to ensure quality assurance of the curriculum under development.

Brainstorming workshops are also conducted by the appointed committee members, academic staff, professors and lecturers involved in the curriculum transformation at my institution. It is noted that students are the least involved agents in the development and restructuring of their curriculum. Surveys are also made offline and online for community members, university stakeholders, students, and other academic staff members to participate in. Their views are sought on the various important factors causing curriculum transformation, such as technological advancement, developmental processes, industry, the country's growing population, unexpected pandemics, the job market, and the upward unemployment rate.

4.3.2 Influence of indigenous knowledge on curriculum transformation

Today, knowledge and information are considered by most sectors of society to be a means of promoting economic and productive capacities. One cannot imagine the teachers in the medieval universities at Nalanda in Indo-China, Timbuktu in North Africa, and Bologna in Italy to be identically bothered about being responsive to wider economic and social demands (Moll, 2004). However, they have no doubt responded with alacrity to the dictates of their respective Buddhist, Muslim and Catholic orders (Moll, 2004).

Thus, even at UNAM in southern Africa, it can be argued that the institution is responsive towards its catholic, evangelical or Evangelical Lutheran Church in Namibia (ELCIN) orders. Thus, curriculum development and its responsiveness to globalisation still have a long way to go towards its acceptance by masses of individual agents or incorporating indigenous knowledge in our institutions. Most of its developing agents still believe that changes take time to be widely and sufficiently accepted in the institution or across the nation.

4.3.3 Influence of colonial eras on curriculum transformation

As alluded to in the preceding discussion, curriculum development and transformation in my institution are influenced by the colonial and post-colonial legacies in the country. Notably, Namibia being the last country to gain its independence in the southern region of the continent, it can be argued that a complete curriculum transformation is less likely to have been finished by now in the country. As best described by Josua et al. (2022) in reviews of curriculum changes to explore its responsive reasons and outcomes in Namibia, focusing on post, pre and present found that curriculum under traditional education and before the country's colonialism addressed social cohesion and solidarity among members of communal living societies.

The traditional education system promoted Ubuntu of southern African heritage, meaning the promotion of caring for others in our communal societies. This is contrary to the missionary educators who entered a Eurocentric curriculum aiming at converting indigenous Africans to Christianity and the Western ways of living. The German and South African colonial curricula aimed to produce cheap labourers to serve in less-paying jobs across industries (Josua et al., 2022). Education characteristics across the three periods (pre-post-independence and present) are still crucial in curriculum transformation and responsiveness to emerging changes. Most of the agents involved in transforming the curriculum in my institution belong to the colonial and post-colonial periods.

Given their historical experiences, they have a strong mindset to adapt to changes and properly transform the curriculum to suit the current era in higher education. Students and lecturers in the current era are strongly affected by Eurocentric ideology in their daily lives. As a result, it propels them to respond positively to the current curriculum transformation. For example, during

consultations with my students, they believed that indigenous knowledge, local language ascents, and even the form of traditional dress attires are only reserved for the villages where they come from and not in the university where they are studying.

4.4 Chapter summary

It is very important to consider the role of all parties and /or agents involved in the development and /or transformation of my institution's curriculum, especially the students, as it will assist with improving their learning. If students are given a chance to choose how they learn and are taught, it will address the gap in their unemployment rate after university completion. Incorporating all knowledge of learning and epistemic models within the curriculum will also transform it to address the inclusion of indigenous knowledge, as it is lacking in the current curriculum transformation within my institution.

The Namibian nation also underwent three different curricula eras due to its past colonial regimes, which were imposed on the nation to serve different purposes. Thus, the current curriculum development and /or transformation will take a toll and face unbearable challenges. Some of the agents involved in developing the curriculum lived in both eras. They are still subjected to imposing all the factors from both eras without considering the current societal needs, changes and student served by such transformed curriculum and their current era. Also, they are the same agents of curriculum development who drafted the institutional, stakeholder, and regulatory bodies' policies and guidelines. Hence, the culture of changes toward developing a responsive curriculum to serve the current era is still under scrutiny.

Long institutional procedures and practices and NQA and HE Aguiding bodies' strict guidelines and procedures will enable the quality production of developed or transformed curricula. However, they also hinder students' learning as the ongoing curriculum transformation takes too long. Such practices do not consider students graduating from the old curriculum who have an opportunity to do so in the new curriculum of the school of science.

5. CHAPTER 5: UNDERSTANDING SCHOLARSHIP OF ASSESSMENT IN HIGHER EDUCATION

5.1 Introduction

An assessment is a structured process in which evidence is gathered to judge an individual's performance in relation to agreed and defined criteria. It is also central to recognising achievement and providing credible qualifications (Wolfaardt et al., 2013). How do I ensure quality assessment for and of student learning under the current circumstances of (1) COVID-19 and current development after a state of emergency, and how am I enhancing quality assessment to the diverse population of students to influence epistemic access to my student, (2) War in Ukraine, and (3) Refugee from around the world and (4) Specifically Namibia based on the teaching of Chemistry is a major concern.

Assessment of student learning should be done for a purpose, but teachers often lose focus on documented traditional assessment. According to Norton (2009), four main purposes of assessment include (1) Pedagogy, which promotes student learning by providing students with feedback; (2) Measurement that evaluates student knowledge, understanding, abilities and skills; (3) Standardization, which provides a mark or a grade enabling the establishment of student performance, (4) Certification that enable employers and Higher Education providers access to a level of student achievement reflecting academic standards set by the awarding institution.

Assessment of learning is a major aspect of the teaching and learning process in HE. Therefore, it is very important to give feedback on learning and teaching, which allows the evaluation of teachers' performances and progression for future improvement. As for the university of Namibia and its academic teaching and learning policies, it provides a holistic approach through evaluation of teaching, self-reflection data generation by the lecturer, peer observation, supervisor observation and student feedback (CPDTLI, 2019).

5.2 Rationale for assessment

5.2.1 Assessment policies and criterion in HE

Based on my experience as a Namibian educator who teaches Chemistry in HE. I regard planning as an important factor in all the teaching aspects. When assessing, I occasionally had to ask myself what and why I needed to assess the students. In most cases, my assessment had to be driven and responsive to the curriculum, course outlines, and learning objectives. While it remained unclear what I needed to assess in the past, Clarence, Quinn, and Vorster (2015) have shed more light on the issue. The first assessment is still predominantly related to measurement, certification, and quality

assurance, and it is about certifying existing knowledge and giving students feedback on current learning.

Additionally, valid and reliable judgements of student work can be made from, for or against certain criteria. The design processes of such criteria can contribute to ensuring a clear alignment between course purpose and the outcomes envisaged for students taking the course (Clarence et al., 2015). There are two types of assessment criteria within the assessment policies. While the Norm-Referenced Assessment (NRA), the evaluation or numerical grading of students, is mostly used, students do not know the content of tested items, and the marking criteria are not explicit (Clarence et al., 2015).

The university departments are reconstructing their policies, requiring a shift to Criterion-Referenced Assessment (CRA), which is more effective in performance measurement in conformance with the set-out criteria. Essentially, CRA looks at what is covered in the given student assessment activity, particularly the introduction, methodology, body, and accumulative grading based on the overall grading (Clarence et al., 2015). Therefore, since students tend to gain knowledge of the tested content of their quizzes, tests and examinations, such a shift is believed to provide a general outcome and timeline for change with no method, processes, or specific outcomes (Carlson et al., 2000).

The curriculum transition can only function and succeed when a top-down policy is combined with a departmental-driven action process with a maintained financial and time and if a collaborative process amongst staff is sustained (Carlson et al., 2000). Combining the two sets of criteria will enable the maximum-driven system of assessment that can benefit both students and teachers. According to Wolfaardt et al. (2013), criteria for effective assessment are grounded in sound programme design, development, and implementation. The provision of measures with respect to student assessment opportunities and the process at the module and programme level remains critical in the pursuit of responsive education (Wolfaardt et al., 2013).

The criteria for effective assessment pertain to fairness, transparency, reliability, validity, clarity of meaning, assessment in outcomes, learning guides, the learning outcomes and assessment criteria (Wolfaardt et al., 2013). According to the UNAM assessment policy, effective assessment is grounded in the designed sound program, development, and implementation. The policies also elaborate further on their respective criteria; fairness ensures student limitations are avoided when it comes to being equal and unbiased. Transparency is where the assessment system confides and requires all parties to know and understand the system. Validity ensures that the assessment process assesses what they set out to do with respect to the clearly stated and expected outcomes. Clarity of meaning is a requirement against which the students' performance is measurable. It also acts as a built-in mechanism to ensure that examiners and moderators do not deviate, act inconsistently, or make errors. Assessment in outcomes-based stresses the analysis of outputs and competence products within the curricula outcomes and assessment criteria.

Learning guides for each course are provided to students at the beginning of their respective academic year, wherein the specific assessment requirements are clearly explained (Wolfaardt et al., 2013). Previously, I mostly assessed to achieve the learning objectives and graded the students based on their performance. Hence, it had always been a challenge to identify the correct factors and applicable principles of assessment before I enrolled in the current course.

5.2.2 Assessment methods and strategies in HE

However, according to Luckett and Sutherland (2000), it is important to recognize that assessment can serve multiple purposes simultaneously. One needs to be clear before beginning an assessment regarding what educational purposes the assessment will serve (Luckett & Sutherland, 2000). One needs to be aware of three main important purposes of assessment before starting to teach. They include:

1) Diagnostic assessment to diagnose a student's strengths and weaknesses. It also determines whether a student is ready to be admitted to a particular learning programme or what remedial action may be required to enable their progress.
2) Formative assessment is used to motivate students and provide feedback about their progress. It helps students improve their learning, consolidate their work to date, and profile them of what they have learnt.
3) Summative assessment is used to provide judgment of students' achievement to establish their level of achievement at the end of a program. It grades, ranks or certifies them to proceed or exit from the education system.

Additionally, it selects students who require further learning and /or underwrites them a license to practice (Luckett & Sutherland, 2000). For UNAM, it is clearly outlined in its two academic policies: (1) policy on learning and teaching and (2) assessment policy, which encompasses different kinds of assessment. Such policies state that under the learning-centred approach, which the university is currently using, assessment can be evaluation, diagnostic, formative (assessment for learning) and summative (assessment of learning), continuous, moderation, grade descriptors and fit for purpose, depending on the intended purpose of assessment (Wolfaardt et al., 2013; CPDTLI, 2019).

Based on my teaching experience, all assessment methods are applicable, and I was largely familiar with summative assessment then. I had also applied diagnostic assessment even though I did not know I was performing it then. I used diagnostic assessment mostly for first-year Chemistry students' laboratory work. For first-year students, this was important to obtain a knowledge of basic and practical chemistry. During their first class, students are inducted on basic chemistry laboratory chemicals, equipment, health and safety, and familiarization with the laboratory infrastructure such as second emergence and first aid kits.

Diagnostic assessment also occurred during the pre-laboratory questions I gave students to answer before entering the laboratory room. The pre-laboratory tasks enable students and the teacher to understand the context of the next laboratory experiment. The formative assessment usually occurred regarding writing laboratory quizzes, assignments, and tests in my teaching experience. Summative assessment is the one I was always aware of when applying, and it included writing for the Chemistry course, performing laboratory practical examinations, and grading students at the end of their academic semester.

For the method of assessment to be effective, it should also constructively align with assessment strategies, which, for UNAM, are outlined in the assessment policy. The policy is guided by evidence, effective assessment methods, feedback, communication with students, electronic assessment, Recognition of Prior Learning (RPL), assessment and people with disabilities assessment and languages (Wolfaardt et al., 2013).

5.3 Effect of current global crises on the HE spectrumCOVID–19 and war in Ukraine

It is very important to ensure that the assessment of what is learned is based on the targeted goals of teaching a student. Knowledge sharing, giving and receiving modes are taught in packed classrooms and assessed via multiple-choice tests, quizzes and assignments. That is a common adaptation and has been known to work for centuries. However, as the world changes, such practices become invalid and do not conform to the world's new order of operation.

For example, in the current world of COVID-19, students and teachers are not allowed to sit in the same face-to-face classroom or learning space to deliver and receive knowledge. The online assessment was used during the COVID-19 era. An adaptative assessment was established to prevent the spread of COVID-19 when students write their examinations in the classroom.

Even though learning required to continue all the time, additional plans and learning alternatives were acceleratively made. They were e-learning, online teaching, video and recording sharing of lecturers and online writing of tests and examinations. After declaring a state of emergency, adapting such new learning and teaching modes was required. Students and lecturers panicked after 27 March 2020 in Namibia, even though eventually everything was adapted and became the new order of operation in education and other sectors.

The panicking was a result of being unprepared for such an unexpected world pandemic, which was killing many people in the short period of contracting the virus. Other authors, such as Padayachee and Matimolane (2021), confirmed that the shifting to Emergency Remote Teaching and Learning (ERT&L) affected assessment and feedback as it became a major source of discontent and challenge for students and teachers in HE.

The war in Ukraine affected the price of many daily commodities, such as cooking oil and rice, which increased in Namibia. Parents are struggling to keep up with fee payments for their children's education due to the price increase of necessities almost every month. As an educator, I had to adjust my assessment of student learning by considering all such factors. Students cannot study due to a lack of study materials such as computers and access to transport and accommodation money to travel to cities for their studies.

Hence, the same observation is supported by Padayachee & Matimolane (2021), who revealed that assessment strategies based on outcomes and challenges of ERT&L have further marginalized and disadvantaged students who faced digital, technological, economic and socio-cultural access and affordability issues.

5.4 Compromised assessment due to inadequate practice of constructive alignment

It is difficult for students to continue adopting the idea of construct meaning of the Constructive Alignment (CA) (Biggs, 2003). According to Biggs (2003), such meaning is not something imparted or transmitted from teacher to student but something students create for themselves. Constructive alignment implies that if a student is to learn desired outcomes reasonably effectively, then the teacher's fundamental task is to get students to engage in learning activities by setting up an appropriate learning environment that results in achieving those outcomes (Biggs, 2003). Hence, students construct their learning desires only when the teacher ensures they are aligned with the curriculum.

Therefore, aligning teaching components with learning outcomes is very important to ensure the enhanced and improved quality assessment of the diverse population of students in my prospective context of chemistry teaching. As a teacher, I am the aligner and connector in the principle of CA. Ensuring that all students have access to equipment and a mode of accessing the eLearning system is the first step as an aligner to address the limitations of students to eLearning.

Once all students have access to eLearning and are trained enough or inducted on features of such a new learning system, can they actively participate and perform in virtual classes, and can they be able to establish meaning and derive their understanding of the context taught without cheating in the tests, quizzes and examination?

As Luckett (2001) stated, curriculum transformation occurs most readily in response to major social changes and crises. The current global crises in HE have affected our institutions, and such changes have affected my curriculum. Therefore, because of the current global development in HE, immediate changes had to be made to enhance and improve the quality of assessment. A few factors considered in implementing such changes include:

a) The contents of the course outline had to be reduced by choosing the main important learning activities and shifting emphasis on the importance of topics.
b) Regarding who decides what topics are more important than the others, the decision was entirely on the lecturers. Students and teachers had to continue their daily learning and teaching because there was insufficient time to incorporate all institutional stakeholders in the decision-making process.
c) Laboratory practical activities were reduced.
d) Students were not failing.

As a lecturer, selecting which topic is important was a challenge, too. Biggs (2003) provides four major steps: 1. Defining the desired learning outcomes, 2. Choosing teaching or learning activities, 3. Assessing students' actual learning outcomes to see how well they match what was intended, and 4. Arriving at a final grade was considered during the alignment of teaching and assessing in the current global crisis era. Not fully choosing assessment tasks that usually inform on the individual student's attainment of learning outcomes consequently leads to the final grade being achieved without going through the whole four processes.

5.5 Structure, culture and agent for differentiation assessment

Archer's Social Realism theories (1995, 1996, 1998) (Archer, 2003) have been used to interrogate the interactions of structure, culture and agency in HEIs (Shalyefu, 2017). Realist Social Theory states that there must be internal consistency between social ontology, explanatory methodology and practical social theorizing, idealizing that any social ontology adopted has implications for the explanatory methodology endorsed. In turn, this methodology has implications for the guidelines for practical social theorizing (Zeuner, 1999). Understanding the three domains of Archer's Social Realism (SR) theories enables its usage in most learning contexts in HE. They can be used on the broader spectrum of Teaching and Learning, Curriculum Development and differentiation assessment OF and FOR Learning.

When planning an assessment, it is also important to consider student differences and educational needs. Students and teachers are the agents' domains in differential assessment, and both agents ensure constrictive alignment within learning, teaching, and assessment practices. Many students have different challenging personal and academic backgrounds, while others are living with disabilities. Using SWOT (Strength, Weakness, Opportunities and Threats) analysis and designing a student profile lets me know my students' natural and learning shortcomings. This helps me to design an appropriate and suitable assessment for the students.

In consideration of differentiation assessment, it is also important to keep in mind the laws and regulations of the guiding bodies in the institution, such as the institution council, senate, departmental committee, and faculty committee. For example, if partially and fully visually impaired

students take the same exam as others with no vision problems and the total duration is 3 hours, it is legal to add 3 more hours for those with vision disabilities.

UNAM also has an assessment policy that protects all students with and without disabilities and forms part of the culture within Archer's social realism theories. According to the policy on assessment and people with disabilities, students can apply for special assessment conditions following the procedures set out in the University's policy on people with disability and academic regulations (Wolfaardt et al., 2013).

5.6 Reflective analysis of case studies for understanding assessment in HE

Two case studies were considered for understanding at a practical level, and the core principles, theories, and models applied in the assessment OF and FOR student learning in higher education were considered. The case studies were extracted from Assessment in Higher Education: Reframing Traditional Understanding and Practices (Clarence et al., 2015), written and compiled by Rhodes University.

The latter article contains about 21 case studies. However, only two case studies were exclusively studied to gain a deeper understanding of the assessment of and for students on a deeper level. The case studies were Case Study 19, an Inquiry-led fieldwork project by Susi Vetter, a Botanist, and Case study 20, Encouraging deeper reading and comprehension of key texts by Samantha Vice, a Philosopher (Clarence et al., 2015).

After studying the two case studies, I reported, as stipulated below, my thoughts, ideas, questions, and any points of interest that arose during each case study's analysis. The analysis of the case study was done to encourage engagement with literature and craft a better understanding of assessment readings. The following reading characteristics for understanding and evaluation were also explored. They include issues explored in the reading, questions and dilemmas the author is trying to address, the position the author is arguing for or against, key concepts introduced in the case studies and their relation to assessment.

5.6.1 Case study 19: Inquiry-led fieldwork project

The article is written by a Botanist named Susi Vetter, who was trying to address the gap of knowledge creation in the specific disciplines of scientific fieldwork through data or information collection (Clarence et al., 2015). The author argued for providing students with experience as practical botanists by constructively connecting theoretical knowledge to practical applications in real-world settings. To explore such an issue, a two-day field trip was designed for students, and beforehand, they addressed some levels of Bloom taxonomy by pre-designing the following for the students:

(1) They discussed the ecological background of field exercise (level of remembering)
(2) purpose and nature of fieldwork (level of remembering),
(3) Outline what is expected of students in the field (level of remembering),
(4) Explain and provide written instructions for the expected field report (level of understanding),
(5) collecting data in the field (level of application). After the field trip, students continued with the following tasks:
(6) Analysis, criticizing, and justifying of data collected (level of evaluating/ evaluation),
(7) Overall field report (level of creation or creation).

Other important issues explored in the reading include students working individually and in a group, and assessment of field work reports was formatively done among students and tutors as a whole group and individually. The summative assessment was done on the final and improved report, which was formatively assessed to determine the individual grading of each student participating in the field trip activity.

My thoughts, questions, and points of interest are that their developed tool, inquiry lead fieldwork, can also be incorporated into teaching and assessment plans for any discipline because it is universally formulated. I am interested in using the same concept in teaching my practical subjects as the model is compatible with some set up of the Chemistry laboratory practical. The tool ensured that practical activity and peer assessment were done collectively. The key concepts in the analysed case study were assessment criteria, lecturers and tutors, and draft reports. Formative assessment, criterion-referenced assessment grid, formal assessment, peer assessments and fieldwork. Such concepts are equally important during the assessment of students for Chemistry laboratory sessions.

5.6.2 Case study 20: Encouraging deeper reading and comprehension of key Texts

The article is written by a Philosophy named Samantha Vice, who taught 1st-year students a philosophy course (Clarence et al., 2015). The author was trying to argue that students learn to connect different viewpoints required for creating and defending their arguments. The author aimed to enable students to make philosophical arguments or think philosophically. The following issues and ideas were explored to achieve this: She designed a repetitive assessment task for students and required close reading of philosophically selected texts using specific philosophical thinking tools.

Before students can use the developed philosophical tool or do the task, Samantha provided and incorporated Bloom's taxonomy level into the tool. The tool required (1) Students to identify prepositions made in the text (level of remembering), (2) Explain the arguments using extracts from the text (level of understanding), (3) evaluate the validity of the text's argument (level of evaluating/ evaluation), (4) Response was developed for the tool among students (level of creating or creation) via understand their claims. Both the tutor and a group of students formatively assessed the task. The

formatively assessed tutorial tasks were further used to prepare students for formal summative written assignments and examinations. Which were, finally, summatively graded.

My thoughts and point of interest on the analysed case studies are that the article demonstrates the need for students to learn at different stages (first and second year), which relates to the epistemic knowledge quadrants, Luckett epistemic model and experiential knowledge quadrant, and this is due to their philosophical reading is different at a particular level. For example, at the 1st year level, students learned to read and to know how to make a particular kind of argument, while at the 2nd year, they used the learned arguments to create and make an informed decision. Hence, the teacher also incorporates the Bloom taxonomy model of organized structural teaching.

My additional point of interest and benefit is that I will use the same concept in teaching my practical Chemistry courses as the developed model is compatible with it, too. The introduced key concepts in the article include 1st year, 2nd year, philosophical text, philosophical thinking, largely formative, and summative grading, which all serve as major aspects of assessment.

5.7 Chapter summary

Who I was before and after attending the course module of Assessment OF and FOR student learning are currently two different-minded people on the subject. Before attending the course, I had little understanding of the course. In the past, I used to assess without knowing what type OF assessment I was performing. I was also not fully aware of what the assessment was FOR. The biggest highlight of the journey was distinguishing the two types of assessment. I am now fully aware of two important forms of assessment: before (diagnostic), during (formative) and after (summative), as well as the difference between developing criterion assessment tasks and grading in higher education. Effectively conducting the three main forms of assessment in their order greatly improves one's assessment of students' work and further enhances grading and progression rate in the courses of study.

Additionally, considering the current world crises in o HE: (1) COVID-19, (2) war in Ukraine and (3) refugees from all over the world, especially from Asia and Angola. Such crises limit student learning and teaching and, in return, hinder their assessment of learned activities by teachers. The assessment policies are, therefore, also required to incorporate and accommodate compromised assessment due to any unexpected crises arising. Special considerations must be considered to ensure that students are fairly graded even in events when their learning and performance are heavily compromised.

Constantly updating and understanding my institution's academic policies, such as assessment policies and their guiding national documents, such as the UNAM Act of 1992, Higher Education Act, Namibia Qualification Act and National Qualification Framework, is key to the effective execution of Assessment OF and FOR students in the educational context of Chemistry courses.

6. CHAPTER 6: A SOCIAL REALIST PANORAMA ON QUALITY ASSURANCE: A CASE OF THE UNIVERSITY OF NAMIBIA

6.1 Quality assurance in HE

The development of mass higher education has led to a growing concern regarding quality, including the relevance of higher education for the job market (Storen & Aamodt, 2010). The authors further stated that the quality of higher education and the benefit and usefulness of the study programme for career and work tasks can also be measured by the employability of students after several years of graduation (Storen & Aamodt, 2010). The key questions are:

1. Are the students being produced by the intuitions of higher learning ready for the job market? Are the graduates fully impacted to tackle and conduct the work tasks in the industry?
2. Are additional training or internships required for students after graduation and before they can embark on their actual studied job career paths?

These are some of the questions that determine the quality of teaching and learning in HE. Recent trends in higher education have increased attention given to the focus and quality of the teaching offered to the students as major clients of the institutions of higher learning (Henard, 2008). From the student perspective views, this could be due to various reasons like (1) More students to be taught than ever before, shifts in the conception of the role of universities, (2) States and students demand that the learning experience be worth their money (Naeve, 1998).

The increasing viewing of higher education as an investment that should contribute to national prosperity in the long term and (3) changing student body and teaching methods; modification of expectations regarding teaching (Henard, 2008). The university roles change with and/ or as time progresses. The population of students in higher education in the 1960s is no longer the same as that of the 1980s, and so are its teaching and learning requirements, which changes, too, and more so today, with a much higher student population.

Changes in the funding structure of many universities in the institutions of higher learning play a huge role. Nowadays, most institutions can no longer sustain themselves without external funding. External funding agencies often have strict requirements, such as research quality and teaching, to release funds to an institution. In addition, higher education institutions now have a diverse student population, meaning that higher education is no longer reserved for the elite as it was in the past.

6.1.1 Evaluation of teaching and learning in HE

Evaluation plays a pivotal role in education quality assurance in higher education, emphasising teaching and learning activities within the institution. In other words, the delivery of quality education can be measured, monitored, and maintained through evaluation processes for teaching and learning activities. This implies that evaluation is required to understand the effect of teaching and learning, and its outcomes can be used to improve teaching practices. According to Ramsden (1992), evaluating teaching and learning involves many activities, such as collecting, interpreting, and making informed judgements of actions to improve teaching and learning. Furthermore, Ramsden (1992) stated that the evaluation process had become an integral and necessary step in achieving accountability to the students and the public and that it must be viewed as a way to improve teacher's professional competence and students' understanding. Additionally, Saroyan and Amundsen (2001) conformingly added that evaluation can be a strong practical mechanism for improving the learning processes and that it must be practised as a continuous process to ensure its effectiveness.

6.2 What is quality, and what is my drive to deliver quality work as a teacher?

I believe quality is an assurance mechanism that ensures clients are satisfied with their services. In the case of institutions of high learning like UNAM, such clients can be students, parents, community members and private stakeholders. According to the British Standard Institution (BSI), quality is defined as the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs (Green & Harvey, 1993). As a teacher, delivering quality work for customer satisfaction and maintaining my values, such as good self-consciousness, consistency, and keeping up my image and future self-evaluation is important. This is in line with the UNAM Academic Integrity Policy (2022), whose relevant objectives on this matter are to (a) Clarify expected academic behaviour at the university and (b) Support scholarly competence through self-discipline and rigour.

6.2.1 Components and different angles of quality

According to Harvey and Green (1993), quality in linkage to Higher Education (HE) is defined and/or viewed differently by different people. The authors further categorised such understanding of quality about HE into five interlinked aspects, namely: (1) terms of exceptional, which refers to exceeding high standards and passing a required standard; (2) terms of consistency, which is exhibited through zero defects and through the culture of getting it right the first time, (3) Quality as fitness for purpose; which requires the products or service to meets the stated purpose, customer specification and satisfaction, (4) Quality as value for money; which is achieved through efficiency and effectiveness, and (5) Quality as transformative; measured through qualitative change.

6.2.2 Quality as Exceptional

Quality as an exception embodies three notions: distinctiveness, excellence, and passing a set of minimal standards (Kadhila et al., 2013; Harvey & Green, 1993). From the view and perspective of my institution as a Chemistry teacher, giving and improving my lectures every year can contribute to the first notion of exceptional quality. Every year, lectures on the same topic can be improved through research on the same subject as science is always changing through research, and new findings and evidence arise after years of researching the specific subject. Quality as excellence is related to the availability of resources in my case.

If there is a sufficient budget to buy laboratory consumables and equipment and measuring instruments and laboratory equipment are properly calibrated, then Chemistry students are prone to attain excellent results after their respective subject laboratory sessions. This is confirmed by Harvey and Green (1993), who stated that if one received a lecture from a Nobel Prize winner have a well-equipped laboratory with the most up-to-date scientific apparatus and a stocked library, then excellent results would be produced. Regarding compliance with standards, there are pre-entry requisites for registration into the faculty of science at UNAM. Only students with certain pass symbols in secondary school science subjects must register for science study programs at UNAM.

For example, to register for a Bachelor of Science in Chemistry (Honors) degree programme in addition to the UNAM general admission requirement, a candidate must hold at least a C symbol on Namibia Senior Secondary Certificate (NSSC) or equivalent qualification in mathematics and physical science (UNAM School of Science Prospectus, 2022). Such quality check to standards by the Faculty of Agriculture, Engineering and Natural Science (FAENS) enables students to perform better because their pre-knowledge in these science subjects is already strong. Thus enabling the teaching and learning to comply with the exceptional quality set.

6.2.3 Quality as perfection or consistency

Quality as perfection or consistency is exhibited through zero defects and the culture of getting it right for the first time (Harvey & Green, 1993). Based on my experience, it is time-consuming to attain such quality. In most cases, it is important to have good analytical grade chemical consumables in the approved specification range of the company supplying such consumables. Such analytical grades and purity of chemical consumptions must be of the specification of at least 90% or above. It enables reproducibility of the respective experimental results and thus, in turn, enables compliance with quality, such as perfection and consistency.

6.2.4 Quality as fit for purpose

The quality required for a product or service is analysed differently to meet its meaning. Thus, quality is judged by how much the product or service fits its purpose and harnessing the drive to perfection

(Harvey & Green, 1993). In my case, we are required to meet the needs of the students to perform better and produce good research and laboratory results. Students can use such results to write their final laboratory reports and examinations and acquire knowledge that they can apply to the industry when they graduate and get employed.

The determination of whether the quality of teaching I give the students fits the purpose of the student to be employable in the industry after graduation is still questionable in my case. There are many other sets of quality criteria an employing company will be interested in my graduate students. Sometimes, such a set of quality criteria is beyond our institutional control. Hence, the quality as fit for purpose is difficult to measure in my case when the product is the Chemistry graduate students or the service provided is knowledge delivery.

However, this case can be improved by improving my teaching and learning methods in the classroom to translate and transition them from knowledge consumer to knowledge creation and employability creator when students graduate. The quality of fit for purpose can be slightly met by producing self-employing graduates and products of the degree-awarding university.

6.2.5 Quality as value for money

The notion of getting what you paid for is represented by quality as value for money. The UNAM students pay school fees and are attributed to receive quality education for the value of their money. In addition, most students whose tuition fees are sponsored by student funding agencies like the Namibian Student Financial Assistance Fund (NSFAF) must pass their respective registered academic year for the funding body to keep paying for the following year. If a student fails a registered academic year, NSFAF stops payment of the failed year and only resumes it after the student passes the respective academic year.

For that reason, delivering quality education is important to avoid unnecessary failure of students, which can lead to student dropouts, as they cannot pay for the failed academic year. Anyolo et al. (2018) stated that quality education for sustainable development should be the one that helps student develop the right attitude, skills, and knowledge to make well-informed decisions for the benefit of their country's development. In my case, quality as value for money is also related so that students pay for laboratory fees and expect the education to be for sustainable development. If quality education is delivered, the student is highly likely to graduate and be employed or create job opportunities, thus getting value for their invested funds in their education. If efficient and effective results are not obtained in the laboratory experiments to enable them to write good practical reports and pass examinations, it also contributes to student failure, repetition and reduced student graduation rate.

6.2.6 Quality as transformative

Quality as transformation is measured through qualitative change (Harvey & Green, 1993). It is complicated to measure such changes when the customers of high education are students. However, in the case of laboratory scientific research, it can be measured through research conducted by students. The products that students develop in their laboratory experiments can also be a measure of quality as transformative. Some of the products can be innovative. For example, if a final-year Chemistry student produces a new drug with good healing efficiency in the laboratory, such research can be patented by the university.

The drug can commercially be produced based on that student research and exact experimental procedures applied. This is confirmed by Harvey and Green (1993), who also stated that transformation in higher education is a unique, negotiated process. The same applies to research, whereby the teacher produces new knowledge in a vacuum and is rather involved in transforming a given body of knowledge for a particular purpose.

6.3 UNAM attempts to improve quality service delivery

It is reported that in the past, quality was undermined, while in the present, certain factors such as audit, evaluation, appraisals, and full-cost pricing raise the quality of work within the institutions of high learning (Harvey & Green, 1993). UNAM recently launched its Performance Management System (PMS). The main goal and objective of the PMS is to ensure the work done by all university employees is in alignment with the strategic objectives of the institution, whose themes are (a) Institutional sustainability, (b) Higher education graduate employability, (c) Transformative research and innovation (d) Community engagement, social relevance and environmental sustainability (e) Institutional planning and internationalization, (UNAM Reviewed Institutional Strategic Plan, (2019 - 2024). The themed strategic plans are developed to ensure quality of service in HE and at UNAM, as well as the government and the institutional stakeholders.

The UNAM PMS will also ensure internal academic and administration staff audits that determine the extent of quality service delivery in their daily work operations. The audit exercise through the PMS for quality institutional service delivery will work together with the UNAM's existing quality assurance policies and procedures, such as the policy on learning and teaching and quality assurance and management policies and procedures. The PMS is expected to bring out results of evaluated individual staff members on their performance scorecards. The scorecards can strengthen, improve, train and capacitate individual staff members struggling to deliver quality work as excellent, consistent, fit for purpose and value for money in their appointed roles at UNAM.

The PMS will inform UNAM of its progress in teaching and learning, a system used together with institutional policies to evaluate the institution's progress on quality service delivery. South African institutions of higher learning also perform similar audit processes. According to Boughey and McKenna (2017), the institutional audit process attempts to assess the impact of teaching and learning

to inform planning for the institutions. The outcomes of institutional quality assurance and audit exercises are aimed at promoting efficiency and accountability discourses and the hope of contributing to the transformation of society and creating opportunities for all (Boughey & McKenna, 2017).

6.4 Social realism in relation to quality assurance at national and institutional levels

In Namibia, the institutions of Higher learning are regulated by external regulatory agencies such as the Namibia Qualification Authority (NQA), National Council of Higher Education (NCHE) and Namibia training Authority (NTA). According to Kadhila and Iipumbu (2019), these agencies are responsible for country quality assurance systems at both national and institutional levels. The objectives of NQA include setting up and administering a National Qualifications Framework (NQF) and accreditation of persons, institutions, and organizations that provide education and training per accreditation requirements. The NCHE is designed to promote the establishment of a coordinated higher education system, access to students to higher education institutions, quality assurance in higher education, programme accreditation, and institutional audit (Kadhila & Iipumbu, 2019).

Margret S. Archer, the dean of the critical realism movement, has brought theoretical reflection on culture, social structure and human agency to a successful conclusion with empirical investigation. Archer (2003) rebuffs the duality of agency and structure and chooses instead the stratified conception of reality that does not elide the different aspects between the systemic and the interactive strata of society but acknowledges the relative autonomy of cultural systems and social structures. Thus, these components are key to understanding the social world (Shalyefu, 2017). According to Shalyefu (2017), who further critically mapped the sociological framework of analysis, Bhaskar (1978; 1979) and Archer (1995; 1996) defined structure as the legislations, acts, policies, and official documents. Culture is the beliefs, values and practices. At the same time, agencies are the academic leaders, students, lecturers and developers. These various external agencies are the structures with their laws and regulations forming their culture of monitoring and evaluation of quality assurance in institutions of higher learning. External agencies have their culture practices through the respective mandated themes such as accreditation, institutional audit, certification, NQF registration, licensing, and registration of providers and de-registration of institutions to achieve their various and respective objectives. The instructional stakeholders and evaluators from external QA agencies coming to the institutions are the agents of such agencies and institutions, respectively.

Institutions like UNAM must abide by and meet the standards of the national external quality assurance agencies. Meanwhile, UNAM has its own policies and internal control measures to ensure its institutional standards and policies uphold quality as value for money to its stakeholders. In a global context, publishing journals such as Elsevier, loyal society of Chemistry, functional material and others are the **structures**, and lecturers, researchers, and academic staff should comply with their

publishing requirements. We have good publishing journals like African journal online (AJOL), African Journal, and SUN journals in Africa. In Namibia, some of the publishing research journals include NCRST, UNAM repository journal, and Science publishing journals. We have an annual Science Research Conference every year at the departmental level or faculty and school of science.

The **culture** of setting standards at global publishing journals is set with the impact factor. For example, the impact factor of certain journals can be seven, while others are three, four, five or six. The higher the impact factor, the higher the quality of your work. Hence, high-impact factor journals consider groundbreaking research results of good quality for publication and further increase your publishing ranking. The identical article publishing procedures apply to continental and national levels. On the institutional level at UNAM, we strive for Open-access publication to make our work visible and fully accessible to the world. In other words, open access promotes a high chance of article citation, which improves UNAM's institutional ranking.

The ranking increases with the number of institutional-cited works or published papers. At departmental and individual levels, our culture strives to write more grant proposals and sourcing for funding to finance various research work. Obtaining funding increases the publication strength of the university, and sometimes, budgets within the project funds are used to pay for our publishers of papers in good journals with higher impact factors. The same applies to my goals: write more grant proposals for other researchers to acquire more funding to achieve research output for the students and, by implication, the university.

The structure empowers the agents differently, and that agency can be collective or individual concerning their social role and capacity to act voluntarily (Boughey, 2012). In this case, an **agent**, at the global and continental level, is the article reviewer who meets the set standards to review the journal articles and assess the submitted manuscripts for publication. They are sometimes rejected if the submitted manuscripts do not meet their standards.

If they meet the standards of the publishing agency, they give feedback and sometimes comments for improvement/adjustment and resubmission. At institutional, faculty, school and departmental levels, we have groups of academic people (human agents) in the same research themes or common interest areas who meet and review and address the external reviewers' comments. At the individual level, I also ensure that I share them with my colleagues and laboratory group members for their opinions before sharing them with my departmental, school or research group members.

6.5 Social realism in relation to quality assurance at my institution

Kadhila and Iipumbu (2019) stressed that until now, quality assurance is one of the important aspects of the reform in higher education in Namibia. Therefore, quality assurance practice has to be implemented to help foresee transformation at institutions of higher learning in the country. UNAM

has a quality assurance unit called the Centre for Quality Assurance Management (CEQUAM), of which its institutional policy objectives are to

a) ensure university staff, students, governance bodies and external stakeholders that quality procedures are in place to improve the quality of HE.
b) To foster and sustain a quality culture supported by on-going learning and innovation at UNAM.
c) To maintain public confidence in the quality and standard UNAM staff and students achieved.
d) To confirm the effectiveness of the quality procedures through audits and evaluations.
e) To facilitate quality enhancement based on recommendations from reviewers.
f) To align UNAM internal quality assurance processes with the legislative provision and compliance with relevant national quality standards agencies (UNAM Quality Assurance and Management Policy and Procedures, 2021).

The UNAM Quality Assurance and Management Policy and Procedures is complimented by other institutional policies, such as teaching and learning, to achieve its objectives effectively.

6.5.1 Structure in relation to QA at UNAM

In interrogating Professor Archer's social realism of theory, the UNAM Quality Assurance and Management Policy is the **structure**. The policy deals with institutional program development, which embodies the programme accreditation aspects. The policy also maintains that before applying for accreditation, the institution can provide such programmes as physical infrastructures, qualified human personnel, and operational finance. The policy also deals with quality review by CEQUAM internal audit before an external audit by accreditation bodies, external audit by accreditation bodies, annual monitoring of academic programmes, and implementation of audit recommendations.

The policy also facilitates institutional curriculum development and stakeholder engagement. The departments initiate the curriculum content map out its important stakeholders, such as the Ministry of Health and Social Services, National Institute of Pathology (NIP), Namibia Standard Institute (NSI) and chemical supplier companies in the case of curriculum development at the department of Chemistry physics and material science.

Stakeholder engagement is very important with relevant stakeholders as those stakeholders and companies will likely employ the graduating Chemistry students. Benchmarking with other sister universities for factors like pre-conditioning modules and credit recognition of programme modules allows smooth transitioning when students have to go further with their studies at such universities or others. The benchmarking support letters are also issued as part of evidence in curriculum development and programme accreditation processes.

While UNAM is aspiring to follow suit in countries like South Africa, academic development has undergone several theoretical and ideological shifts, which have seen it moving from equity to a focus on efficiency (Boughey, 2007). The author further stated that, in many respects, these shifts arise in response to the wider institutional and national policy contexts, which have also reoriented themselves from radical transformational objectives (Boughey, 2007). The UNAM case, curriculum development and programme accreditation documents are submitted to the school boards, academic committee, and the senate. Once the Senate approves it, the documents are submitted to NQA for the NQF registration. The documents are further submitted to NCHE for assessment and programme development. NQA requires relevant institutional stakeholders to support and endorse the respective applied accreditation programme. The NCHE checks for relevant accreditation requirements such as infrastructure, available library books and journals, e-learning processes and documentation, departmental budget, and external programme sites.

After the external audit, the institution is granted conditional, full, or no accreditation based on the findings and recommendations. According to Boughey (2017), the institutional audit assists in measuring the impact of teaching and learning across the country. In south Africa, quality assurance policies have resulted in all universities being open to all candidates, unlike in the past; however, poor performance of the system overall, with students taking longer than the regulated time to complete the registered qualifications or failing to complete them at all (Boughey, 2017). This is similar to UNAM students who also struggled to finish their study program, mostly when the quality assurance policy was not formulated.

6.5.2 Culture and agency in relation to QA at UNAM

At UNAM, maintaining an accredited program is a challenge. Archer (2003) stated that there is casual power of cultural systems, and social structures are always meditated through human agency, meaning that if there is no agency, there is no system. Therefore, to elucidate the interplay between the structure and agency, the strategy separates and keeps both strata components constant. In this case, the three components are interrogated on a linkage basis. A culture of programme expertise is struggling to follow conditions to keep the programme's accreditation.

For example, the expertise of accredited programmes sometimes continues to teach the newly accredited program using old programme contents. Such programme experts or lecturers also struggle to update and increase their assessment activities and timeframe and not evaluate student progress based on the new program. Hence, the lecturers implement half-new and old curricula, adversely affecting the student progression and graduation rate. The culture of resistance to change during the implementation of a new programme at UNAM is driven by the fact that the lecturers often view themselves as content experts and struggle to follow the conditions of the newly implemented

programme and CEQUAM guidance. As the driving agents, the lecturers also have a culture of not giving extra time to work on curriculum development and program accreditation activities.

The external panel members are also part of the human agencies that drive programme accreditation and curriculum development at UNAM. These panel members are institutional, national, and international personnel, and the UNAM department signs off to allow them to participate in their program review. Organizations like NQA also invite Chemistry experts from the industry and other national universities to confirm and offer an external opinion on the program documents submitted by UNAM for NQF registration. To understand teaching and learning procedures at UNAM, lecturers are guided by the policy on learning and teaching. Essentially, the UNAM Quality Assurance and Management Policy and Procedures (2021) assures the delivery of quality learning and teaching.

As human **agencies** drive the quality learning and teaching process at UNAM, some lecturers lack the understanding of programme accreditation and curriculum development and that complementary work, such as curriculum development, contributes to UNAM's vision. Students as agents of the university are also required to undertake the university core modules as encouraged by the (UNAM Policy on Learning and Teaching, 2019). Such modules include computer literacy, English for general communication and contemporary social issues. The knowledge and social understanding acquired in these core modules enrich the students and place them in a better and quality position to further progress in other modules of their respective courses of study. The students also desire to do well in their future careers and employment after graduation.

6.6 Chapter reflective summary

Before studying the course of QA and evaluation in HE, I was not fully aware of the importance and role played by all quality approaches used in HE, such as quality as transformative and quality as fit for money. In the past, I would usually not put consideration in measurable and strategic action to ensure students get value for their money during teaching and learning. I usually only believed that for students to be taught, they must pay for such service through their registration and tuition fees. However, how they are taught is entirely up to me as a teacher.

Now, after attending the course, I am fully aware of all the national structures, such as the national external QA agencies (NQA, NCHE and NTA), which are mandated by the government of the Republic of Namibia for standardization, monitoring and maintaining the structures of QA such as their policies onto institutions of high learning in the country such as at UNAM. I am now fully aware of the human agents, the institution’s employees, who review UNAM's proposed and submitted programme documents and visit campuses to evaluate the feasibility of the study program before they accredit it. The programme accreditation and curriculum development are also faced with challenges such as requiring time as the human agency; stakeholders, lecturers, and students struggle to avail

time for their engagement with the university CEQUAM, which is the driving unit of the AQ processes.

I have also received the Scholarship of Teaching and Learning (SoTL). From now on, my teaching plans and strategies will be more centred on research and engaging students practically. Toward practising the SoTL, I will invite fellow lecturers to observe my teaching and give me feedback, which will create room for improvement and enhance the quality of my teaching and learning. As I am well informed of QA practices, models, and influencing factors, I will align my daily teaching and learning with a strong interrelationship between teacher, context, and students through instructional components and contextual environment. For example, I will consider that not all students are the same and learn differently, which can be achieved through student profiling. Finally, as an informed teacher of QA in HE, I will ensure that my teaching and learning align with the existing institutional QA policies and teaching and learning policies. I will relatively align my institutional QA documents to those of national external quality assurance agencies to ensure smooth implementation of the new academic programme.

7. CHAPTER 7: APPLICATION OF TECHNOLOGY IN HE: ANALYSIS OF UNAM BLENDED ONLINE LEARNING STRATEGY

7.1 Introduction

The development of communities and societies and increased civilization are always in progress, leading to teaching and learning to become more organized with constant evolution (Kumar & Nanda, 2020). The learning and teaching practice is no longer restricted to the traditional classroom and textbook learning approach. Hence, adopting new learning strategies that align with the time and evolution in education is required. Learning strategies that include blended online approaches and strategies can effectively integrate with the alarmingly technological development. It is, therefore, important to partially shift to digitalization in HE as it influences and challenges how education is organized and administered (Lillejord et al., 2018).

Open Education Resources (OER) is one approach that includes all sorts of blended and online learning methods, strategies and principles for learning and teaching in HEIs. Some understanding of blended online strategies is mainly based on the research, depending on what research subjects an individual is doing or teaching. Most researchers will go online to search for scientific articles that will aid in creating learning content for students. One platform for blended online learning is Moodle, which is used to upload course-learning content for students. Pre-recorded lecture sessions are uploaded to Moodle so students can attend and learn about that specific course session. UNAM uses online Moodle, and there are guiding policies such as UNAM Open, Distance and eLearning (ODeL) Policy and Procedures (2020) and UNAM, Quality Assurance and Management Policy and Procedures (2021). These policies ensure that the blended online teaching and learning at UNAM conforms to set national and institutional quality and standard procedures.

Most lecturers at UNAM have the experience of marking student work and providing feedback online, as these are some of the procedures they used during COVID –19 era. However, some lecturers still do not understand other online sources of subject content like YouTube and whether such sources are credible enough to be used in teaching and learning at HEIs. I was also sceptical of using research

journals for students to extract learning content. Even though recent journals and those from well-known publishing agencies such as the Loyal Society of Chemistry, Elsevier, Taylor and Francis are used when extracting Chemistry subject content for students.

The use of social media in teaching and learning within HEIs is currently being explored at some institutions as it is sought to have many advantages. According to Kumar and Nanda (2020), using social media in HEIs has Pros and cons, including allowing lecturers and students to interact in cyberspace and compromising the quality of education HEIs offer. The role of social media in education is also prone to connect a wide range of applications that allow users to create, share, comment and discuss digital course content (Kumar & Nanda, 2020). The UNAM ODeL Policy and Procedures (2020) also states that online learning is beneficial in enabling students and lecturers to develop skills essential for a global information society.

It is also necessary to improve the quality of teaching and learning and enhance UNAM's academic profile (UNAM ODeL Policy and Procedures, 2020). It is noted that UNAM is progressing toward the evolution and globalisation of knowledge as these initiatives of blended online learning are only implemented in 2021. The blended online learning strategy can be implemented on a classroom, departmental or institutional level depending on the level of the lecturer, HoDs and course supervisors. For the case of Industrial Chemistry 1 (CHM 3761), the blended online learning strategy is developed and implemented at a classroom level.

7.2 Literature of blended learning in Higher Education

The blended online learning strategy is well-developed and practised in developed countries like Norway. The Norwegian higher education sector is at the forefront of cooperation, incorporating digital solutions with effective infrastructure solutions and joint service for administrative tasks, education and research (Lillejord et al., 2018). The strategy explores how teaching with technology supports student active learning in HE.

7.2.1 Professional Digital Competence Framework (PDCF) of Norway

Based on Kelentric et al. (2017), the professional digital competence framework for teachers was developed in Norway and analysed to deal with the various aspects presented herein. The framework is teacher Professional Digital Competence (PDC), introduced in Norway in 2012. It describes how technology changes and creates new challenges for teachers, such as working methods in pedagogy, administrative contexts, and developing students' digital knowledge and development. It also outlines the role of teachers in the digital era by developing their professional digital competence. The frameworks aim to centre on professional development and actual practice of the profession

(Kelentric et al., 2017). It is advised that teachers start using the PDCF even in HEIs in developing countries.

Norway's framework is also currently used in research environments and official steering documents to assist in aspects such as (a) developing common national frames and directions for teacher education, (b) planning and implementing initial and continuing teacher education, and (c) evaluating and following up on teachers' professional digital competence (Kelentric et al., 2017). It also acts as a guiding document used by policy developers, HoDs, educators, teachers, and students in HEIs. Furthermore, it is used by the HE agents as a reference in their work on improving the quality of teachers' education and systematic continuing professional development. This highlights the teaching profession's key role in realizing digitalization in schools and developing digitally competent students (Kelentric et al., 2017).

The framework competence has seven areas containing a description of knowledge, skill and competence known as (a) subjects and basic skills, (b) school in society, (c) ethics, (d) pedagogy and subject didactics, (e) leadership of learning processes, (f) interaction and communication and (g) change and development (Kelentric et al., 2017).

7.2.2 Relationship between UNAM disciplinary (Chemistry) context and PDCF of Norway

The relations of seven areas of PDCF, containing a description of knowledge, skills, and competence in teaching industrial chemistry, which I teach, are fully demonstrated. A PDC's subject and basic skills for interaction and communication are handled as teachers develop and share the lecture notes and experimental manuals online on the Moodle learning platform. The student can also write and submit assignments on the same online platform. The teacher assesses student course activity and provides the student marks and grading on Moodle. In addition, comments and teacher-student evaluation assessments are also performed on Moodle.

As a PDC, the teacher develops teaching methods for research dissemination in the school society. The teacher also encourages and gives examples to students on using various online platforms to search for journals for their final-year research projects. Even though the taught subject of Industrial Chemistry I is a 3rd-year module for the Bachelor of Science in Chemistry (Honors) program, once the students progress to their final year and continue with their respective research work, the laboratory results can be original and unique. The research results are transformed into a scientific research paper. The research paper is, therefore, published in a reputable scientific journal where the student's work can be criticized, judged, and contribute to the societal knowledge bank.

In pedagogy and subject didactics as PDC, there is a definite relationship between PDCF and the Chemistry discipline context. While the framework allows its measures and dictates how research is

conducted, the Chemistry 4th year students are expected to conduct research and prove, validate or disengage a certain hypothesis in their research projects. The PDCF is integrated into research so that Chemistry students can use computerized applications such as MatLab, organic work tools, and others. These applications are used for the analysis of their synthesized metal complexes. The ethics as PDC relates to an area of Chemistry as competence in obtaining an ethical clearance letter, which is expected from NCRST.

In the case of UNAM, the ethics clearance letter is obtained through a school of postgraduate studies before a student conducts their Chemistry-related research. An ethical clearance letter is required to ensure no potential harm to humans and the environment due to the nature and composition of chemicals, reagents and consumables involved in the Chemistry discipline research. In the leadership of the learning process as a PDC, it is known that science is endless, and yesterday's knowledge is always being criticised, challenged, updated and continued.

For the latter reason, online notes are regularly updated during scientific subjects. The updates are usually based on new developments and findings from other researchers and HEIs worldwide in the broader industrial Chemistry research area. As a result, the learning outcomes, subject objectives, and curriculum review also follow similar upgrades in the same discipline. The graduates are, therefore, produced with updated knowledge proportional to the time, evolution, progress and new findings in chemical-related research work.

7.2.3 Social media for blended online learning in HE

It is known that most students who own social media devices access their accounts daily. The role and extent to which social media facilitates teaching and learning are investigated by both Chawinga (2017) and Kumar and Nanda (2020). The authors also highlighted the pros and cons of using social media in HEIs.

7.2.4 Pros of social media usage in HEIs

(i) It accelerates the fast delivery of information to the students, as they are more easily accessible and interactive and increase sociability.

(ii) It allows people and students to interact in cyberspace.

(iii) It removes constraints of time and space in higher education.

(iv) It helps in reviewing user-generated comments and content

(v) Many students love social media and work best on such platforms. The student will timely do the work.

(vi) It also creates opportunities for HEIs to amplify psychological engagement with students and to increase influence by following student-to-student conversations.

(vii) It can also convert teaching and learning into more open and collaborative work with other students in the same or different institutions.

7.2.5 Cons of social media usage in HEIs

(i) It compromises the institution's quality of education if learning sessions and activities are occurring via social media.

(ii) It gives rise to plagiarism, as there are no supervisory measures to prevent the copying and pasting of information among students.

(iii) It also gives rise to ghost students performing the studies for real students who work full time or do not have time to attend and perform their studies.

It will also contribute to leaks of confidential institutional documents and information not meant for the public.

7.2.6 The need for integration of social media in blended online learning strategy

Chawinga (2017) sought to investigate (a) the benefits derived from the practical use of social media in a university classroom and (b) the factors that affect the use or non-use of social media by students in the same environment. He used the methods of students creating blogs and Twitter accounts, followed by tweeting and blogging. The tweets were analysed by students in addition to distributing a questionnaire to students, which collected feedback regarding the use of blogs and Twitter in the classroom. The findings revealed that there were about 9000 students' tweets for 12 weeks, with the least having tweeted 20 times and the highest with 320 tweets, while the blog transactions, including posts, blogs, and comments via audio and videos, totalling at over 500 blogs (Chawinga, 2017).

The benefits derived from social media were grouped in terms of technological devices students use to access tweeter and blogs. Notably, it was found to be personal phones as they are cheaper and easier to access than computers and the university library. The use of tweeters and blogs benefitted the students in their course of study because they accomplished their academic activities (Chawinga, 2017). The Chawinga (2017) concepts of using blogs and Twitter relate to my teaching and student learning so that many students tweet about how they will tackle specific chemical processes and balance chemical equations and unit operations. The same student can also blog about asking for assistance from other students to tackle such problems in the form of writing or chatting, as well as

audio and videos. As a result, it forms a central integrated area for student learning in the comfort of their homes and using cheaper smartphones.

According to Kumar and Nanda (2020), digital devices have become a routine not only for playing games and communicating with classmates but also for education and gaining knowledge. This could be the changing focus of the environment, which has shifted from the teacher to the students. Kumar and Nanda (2020) also stated that the average time spent by millennial users worldwide on mobile internet is about 223 minutes per day. These statistics doubled in 2017, proving that young people depend strongly on the internet daily. This suggests that the internet can be used as an advantage by integrating the blended online learning strategy, as students tend to spend more time online.

Considering the Namibian context and its population, which is approximated at 1.6 million as of 2022, the usage profile of Face Book, YouTube, WhatsApp and Face Book Messenger exist at its equivalent ratio to the Namibian population. Many Namibians also use Instagram more than Facebook Messenger for social communication. We Chat platform is the least used social media platform in Namibia, as those who have travelled to China mostly use it. Such students and others communicate through WeChat with those in China after returning to Namibia. Moreover, the statistics can be in contradiction when it comes to some of my older students who are not electronically and technologically active. They tend to prefer face-to-face lectures and physical notes in the form of books and manuals for studying and learning.

Additionally, in the Namibian context, blended learning is required as many students live in remote areas or shanty towns in the city and have no regular transportation to access the university for traditional learning mode. Moreover, the online blending of learning practices is costly and requires students to have electronic learning materials and devices such as laptops, smartphones, and internet connections. Many Namibian students cannot afford these gadgets to study online.

7.3 Blended, online, or E-learning policies, strategies, and guidelines at UNAM

UNAM has various policies and procedures that inform, facilitate, and guide the institution's use of online teaching and learning. Such policies include the (a) UNAM, Open, Distance and eLearning (ODeL) Policy and Procedures (2020) and (b) UNAM Open Educational Resources Policy (OER) (2020). The effective implementation and usage of the UNAM blended online learning policies are supported and used together with their other counterpart policies like the UNAM Policy on Learning and Teaching (2019), UNAM Assessment and Awards Policy Procedures and Regulations (2021), Quality Assurance and Management Policy and Procedures (2021), and UNAM Research Policy (2013).

According to the ODeL Policy and Procedures, some of its specific objectives are to support the framework for the operation of a business model for ODeL, Promote the development of accessible,

relevant and sustainable ODeL programmes, and guide the application and integration of ICT and innovation, UNAM, Open, Distance and eLearning (ODeL) Policy and Procedures, (2020). Its scope of work includes the policy to apply to all programmes delivered through distance, blended and online modes. It also applies to members of UNAM staff, both full-time and part-time lecturers, tutors, students, academic and administrative staff and visiting scholars and management who are engaged in developing and teaching ODeL programmes (UNAM ODeL Policy and Procedures, 2020). It is, therefore, justifiable that all the courses and/or chapters identified for teaching and learning in the open distance and eLearning mode are safeguarded by the policy. In the case of Industrial Chemistry, only certain chapters and units (Units 2 and 3) of the course are taught online, and the other units (Units 1, 4 and 5) are taught face-to-face. Additionally, laboratory practical sessions are conducted online (practicals 2, 4, and 6) and face-to-face (practicals 1, 3, 5 and 7). Thus, blended online learning is fully utilized in the course of Industrial Chemistry and is in alignment with the UNAM ODeL Policy and Procedures.

The ODeL policy and procedures inform the learning and teaching on quality assurance and stress the development of quality assurance policies. It also informs the development of procedures for moving programmes to ODeL delivery modes of distance, online and blended learning UNAM, Open, Distance and eLearning (UNAM ODeL Policy and Procedures, 2020). The latter agrees with the existing UNAM Quality Assurance and Management Policy and Procedures (2021). Some of the objectives of the quality assurance policy are to confirm the quality procedures that effectively enable different university units to achieve the quality and objectives of the quality assurance policy (2021).

The UNAM ODeL Policy and Procedures (2020) also states that online learning provides many learning possibilities, such as web-supported, web-dependent, and fully online programs. In the Industrial Chemistry I course, web-supported and web-dependent programs are essential and currently used for the course. During such programmes, students learn through printed materials and use the internet to access additional information and resources, especially in units 1 and 4, which are taught face to face. They also use the internet to access their study materials and participate with their peers and lecturers through discussion forums such as Moodle. The latter occurs in units 2 and 4, which are taught online.

The benefits of blended online learning include collaboration at a distance, increased flexibility, increased interaction, enhanced learning and learning to be virtual citizens (UNAM ODeL Policy and Procedures, 2020). These benefits of blended online learning provide flexibility, especially in the teaching and learning of research. Scientific research allows researchers to collaborate with other researchers in the same discipline, create and develop publications, and co-fund and grant applications at different universities. The UNAM Research Policy (2013), whose scope supports and objectives are to facilitate scholars and collaborative research partners under the umbrella of UNAM.

In my experience, the blended and online learning used for teaching industrial Chemistry is effective. It allows full participation and inclusion of both students in the lecture and assessment activities. Students learn differently; some learn better face to face, especially the older students who sometimes attend the course, and some learn better online. On the contrary, millennials spend most of their time online, specifically on social media platforms. The disadvantage of these online platforms is the non-availability of resources to some students, especially those from disadvantaged communities such as villages, San communities, and remote areas. It takes a few months after the students enrol in the university to teach them beginner UNAM core courses such as computer literacy, enabling them to acquire sufficient knowledge and skills to use and adapt to the blended online learning approach. Most students are sponsored and funded by NASFAF. However, not all of them can be funded, so some do not have the resources for a blended online learning approach.

7.4 Envisaged Blended Learning Strategy at the classroom level

The developed blended online strategy is envisaged for a classroom level. It is important to understand the role of the lecturer in the HEIs; in my case, I am a part-time lecturer at UNAM. I have limited capacity or role as a lecturer to implement the strategy. Hence, the strategy can only be implemented at the classroom level. The latter is different for lecturers who are HoDs and are involved in management operations. Furthermore, the directors and associate deans of schools, centres and units are better placed to implement the strategy because it is within their job descriptions to implement the blended online learning strategy at the departmental and institutional levels.

Other reasons for implementing the strategy on the classroom level could be that it will be easy and flexible to manage, maintain and update as I have direct access to it daily during my teaching. It is also adequate for students to participate in its management as I am also in direct contact and communication with the students daily, according to the UNAM Policy on Learning and Teaching (2019), which encourages the learning-centred approach and entails the active involvement, dialogue and participation of students in the learning process, such as the practical approaches and strategies that include interactive, reflective, cooperative, experiential, creative, constructive and conceptual learning. Hence, implementing the strategies at the classroom level ensures the adoption and adherence to the UNAM teaching and learning policy, which is also used with the two blended online learning policies (UNAM ODeL Policy and Procedures, 2020; UNAM OER Policy, 2020).

Based on the UNAM Assessment and Awards Policy, Procedures and Regulations (2021), whose objectives are to provide procedures, guidelines and regulations for assessment and awards, a framework for assessment activities, a framework for quality enhancement and quality control in assessment as well as a tool for determining eligibility for formal conferrals of qualification. It is important to involve the students in their assessment-determining strategy as it is being developed for them.

The classroom-level approach of developing blended online learning will ensure students' involvement in deciding how and when their activity will be assessed together with the already in-place curriculum for the course. The course curriculum is fully described in the (UNAM School of Science Prospectus, 2022) even though the prospectus describes the two lecture periods per week (UNAM School of Science Prospectus, 2022). The students are reachable every day as the consultation period is daily, and they can visit the office regularly. It is also through student consultation that the blended online strategy can be discussed and upgraded to improve student learning, assessment, and overall degree programme.

7.5 A Blended Learning Strategy for CHM 3761

The support and role of UNAM in the blended online learning approach is that the university has put supporting and guiding policies in place, as discussed in the previous section. The policies ensure the effective implementation of the learning strategy. The university has also provided online support and systems such as institutional online learning and teaching sharing, such as Moodle and Shared Drive. On these platforms, the students and teachers can interact on a 24-hour basis and in the comfort of their places and time.

UNAM also has an online and face-to-face or physical library where students and teachers can source learning and teaching resources and content for their classes, lessons and examination preparations. The university also has a department and supporting centres, such as research services, grants management, and resource mobilization units. The units support staff members, students, and researchers in writing grant applications and collaborating with other stakeholders for funding and publications.

The developed LMS for Industrial Chemistry I will be incorporated into the blended online strategy. It aims to ensure the effective implementation of the blended online learning strategy. It comprises four units, two of which are taught online and the other two conducted face-to-face. It is also composed of online and face-to-face laboratory experiments. The experiments are designed to fit the provisional availability and accessibility of students, lecturers, chemical reagents and consumables required to conduct laboratory activities effectively.

The designed blended courses also contain online and face-to-face assessment activities. These activities are designed to involve all students' participation and lecturer guidance on both face-to-face and online Moodle platforms. The face-to-face student assessment activities include classroom quizzes, tests, and examinations, while the online ones include homework and assignments. Both learning assessment activities contribute to the student's continuous assessment that enables them to qualify for writing examinations and contribute to their examination marks.

It is, therefore, important to strategically design and place these assessment activities online or face-to-face, depending on which activities are best executed and which blended approaches are best. Also critically important are the profiles of the students based on which students perform better online and face-to-face for improved student performances on the blended approaches. Observations during the course teaching revealed that profiled older students work better face-to-face than millennial students who mostly consider learning online.

The role of students is to ensure the strategy works best for them as all involved agents develop it. How students learn is an important factor that is considered and revealed through and by their profiling results. Students are expected to participate fully and decide how they learn, as the UNAM adopted a student-centred approach. The educators are the implementers of the strategy, and their role involves teaching and assessing the students based on the strategy. Changing and upgrading the strategy to suit all students and their time, upgraded notes, and research also form part of the strategy. While the lecturer is the custodian of the strategy, students are its clients, making both agents work together to ensure its implementation success. The success can be measured through the student learning outcomes or performance *via* assessment activities.

The UNAM, Quality Assurance and Management Policy and Procedures (2021), together with the UNAM, Open, Distance and eLearning (ODeL) Policy and Procedures (2020), ensures that the quality assurance and monitoring of learning and assessment are properly conducted online. The lecturers are also trained through short courses, online Zoom and team meetings by the staff members from the directorates of quality assurance and the Centre for Innovation in Learning and Teaching (CILT), respectively, who are the custodians of these policies. Students also receive training on using the online Moodle platform *via* its operational online manual and videos provided by CILT.

There are other stakeholders involved in the teaching and learning of the students. These stakeholders are concerned about the capacity of student sponsorship, such as loans and bursaries from NASFAF and other funding agencies. These stakeholders demand quality money for their student sponsorship. Accordingly, quality education and subject passing with excellent results for their sponsored students are required. This can be achieved *via* the blended learning strategy by ensuring that all students are accessible to the learning devices, materials, and online platforms, and such factors form part of the strategy.

Other stakeholders, such as the government and external funding agencies such as the European Union and foreign funding governments sponsoring UNAM research projects, also require quality and excellence in the institutional research work. In the case of scientific research, these can be measured through research outputs such as patented research work and publications in high-impact factor journals. The latter factor can also be filtered into the strategy by ensuring that the research services

and the grant management centre of the university work together to ensure that the requirements of the funders and institutional donors are met.

Potential risks involved in the blended learning strategies range from internet and network failure, cyberbullying and security, leaking of confidential information and exposure to potential hacking. Other risks can be students copying and pasting content when writing assignments and homework. For these reasons, the examinations and tests are strategically designed to be written face-to-face for the Industrial Chemistry I course, as these are major contributors to the continuous assessment and examination final mark.

It, therefore, monitors and maintains excellence and quality. As for other risks, it is sometimes impossible to determine when the power cuts off by the municipality if they did not announce it. This could be when the students are writing online examinations and tests for other courses strategically designed as such. The university also has a malware protection site, which services an online learning platform like Moodle. It also routinely performs service checks and maintains a site for all its emails and online learning platforms to mitigate these risks.

7.6 Chapter summary

After attending technology for teaching and learning in higher education courses, the policies of UNAM ODeL Policy and Procedures (2020) and UNAM OER Policy (2020) are currently understood. I learned that many useful sources of online content, such as audio, videos and credible websites, can be posted to the teaching notes as additional learning resources. The learned online content links can be posted on digital social media platforms such as student WhatsApp groups and telegrams.

It has been observed that students tend to learn and concentrate more when using digital resources and platforms to teach blended online strategies. For example, if a teacher posts a working activity in an online Moodle announcement or WhatsApp group chat, Students tend to do the work exercise faster as they can do that in the comfort of their own homes, cars, and libraries for as long as they are on their phones and have access to the internet.

The OER creates an exceptional teaching strategy for students. This is because different students learn differently based on their profiled information. Some students learn best by listening, some by writing, while others by reading. It was also observed that integrating into OER will enable students who learn fast through watching and listening to endure and persevere in their studies, as videos and visual online learning content will rapidly aid them in achieving their learning success.

It will also be helpful for educators to incorporate digital teaching methods in daily teaching and learning methods and approaches. It will greatly improve the teachers' growth in their respective teaching disciplines. Hence, the licensed online content will explore maximally utilising the 5R

(retain, revise, remix, reuse and redistribute) in teaching and learning content. Additionally, full exposure to OER and blended online approaches will allow all students to be included in the learning and teaching processes.

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APPENDICES

Appendix 1: ***Student Questionnaire on Inclusivity in HE***

Institutional Campus Audit
Dear Student,

I wish to invite you to participate in a campus evaluation form and complete the questionnaire. Completing the questionnaire takes about 15 minutes. The study focuses on inclusive education towards multicultural education, social justice, legislation, and improving your learning encounters. The data collected will only be used for the academic assignment on inclusive learning and will not be shared with third parties.

Thank you for your cooperation!

---

* Required

1. Email *

2. I hereby give consent to participate in this campus evaluation survey. *

Mark only one oval.

- Yes
- No

3. What is your gender identity? *

Mark only one oval.

- female
- Male
- I prefer not to say
- Other: _____

4. Is there an increase in the diversity of students from the locality included in the school?

Mark only one oval.

- Yes
- No

5. I hereby give consent to participate in this campus evaluation survey. *

Mark only one oval.

- Yes
- No

6. Do practitioners attempt to avoid conflicts between cultures in the setting and in * the homes of students? *Mark only one oval.*

- Yes
- No

7. Is information accessible to all, irrespective of home language or impairment * (for example, available as necessary in translation, Braille, audiotape, large print)?

Mark only one oval.

- ◯ Yes
- ◯ No

8. Is there an increase in the diversity of students included within the setting from the local area?

Mark only one oval.

- ◯ Yes
- ◯ No

9. Are students categorised as having special needs educational needs * seen as individuals with differing interests, knowledge and skills rather than part of a homogeneous group?

10. Does behaviour support addressing barriers to learning and participation in * school policies and culture as well as practice?

Mark only one oval.

- ◯ Yes
- ◯ No

11. Are all support policies coordinated in a strategy for increasing the capacity of * the school to respond to diversity?

12. How helpful are your colleagues' ideas for improving your practice when promoting culturally responsive practices?

13. What are your areas of strength around inclusive practice? *

15. Does the school have an induction programme that works well for students and their families, whether they join at the start of the school year or some other time? *

Mark only one oval.

- Yes
- No

16. Are the needs of deaf, blind, and partially sighted people and people with physical impairments considered when making the school building and grounds, including classrooms, corridors, toilets, gardens, playgrounds, canteen, and displays accessible?

Mark only one oval.

- Yes
- No

17. Do students avoid racist, sexist, homophobic, disablist, and other forms of discriminatory name-calling? *Mark only one oval.* *

- Yes
- No

18. Are students with impairments as welcome as those without impairments?

Mark only one oval.

- ◯ Yes
- ◯ No

19. Is people's first contact (for example, the reception) with the setting * friendly and welcoming? *Mark only one oval.*

- ◯ Yes
- ◯ No

20. How well does your school help students speak out against discrimination * (e.g. racism, sexism, homophobia or disability)?

21. The Lecturers and admin staff understand and respect cultural differences. *

Mark only one oval per row.

	Strongly Disagree	Disagree	Strongly Agree	Agree
Please answer as honestly as you can.	◯	◯	◯	◯

Appendix 2: ***Management Questionnaire on Inclusivity in HE***

Institutional Campus Audit

Dear Management,

I wish to invite you to participate in a campus evaluation form and complete the questionnaire. Completing the questionnaire takes about 15 minutes. The study focuses on inclusive education, multicultural education, social justice, legislation, and improving your learning encounters. The data collected will only be used for the academic assignment on inclusive learning and will not be shared with third parties.

Thank you for your cooperation!

* Required

1. I hereby give consent to participate in this campus evaluation survey. *

   Mark only one oval.

   - ◯ Yes
   - ◯ No

2. Do practitioners attempt to avoid conflicts between cultures in the setting and the homes of students? * *Mark only one oval.*

   - ◯ Yes
   - ◯ No

3. Is information accessible to all, irrespective of home language or impairment * (for example, available as necessary in translation, Braille, audiotape, large print)?

   Mark only one oval.

Yes

No

4. Is there an increase in the diversity of students included within the setting from the local area?*

Mark only one oval.

Yes

No

5. Are students categorized as having special educational needs, seen as individuals with differing interests, knowledge and skills rather than as part of a homogeneous group? *

6. Does behaviour support to address barriers to learning and participation in school policies, culture, and practice? *

Mark only one oval.

Yes

No

7. Are all support policies coordinated in a strategy for increasing the school's capacity to respond to diversity?

8. How helpful are your colleagues' ideas for improving your practice when promoting culturally responsive practices? *

9. What are your areas of strength around inclusive practice? *

Appendix 3: Case study 19; "*Inquiry-led fieldwork Project*"

Susi and her colleagues taught first-year students a Botany module on plant ecology called 'Ecology and Biomes'. It was offered towards the end of the year. The lecturers agreed that having done some introductory Botany courses earlier in the year, it was time for students to begin appreciating what 'being a botanist' means and how botany knowledge is created. To do this, they needed to have experience being out in the field. The lecturers, thus, arranged a two-day field trip to the coast near Grahamstown for the class. Before leaving the field trip, the lecturers ensured all the logistics were planned and did careful preparatory work with the students. They:

• Discussed the ecological background of the field exercise, the purpose and nature of fieldwork, and why fieldwork is necessary and important for becoming a practising botanist.

• Outlined exactly what was expected of students in the field (particularly concerning data collection).

• Explained and provided written instructions for the field report students would be expected to write for summative assessment purposes.

Students entered the field with their lecturers and demonstrators as guides and supervisors. They were required to work in groups to collect data. Once back on campus, they worked in groups to analyse their collected data. Students were then given explicit guidance on how to write scientific reports and assessment criteria to guide them further. The criteria were discussed with the students to ensure a common understanding of the requirements. After each group completed the data analysis with the help of the lecturers and tutors, each student had to submit a draft report, which was formatively assessed by a peer from another group using the criterion-referenced assessment grid. This exercise aimed to deepen their understanding of what makes scientific writing effective. Using the feedback on the individually authored draft reports, each field group planned and produced a final group report, which the lecturers formally assessed. Each student also assessed the intellectual and practical contributions made by the other group members. To arrive at the mark for each student in the final group, Samantha taught a first-year philosophy course called 'Introduction to Moral Philosophy'. In order to 'do philosophy' and learn how to develop philosophical ways of constructing written argumentation, students must engage in very specific ways with texts. To scaffold students' learning during the course, Samantha designed an assessment task repeated several times over the

semester. This task was worked on in tutorials in small groups. The task required close reading of a specially selected text using a specific philosophical thinking 'tool' or process. During lectures, Samantha carefully modelled the use of this thinking tool, which entails an *identify-explain-evaluate* process. In brief, it requires students to *identify* a proposition made by the author in the text, *explain* the author's argument using extracts from the text as evidence, and *evaluate* the validity of their argument. Students need to use this thinking tool throughout their studies in this discipline, so Samantha believed it was worthwhile and necessary to give them several opportunities to practice using it in their first year of study. Students met weekly during the course in small tutorial groups of 10-12 with a postgraduate tutor. Students were required to read a set text ahead of the tutorial and to prepare a response using the identify-explain-evaluate process. They were asked to identify one proposition or argument made by the author in the text.

To do this, they had to choose three short passages from the text that best captured the author's argument and quote these in their written preparation. They were then asked to explain what the author was claiming in their own words to clarify that they had understood the author's claim. After that, they had to critically evaluate the reasons the author provided to support his or her claims. In lectures and tutorial handouts, Samantha explained clearly what critical evaluation means and gave students practical examples and guidance on critically evaluating philosophical texts. These tutorial tasks were largely formative. The tutors assigned a nominal mark for the tutorial preparation tasks to encourage students to do the preparation work. The success of the tutorials depended on students coming to tutorials prepared to discuss their responses with a tutor and their peers and be guided towards clearer and more appropriate responses if they had misunderstood or made errors. These tutorial tasks prepared students for the more formal summative written assignments and exams.

Appendix 4: Case study 20, *"Encouraging deeper reading and comprehension of key texts"*

Samantha taught a first-year Philosophy course called 'Introduction to Moral Philosophy'. In order to 'do philosophy' and learn how to develop philosophical ways of constructing written argumentation, students must engage in very specific ways with texts. To scaffold students' learning during the course, Samantha designed an assessment task repeated several times over the semester. This task was worked on in tutorials and small groups. The task required close reading of a specially selected text using a specific philosophical thinking 'tool' or process. During lectures, Samantha carefully modelled the use of this thinking tool, which entails an *identify-explain-evaluate* process.

In brief, it requires students to *identify* a proposition made by the author in the text, *explain* the author's argument using extracts from the text as evidence, and *evaluate* the validity of their argument. Students need to use this thinking tool throughout their studies in this discipline, so Samantha believed it was worthwhile and necessary to give them several opportunities to practice using it in their first year of study. Students met weekly during the course in small tutorial groups of 10-12 with a postgraduate tutor.

Students were required to read a set text ahead of the tutorial and to prepare a response using the identify-explain-evaluate process. They were asked to identify one proposition or argument made by the author in the text. To do this, they had to choose three short passages from the text that best captured the author's argument and quote these in their written preparation. They were then asked to explain what the author was claiming in their own words to clarify that they had understood the author's claim. After that, they had to critically evaluate the reasons the author provided to support his or her claims. In lectures and tutorial handouts, Samantha explained clearly what critical evaluation means and gave students practical examples and guidance on critically evaluating philosophical texts. These tutorial tasks were largely formative. The tutors assigned a nominal mark for the tutorial preparation tasks to encourage students to do the preparation work. The success of the tutorials depended on students coming to tutorials prepared to discuss their responses with a tutor and their peers and be guided towards clearer and more appropriate responses if they had misunderstood or made errors. These tutorial tasks prepared students for the more formal summative written assignments and exams.

Appendix 5: ***Abstract of article paper presented at COETAL international conference and published as an article in Journal of Modern Education Review***

A SOCIAL REALIST PANORAMA ON QUALITY ASSURANCE: A CASE OF THE UNIVERSITY OF NAMIBIA

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ABSTRACT

Quality is an elastic aspect that can be defined differently depending on the scenario used. This presentation employs a social realist outlook on quality assurance in teaching and learning at the University of Namibia. These objectives guide it: 1) establishing the structural, cultural and agential mechanism that guides teaching and learning quality assurance. 2) to define quality within the University of Namibia using Harvey and Green's analysis. The paper used social realist theory as an analytical tool to establish the enabling or constraining mechanisms of the parts and people that interact in an institution of higher learning. It was found that there are structures, cultures, and agents in the university that enhance the quality of teaching and learning. It is further revealed that quality within the university fits into multiple definitions. It is concluded that in Namibia, the delivery of quality higher education is determined by the national quality assurance agencies, while the process of ensuring its implementation success in institutions starts and entirely depends on the institutions of higher learning. The internal quality assurance unit, centre, and policies are established to facilitate the quality assurance processes of institutional and external agencies.

Keywords: Quality Assurance, University of Namibia, Teaching and Learning, Culture, Structure, Agency

Appendix 6: ***Language and Editing Technical Certificate***

Centre for Development, Research and Evaluation (CeDRE) International Africa

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This **Certificate of Language and Technical Editing** is given to ***Alina Uusiku*** *on her Postgraduate Diploma in Higher Education dissertation entitled "Understanding scholarship, pedagogies and paradigms associated with effective teaching of chemistry at the University of Namibia"* for submission to the University of Namibia.

The language and technical editing were conducted in line with the requirements of the University of Namibia which specify that a student's dissertation/thesis should be subjected to an independent academic editorial scrutiny. Thus, the key aspects that were edited were as follows:

- ***Academic writing***
- ***Sentence construction***
- ***Grammar, spellings, and mechanics***
- ***Captions of tables and figures***
- ***Numbering of sections***
- ***Paragraphing***
- ***Font style, line spacing and font size***

Signed:

Dr. Pindai M. Sithole, PhD