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Novice teachers' practices of grade 10 Life Sciences CAPS assessment in two Gauteng township high schools

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Novice teachers' practices of grade 10 Life Sciences CAPS assessment in two Gauteng township high schools.

Masters Research Report

This research report is submitted in partial fulfilment of the requirements for the degree of Master of Education in Curriculum Studies.

At the University of the Witwatersrand, in the faculty of Humanities, School of Education

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Supervised by: Dr Emure Kadenge

March 2025

Declaration

I, Ngoakoana Masowa with student number 1886441, hereby declare that the work contained in my research report is my own unaided work under the supervision of Dr E. Kadenge. It is being submitted for the Master of Education degree at the University of the Witwatersrand, Johannesburg, School of Education. It has never been previously submitted to any university for the fulfilment of any degree or examination.

N Masowa at Johannesburg, Parktown 17 March 2025

Signature Date

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Abstract

This study employs the qualitative method to investigate the CAPS assessment practices of novice teachers in two township high schools. It is centered around novice teachers' understanding and practices of quality assessment in grade 10 Life Sciences. By means of semi-structured interviews of four novice teachers and classroom observations, this study inquiries into how novice teachers engage and implement assessment practices considering the challenges they experience particularly with CAPS. The structure, agency and culture theoretical framework by Archer provided an understanding to access the findings of this study which, indicate that novice teachers adopt and conform to traditional methods of assessment within the school, they experience limited involvement in assessment planning and design which is controlled by the Department of Education (DoE) which hinders them the opportunity to develop their assessment literacy. However, novice teachers use formative assessments to keep track of learners' understanding of Life Sciences content knowledge and identify where there is a need for teacher intervention.

The findings further reveal that novice teachers' assessment practices are shaped and influenced by the existing school culture and pressures from external institutions such as the DoE which limits agency and influence their decision making in assessment practices. Consequently, this study recognizes a gap in professional development expressed by novice teachers, whereby they emphasize a need for workshops focusing on their assessment literacy development and support from Head of Departments (HOD) regarding the improvement of assessment practices. In this study, special attention is drawn to the significance of assessments that are relevant to the learners' everyday lives, experiences and societal needs, with the intention of providing them with scientific knowledge and skills that are essential to their participation in society.

Key words: Novice teachers, CAPS, assessment, Grade 10 Life Science

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Abbreviations and Acronyms

ATP- Annual Teaching Plan

CAPS- Curriculum and Assessment Policy Statement

DOE- Department of Education

FET: Further Education and Training

HOD- Head of Department

NCS- National Curriculum Statement

OBE- Outcome Based Education

SBA- School Based Assessment

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Figure 1: The interconnected model of Structure, Agency and Culture adopted from Archer (2005).

Chapter 1: Introduction

1.1. Background

The Curriculum and Assessment Policy Statement (CAPS) outlines the curriculum and assessment protocols for South African schools for grade R until grade 12. It was created to enhance the implementation of the National Curriculum Statement (NCS). Changes were made across all subjects, replacing previous “subject declarations, learning plan guidelines, and assessment instructions” (DBE, 2011, p.3). A key goal of the South African curriculum is to ensure that learners acquire the knowledge, skills, and values necessary for personal fulfillment and active citizenship in a democratic society (DBE, 2011, p.4). This objective should be met regardless of the learners' socio-economic status, race, gender, physical abilities, or intellectual capacities.

The introduction of CAPS was aimed to bring coherence, structure, and standardization to South African schooling by offering clear weekly pacing, assessment guidelines, and learning outcomes (Moodley, 2013). As a replacement for the Outcomes-Based Education (OBE) approach, CAPS was designed to streamline curriculum delivery and increase accountability in public education. While many educators welcomed the improved clarity and structure, empirical studies have consistently highlighted substantial implementation challenges. These include excessive workload, resource shortages, inadequate teacher training, and insufficient classroom support, particularly in under-resourced schools (Mbatha, 2016; Matsepe & Maluleke, 2019). Similarly, Chakavarika (2024) found that in the Tshwane South District of Gauteng, Grade 9 mathematics teachers faced systemic issues including misalignment between the curriculum demands and classroom realities, particularly regarding learner readiness and teacher capacity.

Assessment practices under CAPS, similarly, were of concern. Although the policy advocates for a balanced use of formative and summative assessments, studies show that teachers often prioritize examinations due to systemic pressure and lack of assessment literacy (Kekana, 2024; Chakavarika, 2024). In Mpumalanga, a study by Kekana (2024) identified significant gaps in the use of formative assessment in mathematics classrooms. Teachers rarely adjusted instruction to respond learner needs, and the moderation of assessments was found to be inconsistent, contributing to surface-

level learning. This aligns with the critique by Kekana (2024) that CAPS promotes teaching to test due to its strong emphasis on formal, high-stakes summative assessments.

During the FET phase, one of the aims of Life Sciences is to cultivate a comprehension of the role of science in society, mirroring the third goal of Life Sciences assessment, which emphasizes learners' understanding of the application of Life Sciences in their daily lives for personal benefit (DBE, 2011). It is vital that students apply classroom knowledge to real-life situations, fostering societal development. Science should be evident in learners' societal contributions so that everyone can reap its benefits.

Novice teachers acquire both training and content knowledge during their education courses, learning to use assessment as a means to engage students in the active role of citizenship in a democratic society, which CAPS promotes through the essential knowledge, skills, and values conveyed in its activities (DBE, 2011). Halinen et al. (2014) highlight that Life Sciences teachers often reuse summative assessment questions from previous exams, believing that uniformity in assessment is fair and that traditional questions will best prepare students. However, this approach is problematic, as society evolves continually; thus, summative assessment questions should adapt to remain relevant, enabling learners to connect Life Sciences knowledge to their everyday experiences and utilize it effectively. Many Life Science teachers tend to simplify assessments, incorporating formats like true/false questions, which eases the marking process but reduces assessment to mere grading (Halinen et al., 2014). Vandeyer and Killen (2003) also recognized this challenge, noting that assessment's potential as a grading tool can be limiting. Consequently, Carless (2015) suggested that teachers should implement appropriate assessment strategies aligned with science content knowledge to facilitate effective learning, rather than conducting assessments solely for certification and grading. Therefore, it is crucial to investigate novice teachers' assessment practices and identify ways to support them in enhancing these practices.

Township schools in South Africa remain deeply affected by historical inequalities and systemic resource constraints. Despite policy reforms aimed to address the apartheid era inequalities, township schools continue to experience significant challenges related to

infrastructure, teacher quality and learner outcomes (Spaull, 2013; Taylor, 2005). These schools primarily serve learners from low socio-economic backgrounds with limited access to educational resources, which directly affects teaching and assessment practices (Fleisch, 2008; Magagula, 2015; Matsepe & Malulekaka, 2019; Mbatha, 2016, Schlebusch et al., 2023). Understanding the context of township schooling,is therefore essential in examining novice teachers' assessment practices, particularly in Life Sciences as the performance of learners in this subject affects their progression and future opportunities related to the careers they want to pursue.

1.2. Problem statement

All teachers, including novice ones, are expected to have a strong understanding of assessment, particularly regarding how to conduct assessments and their purposes in relation to the knowledge, skills, and values that learners are meant to acquire. This expectation means that novice teachers should be well-versed in selecting the appropriate assessment styles for evaluating specific knowledge, skills, and values, as well as understanding the expected outcomes of those assessments. A study by Kanjee and Mthembu (2015) on the assessment literacy of foundation phase teachers in South Africa revealed alarmingly low levels of assessment literacy, with 50% of the teachers performing at only a basic level. This deficiency includes both summative and formative assessment literacy. It is essential to investigate whether teachers conducting the CAPS assessment still face challenges related to assessment literacy, so that awareness can be raised and potential solutions can be identified.

Vandeyer and Killen (2003) conducted a qualitative study in South Africa to investigate whether Outcome-Based Education (OBE) and Curriculum 2005 aligned with the principles of high-quality assessment. They argued that during the implementation of OBE and Curriculum 2005, teachers failed to prioritize essential assessment practices and demonstrated limited understanding of these principles. Consequently, the assessments they designed were often superficial and did not effectively support learning.

Mguni (2018), in a qualitative study conducted in South Africa on the curriculum ideology recommended by novice teachers for Life Sciences, states that the majority of novice teachers emphasized their support for a student-centered ideology in relation to CAPS

assessment. Novice teachers indicated that assessment should continually identify the needs and growth of learners, promote suitable learning environments that benefit students, and avoid comparisons among them (Mguni, 2018). These findings underscore that the issue of teachers lacking knowledge about fundamental assessment practices has persisted and requires further research within CAPS, so that strategies to address these challenges can be developed, resulting in effective assessment implementation.

Brookhart (2018) argues that historically in the USA, teachers' essential responsibility was grading learners, indicating that assessment was primarily viewed as a tool for measurement rather than learning. This suggests a persistent challenge with assessment literacy and understanding of assessment practices, particularly during early teaching years. Therefore, it remains important to investigate whether teachers implementing CAPS assessment are utilizing it as a learning tool, in order to address and resolve these challenges. Halinen et al. (2014) in Finland highlight that even Life Sciences teachers in higher education view assessment as content-centered, designed to determine if learners can regurgitate the teacher's words. This is problematic because learners are expected to memorize and reproduce scientific facts rather than apply knowledge in assessments. This issue was similarly pointed out by Ryder (2002), who argued that science education should encourage interaction with the outside world and foster citizenship.

Novice teachers adopt the teaching culture of the schools where they work while also questioning traditional assessment practices, yet they do not utilize their agency to foster change and development in assessment (Kim & Lee, 2021). This is problematic as it reveals that novice teachers' development of assessment literacy is lacking because they tend to adopt rather than challenge traditional assessment practices. Consequently, they are unable to implement assessments that learners can connect to their current contexts, hindering students from applying scientific knowledge in their everyday lives, especially in developing communities. Thus, the challenge novice teachers face regarding assessment literacy and their adaptation to traditional assessment practices highlights the urgent need to investigate these issues in our current context.

CAPS provides the official framework of teaching and assessment, including the cognitive demands, assessment criteria and standards, placing emphasis on alignment between

teaching, learning and assessment practices. However, research highlights that novice teachers often struggle with implementing CAPS assessment consistently and effectively (Khuzwayo & Booi, 2021; Nxumalo & Mkhize, 2019). These challenges are particularly evident in township schools, where there is lack of resources, overcrowded classrooms and limited professional support which creates further complications in assessment practices and implementation (Chisholm, 2005; Magagula, 2015, Matsepe & Maluleka, 2019; Mbatha, 2016; Schlebusch et al., 2023).

The problem addressed in this study is that while assessment is a critical component of effective teaching and learning, novice teachers in township schools face significant barriers in aligning their assessment practices with CAPS requirements. These challenges manifest in limited familiarity with assessment principles, inadequate preparation during their teacher training course and insufficient induction and mentoring support (Swart, 2013; Mhlaba & Rankhumise, 2022). Consequently, assessment practices often are unable to support meaningful learning or provide reliable evidence of learner achievement. This challenge has important implications for the quality of education in township schools, as well as for broader equity goals in the South African education system.

1.3. Research aim and objectives

The first fundamental aim of this study is to investigate novice teachers' practices of grade 10 Life Sciences CAPS assessment in two Gauteng township high schools. In order to capture the assessment practices of novice teachers, I firstly engaged with the novice teachers understanding and knowledge of the principles and purposes of CAPS assessment. Secondly, I found out about the novice teachers' experiences of implementing CAPS assessment. Followed by, identifying how novice teachers assess grade 10 Life Sciences learners. Lastly, this study explored the kind of support novice teachers' need to improve assessment practices of grade 10 Life Sciences.

1.4. Research questions

The principal research question for this study is: How do novice teachers in township high schools implement CAPS assessment in grade 10 Life Sciences classrooms, and what factors influence their practices?

With the purpose of investigating the principal research question, the following sub-questions guided the study:

1. What understandings of assessment principles do novice Life Sciences teachers hold?
2. How do novice teachers apply CAPS assessment guidelines in practice?
3. What challenges and constraints shape assessment practices of novice teachers in township high schools?
4. What forms of support do novice teachers require to improve their assessment practices?

1.5. Rationale

During my teacher training course, I learned that the fundamental purpose of assessment is to promote learning and enable learners to apply their knowledge in everyday life. However, I still struggle to understand how assessment does not equate to measuring a learner's intelligence. In many instances, I've observed that assessment fuels competition among students. During my time as a high school student, teachers framed assessment as a competition, praising those who excelled while shaming those who did not. There is also pressure from the department for students to meet certain performance levels; often, these expectations are unrealistic, given the types of assessments used, the knowledge content, and the pace of learning in classrooms. Literature (Brookhart, 2018; McMillan, 2008; Vandeyer & Killen, 2003) indicates that some teachers lack knowledge about the principles of quality assessment, resulting in meaningless assessments that fall short to foster learning. However, these studies are quantitative and do not specifically address Life Sciences. Thus, there is a need for a qualitative study focusing on Life Sciences assessment to better understand how novice teachers conduct assessments in this subject and how it impacts learning in Life Sciences classrooms. This also provides novice teachers a platform to share their experiences, which is crucial for raising awareness about their assessment practices and the support they require.

Currently, I am a novice teacher in Life Sciences, and I have engaged in discussions and debates with other novice Life Sciences teachers about their assessment methods. In these conversations, I have observed that assessment is often constrained to merely

measuring students' capabilities. This concern was also highlighted by Vandeyer and Killen (2003), who noted that teachers have a limited understanding of assessment and often reduce it to a grading tool.

Most literature (Kanjee & Mthembu, 2015; Vandeyer & Killen, 2003; Halinen et al., 2014) emphasizes experienced teachers, revealing that they encounter challenges with assessment literacy, lacking knowledge about assessment practices, the purposes of assessment, and using assessments to promote learning. It is crucial for students to view science beyond mere facts. Hence, this study is vital for understanding novice teachers' perspectives and practices regarding assessment, aiming to explore ways to support them in conducting meaningful assessments in South African township schools.

Beets and Louw (2011) contend that disadvantaged social backgrounds lead to inequitable assessment practices. Disadvantaged backgrounds refer to contexts that have faced marginalization and have been denied access to essential resources. South African township high schools face challenges such as a lack of resources and are still recovering from the legacy of apartheid (Beets & Louw, 2011). This underscores the difficulties surrounding the quality of education in township high schools, which adversely affects assessment delivery. However, much of the literature reviewed lacks contextual specificity, leading to generalized findings. This study aims to highlight the experiences of novice teachers in a township setting without generalizing them.

Quantitative studies (Beets & Louw, 2011; Lubisi & Murphy, 2002) reveal challenges related to assessment in South African schools, influenced by assessment policies. These issues stem from the ideologies and principles of the apartheid system, which still inform current assessment policies, hindering many students' opportunities to learn, including within assessment practices. Therefore, it is crucial to conduct a qualitative study involving South African novice teachers in township schools regarding their implementation of CAPS assessments.

1.6. Outline of chapters

This study is organized into five chapters. In chapter one, I introduce the study by providing a background for the study, including the motive and general outlook of the study.

Chapter two reviews literature relevant to this study. The literature informs us on types of assessment, challenges novice teachers encounter with pedagogy and assessment, Life Sciences assessment and the dynamics of assessment in South African township high schools. At the conclusion of the literature review, there is a theoretical framework that was applied to analyze and interpret the findings of this study.

Chapter three outlines the methodological grounds of this study as a qualitative study and a detailed explanation of the instruments used to collect data. It also informs us of the steps taken to fulfil the study, organize and analyze data.

Chapter four provides a presentation, analysis and interpretation of the data that was collected. This discussion was guided by the theoretical framework and literature that was reviewed in chapter two.

Chapter five concludes the study by revisiting the questions and considering the research findings and engaging with the analysis process with the guidance of the literature. It also provides recommendations for future research.

Chapter 2: Literature review

2. Introduction

The following literature review engages and presents an understanding of assessment, novice teachers and assessment, Life Sciences assessment, assessment in township schools and the theoretical framework of this study.

2.1. Assessment

Assessment is a process of collecting valid and reliable information using various approaches that are appropriate to the context to find out the learners' level of performance compared with what they are expected to acquire (Reddy et al., 2022). The primary types of learner assessment are summative assessment (assessment of learning), formative assessment (assessment for learning), and self-assessment and self-regulation (assessment as learning) (Reddy et al., 2022). However, Carless (2015) presents argument of learning orientated assessment, which takes the holistic approach of assessment resulting in learning. Instead of being restricted to the primary types of learner assessment by Reddy et al. (2022), Carless (2015) argues that quality learning orientated assessment is made up of constructive alignment, learner engagement and metacognition, ensuring that there is balance between oral and written tasks, individual and group assessments. This balance allows learning mobilization in their own learning, as different learners' learning needs are catered for.

Reddy et a. (2022) further highlights some of the purposes of assessment which include interpreting the performance of learners, allowing the teacher to provide reasons behind the learners' development and to determine if teaching was successful. Teachers use assessment strategies that are relevant to the learners' context and relate assessment with the activities that take place outside school (Reddy et al., 2022). Similarly, Carless (2015) makes an emphasis that quality learning orientated assignment design ensures that there are links between the learner and their everyday lives, this is achieved through the use of various assessment methods and perpetuate critical thinking and application in their contexts.

Assessment is a consistent and organized process of identifying, gathering, and interpreting information based on learners' performance by utilizing different methods of evaluation (DBE, 2011). It comprises four steps: gathering evidence of achievement; evaluating that evidence; recording the results; and using the information to understand how to support learners' development and improve the teaching and learning process (DBE, 2011). CAPS classifies assessment into informal and formal categories, with informal assessment representing formative assessment and formal assessment representing summative assessment.

The primary purpose of formative assessment in learning is to continuously gather information on learners' achievements that can be utilized for enhancing their learning. It is employed daily to monitor learners' progress through observations, discussions, practical demonstrations, interactions between learners and teachers, and informal classroom exchanges (DBE, 2011). Teachers should use it to provide feedback to learners and guide them in lesson planning; it should be integrated into learning activities, but recording it is not necessary. Self and peer assessments engage learners in their own learning, allowing them to reflect on their performance. The results of formative assessments are not recorded and are not used for promotion purposes. However, they facilitate access to knowledge and skills and serve as stepping stones toward summative assessments (DBE, 2011). It would be useful to discuss the merits and demerits of formative assessment.

Summative assessment primarily serves the purpose of measuring student progression and certification. In this process, teachers evaluate and record students' results. To ensure that standards are maintained, summative assessments undergo moderation. These assessments systematically evaluate how learners are advancing within a specific grade and subject area. Examples of summative assessments include exams, practical activities, projects, oral presentations, demonstrations, and performances. These are conducted as part of the formal assessment program over the course of a year in a particular grade and subject (DBE, 2011).

Learners are required to play an active role in their learning and assessment, and this can be done through self-assessment and self-regulation, whereby learners are not

considered as passive subjects (Reddy et al., 2022). Self-assessment and self-regulation are a reaction to some of the limitations of traditional school assessment, it assists learners with reflecting and monitoring their progress as a guideline for future learning goals (Reddy et al., 2022). This type of assessment is initiated, judged, and sustained by learners whereby they track their progress and growth, as Carless (2015) argued that various assessment methods influence how learners interact with assessment, teachers should be conscious of the assessment methods they apply in classrooms. Taylor (2009) highlights examinations are more prioritized as a form of assessment. Therefore, these examinations limit the learners' ability to actively engage in their learning and assessment as their goal will be performing good in their examinations and progressing to the next grade, instead of reflecting and monitoring their progress for future purposes. Villarroel et al. (2018) argues that evaluation judgement in authentic assessment encourages learners to create their own criteria and standards which they regard as good performance so that they can judge themselves and regulate their learning.

Kanjee and Mthembu (2015) conducted a study on teachers' assessment literacy and discovered that teachers have low levels of understanding in this area. Specifically, teachers lacked clarity on the purposes of assessment, the practices of assessments, and how to identify learner needs. These findings are also evident in the study conducted by Brookhart (2018) in the USA, where both historical and recent literature showed that teachers prioritized assessment as a measurement tool rather than for promoting learning. Therefore, it is crucial to investigate novice teachers' practices with CAPS assessment.

Life Sciences is a subject with unique assessment requirements because it combines factual content knowledge with scientific inquiry, problem-solving and critical thinking. CAPS outlines a balance of lower order and higher order cognitive levels in Life Sciences assessments, which require teachers to design tasks that test recall, application and evaluation skills (DBE, 2011; DBE, 2021). However, research indicates that in practice, assessments often prioritize rote memorization rather than scientific reasoning (Ramnarain & Padayachee, 2015; Nxumalo & Mkhize, 2019).

Textbook analysis reveals that there is a misalignment between CAPS objectives and classroom materials. Ramnarain and Padayachee (2015) found that Life Sciences textbooks often present content knowledge in ways that fail to foster critical thinking, thereby making it difficult for teachers to design assessments that extend beyond learners' everyday experiences. Similarly, Khuzwayo and Booi (2021) argue that novice teachers often receive insufficient training in designing assessments that align with CAPS and the transformed goals of science education. These findings suggest that novice teachers may not only lack assessment literacy, but also face systemic challenges in using curriculum resources to design meaningful assessments.

2.2. Novice teachers challenges with pedagogy and assessment.

While novice teachers are commonly defined by the number of years they have spent in the classroom typically less than three years, which is a narrow definition and it overlooks the complex and multifaceted nature of early-career teaching. Contemporary scholarship emphasizes that novice teacher development is not solely a matter of time but involves evolving professional identities, emotional resilience, reflective capacities, and the ability to navigate contextual realities (Yuan & Lee, 2015). For instance, research by Xu et al. (2022) shows that novice teachers often enter the profession with idealistic imagined identities shaped during teacher training course, which are later challenged by the practical demands of real classrooms. This results in a process of identity reconstruction, where teachers move from theoretical aspirations to practiced identities shaped by institutional norms, learner dynamics, and school culture.

Similarly, Simon (2024) outlines a developmental trajectory in which novice teachers progress through phases of survival, technical mastery, and eventually a learner-centered focus, emphasizing that pedagogical growth is not linear and varies depending on school support, workload, and reflective practice. Emotional self-efficacy is another critical dimension, novice teachers often begin with high levels of anxiety and uncertainty, particularly in under resourced contexts, but gradually develop emotional regulation and professional confidence as they engage with learners and colleagues (Chen et al., 2023). Reflective practice plays a key role in this transformation, whereby teachers reflect critically on their assumptions, student feedback, peer input, and theoretical knowledge.

They begin to adapt their practices in ways that foster professional growth and context-appropriate teaching strategies (Brookfield, 2017). Furthermore, school environment and socialization significantly influence novice teachers' development. Supportive mentoring relationships, collaborative staff cultures, and induction programs have been shown to enhance professional identity formation and reduce early-career demotivation (Chen et al., 2023).

The challenge of novice teachers feeling pressured to conform to the traditions of their institutions or environments also extends to assessment approaches. Kim and Lee (2021) conducted an autoethnography titled "Autoethnography of a Novice Teacher's Assessment Literacy in Elementary Physical Education" in Korea, focusing on the cultural, micropolitical, and sociological factors that have influenced their attainment of assessment literacy (Kim & Lee, 2021, p. 1). This study revealed that the novice teacher evolved from being assessment illiterate to assessment literate, only to become assessment aliterate; this progression indicates that novice teachers adopt the school's teaching culture to foster a sense of belonging and safety. At the same time, novice teachers critically evaluate traditional assessments while implementing them, suggesting that they sometimes engage in assessment practices that they do not personally support. They emphasized their sociological experiences of assessment, noting that elementary physical assessment practices are not objective but are shaped by school culture, colleague influences, and the professionalism within Physical Education at their institution (Kim & Lee, 2021).

These studies show that novice teachers' sociological (institutional/environmental) and individual (personal beliefs) experiences in assessment and pedagogy deserve academic attention. This focus can illuminate their understanding of assessment purposes and the influences on their assessment practices. Consequently, novice teachers' assessment literacy and pedagogy can be enhanced through their training courses and teaching practices. Most prior studies in the South African context, including those by Kanjee and Mthembu (2015) and Vandeyer and Killen (2003), concentrated on experienced teachers and did not specifically engage with novice teachers.

Kim and Lee's (2021) study is an autoethnography representing a single voice, highlighting the need for more diverse perspectives and experiences from novice teachers. Their study featured a larger sample size, allowing multiple novice teachers to share their experiences regarding CAPS assessment. Additionally, it explored the cultural and social influences on their understanding and practices of assessment.

2.3. Life Sciences assessment

The cognitive demands of assessment should be appropriate for the age and developmental level of learners in a specific grade. Life Sciences assessments should accommodate various cognitive levels and abilities of the learners. The process of designing assessments must be conducted carefully to ensure that the knowledge and skills are accessible to learners, enabling them to apply them in their everyday lives. This approach will transform assessment into a learning experience or tool for that grade (CAPS, 2011). Such assessments will equip learners with the knowledge, skills, and values necessary for personal fulfillment and meaningful participation in society as citizens of South Africa, a democratic country. Mguni (2018) conducted a qualitative study in South Africa on the curriculum ideology recommended by novice teachers for Life Sciences. He argues that the majority of novice teachers emphasized their support for a student-centered ideology regarding assessment. These novice teachers pointed out that assessment should continue to identify the needs and growth of learners and promote suitable learning environments where learners benefit without being compared to one another (Mguni, 2018). The findings of this study are similar to the study conducted by Vandeyer and Killen (2003), which highlights that teachers still have the same experiences on assessment from the past.

Vandeyer and Killen (2003) highlight that high-quality assessment principles include reliability, fairness, validity, discrimination, meaningfulness, and a contribution to learning. These principles remained unchanged during curriculum reforms, including OBE, Curriculum 2005, and the Revised National Curriculum Statement. McMillan (2008, p.1) also emphasized validity and fairness as the “fundamental assessment principles for teachers and school administrators”. Vandeyer and Killen (2003) found that many teachers struggled to understand and apply these principles effectively in their

assessments. Therefore, they argue that those advocating for curriculum changes should ensure that the principles backing these reforms are clearly communicated and detailed for teachers.

The CAPS document does not explicitly outline the principles of assessment. Instead, it presents overarching CAPS principles like social transformation, active and critical learning, high knowledge and skills, progression, human rights, inclusivity, environmental and social justice, appreciation of indigenous knowledge systems, credibility, quality, and efficiency (DBE, 2011). Additionally, science principles are conveyed to learners through content knowledge. As noted by Vandeyer and Killen (2003), since teachers often lack understanding and effective application of these principles, it is crucial to investigate how novice teachers grasp assessment principles and implement Life Sciences assessments, particularly since these guidelines are not well articulated in the CAPS document.

2.4. Assessment in township schools

Historical inequalities from apartheid education continue to shape township schooling, where systemic underfunding, overcrowded classrooms and shortages of teachers persist (Chisholm, 2005; Magagula, 2015; Schlebusch et al., 2023). Spaull (2013) and Matsepe and Maluleka (2019) highlight that learners in township schools consistently achieve weaker outcomes than their counterparts in better-resourced schools, largely due to poverty related limitations and poor assessment practices. Similarly, Fleisch (2008) and Chakavarika (2024) demonstrate that ineffective teacher training courses and weak school leadership perpetuates this challenge, resulting in novice teachers being vulnerable.

Assessment in township schools is therefore shaped by both structural and cultural constraints. Teachers often lack access to high quality assessment materials, experience limited professional support and work in contexts where learners' socio-economic struggles interfere with academic performance. Within Archer's (2005) SAC framework, these conditions represent structural constraints that novice teachers should navigate with limited agency. The intersection of limited resources, policy demands, and inadequate institutional support results in assessment practices that often fall short of the expectations outlined in CAPS.

Lubisi and Murphy (2002) also conducted a quantitative study on assessment in South African schools, highlighting that historical factors significantly influence current practices in assessment. They argue that the existing policy framework promotes broad and progressive assessments instead of focusing on summative evaluations. Furthermore, Beets and Louw (2011) emphasize that many South African learners still lack access to resources that could aid their development and help them achieve their full potential. This issue primarily arises from their disadvantaged social backgrounds, limited educational opportunities, and inequitable assessment practices.

Edwards (2013) identifies five focus areas for quality assessment by science teachers: “teaching, students, evidence of learning, future decision-making, and impact” (Edwards, 2013, p. 222). These focus areas can inform teachers about their assessment practices in the broader context of the learning environment, allowing them to identify and implement assessment practices that are relevant to their circumstances and can encourage learners to think beyond their context. In this way, the learners’ sociocultural positions are acknowledged and valued in assessment. The emphasis on students underscores the need for teachers to be aware of learners' individual needs (Edwards, 2013). This concurs with Villarroel et al. (2018) who argue that authentic assessment can form inclusion of real context which creates explanations and frame the challenges that need to be solved through assessment. At the same time teachers are responsible for making certain that assessments consider the learners’ everyday lives and their future professional lives.

Science teachers in South African township schools can apply Edwards’ (2013) five focus areas effectively. They must understand their specific contexts and design authentic assessments tailored for their learners. By recognizing the unique needs of students in these schools, teachers can base their future assessment decisions on observed learning outcomes. It's crucial for them to focus on how assessments impact learners, evaluate whether these assessments foster citizenship, and ensure students acquire the essential knowledge, skills, and values necessary for personal fulfillment and meaningful participation in South Africa's democracy (DBE, 2011, p.4). Being attuned to students’

needs when planning and implementing assessments will help realize these objectives, regardless of their socio-economic background, race, gender, or abilities.

Ryder (2000) argues that citizenship education can be reinforced through school science by employing strategies that highlight science epistemology. One effective strategy involves using local science contexts relevant to current societal interests, which encourages teaching methods that address local challenges (Ryder, 2000, p.651-651). This aligns with some concepts from Edwards' (2013) focus areas, promoting assessments that relate to learners' everyday experiences, enabling them to utilize scientific knowledge to address community issues. Implementing these ideas in township schools is vital to determining if teachers can leverage CAPS assessments to support citizenship.

Zembylas (2005) suggests that science education should empower both teachers and learners to reinterpret their learning experiences within an environment that promotes "dialogue, exploration, innovation, and difference" (Zembylas, 2005, p.720). This would liberate science education from Western-centric ideologies, centering learning activities on students' diversities, interests, and social-political contexts. Consequently, learners will be empowered to engage in science activities, fostering "educational equality and cultural empowerment" among different groups (Zembylas, 2005, p.720). Moreover, authentically designed assessments afford learners the opportunity to employ higher-order thinking skills, applying their knowledge to drive change and innovation in their communities (Villarroel et al., 2018).

Zembylas (2005) confirms that science education can promote citizenship and social justice when teachers and policymakers ensure the curriculum reflects student diversity. This is supported by earlier studies (Edwards, 2013; Ryder, 2000; Villarroel et al., 2018) emphasizing teachers' and policymakers' roles in developing a curriculum that fosters responsible citizenship among students. It is vital to assess how effectively South African teachers in township schools can meet these goals when implementing CAPS assessments.

2.5. Theoretical framework

Structure, Agency, and Culture (SAC) theory proposed by Archer (2005) was developed to assist with understanding the relationship between social structure and individual agency and how they interact with each other to shape human behavior. It is based on the philosophical view of determinism whereby social structures and systems influence and pressures individuals. These social structures shape and limit individuals' options which affects their decision making (Archer, 2005). Individuals are viewed as passive products of social structures; however, Archer (2005) argues that individuals have agency, they are autonomous actors who have full control on their actions, and they can use their agency to respond to these influences and pressures exerted by social structures and systems (Archer, 2005). Individuals have internal conversations within themselves which are part of their agency, and they can put them into action by responding to the external forces of the social structures and systems (Archer, 2005).

According to Archer (2005), the structure is made up of external social forces, institutions, norms, and systems that shape and limit behavior of individuals. Educational systems, economic systems, cultural norms, educational institutions, and family dynamics are some of the examples of social structures. At the same time, these structures can grant individuals opportunities and limitations to exercise their agency (Archer, 2005). Agency is the capacity of an individual to act intentionally, make choices and exercise their free will in social structures (Archer, 2005). It allows individuals to take part in activities within their environment and challenge the structure with the intention of creating change (Archer, 2005).

Culture has an impact on an individual's identity, an individual can internalize cultural norms and values which provides individuals with certain roles, values and perspectives which influence their actions and choices (Archer, 2005). Individuals engage in internal conversations that provide them with understanding how culture influences their agency, which leads to them reflecting on their circumstances, choosing values and options that are suitable for them and evaluating how they can act (Archer, 2005). With internal conversations, individuals can develop a relationship between structure, agency and

culture on how they influence them, especially when responding to social opportunities and limitations.

The SAC theory added value to this study by providing a lens of how novice teachers' practices of assessment are influenced by the structure and culture, and how they use their agency to engage with the influences from the structure and culture. In this study, the CAPS, and schools that novice teachers work in were considered as structures that influence novice teachers with traditional assessment practices. The culture of the schools that novice teachers practice in provided this study with ideas of how their assessment practices are impacted by the culture of schools. In terms of agency, novice teachers expressed the internal conversations that they engage in regarding their assessment practices, they also highlighted how they apply their agency in their assessment practices. They also determined if the social structure or system limits their agency regarding assessment practices that they apply in the classrooms.

The framework situates teachers' assessment actions within the interplay of structural limitations, such as CAPS policy requirements, school resources, and institutional regulations; cultural factors, including prevailing beliefs and norms about assessment within schools, and the agency of novice teachers as reflective practitioners who navigate, negotiate, and sometimes resist these conditions. The first sub-question, which asks about teachers' understandings of assessment principles, investigates how culture influences the novice teachers their beliefs, values, and knowledge about assessment which informs their approach to CAPS assessment.

The second sub-question, which focuses on how teachers apply the CAPS guidelines in practice, highlights teacher agency by exploring the ways novice teachers exercise their professional judgment, both within and in response to structural and cultural pressures. The third sub-question, which addresses challenges and constraints, explicitly acknowledges the influence of structural factors such as limited resources, heavy workloads, and policy demands as well as cultural factors, including assessment traditions and community expectations, in shaping assessment practices. Finally, the fourth sub-question on support needs recognizes that enhancing teachers' agency requires interventions that address both structural deficiencies (such as inadequate

training and resources) and cultural barriers (such as low professional esteem or inherited practices). Through the SAC lens, this study examines not only how novice teachers implement CAPS assessment, but also how their practices both reproduce and potentially transform the structural and cultural dynamics of township schooling.

The semi-structured interviews and classroom observations were an aid to capture the novice teachers' reflections of their assessment practices and ways of interactions with the external forces such as CAPS, the school environment and agency. In the first cycle of coding in vivo coding, the words or short phrases that expressed by novice teachers indicated their agency and how they respond to the structural influences from CAPS and school policies. While in the second cycle of coding, themes were developed from the first cycle codes, which categorized the data relevant and meaningful to the concept of structure, agency and culture. This resulted in the ability to identify and access the patterns of how novice teachers engage with the expectations and demands of CAPS, school policies and culture. While novice teachers try to maneuver these structural influences and their application of agency on assessment through creativity in their assessment practices, ensuring that they abide by the CAPS standard and school culture. Through the analysis of these themes, the dynamics of structure, agency and culture that shape and influence novice teachers' assessment practices in Gauteng township high schools were thoroughly engaged with.

Drawing from the priori codes identified from the existing literature which provided me with a lens of comprehending the dynamics and relevance of the codes I have identified from the interviews and classroom observations. This resulted in the flexibility of engaging with new insights from the data and developing a deep understanding of how the structural pressures from CAPS and schools limit the novice teachers' opportunities to practice their agency in their assessment practices in the classroom.

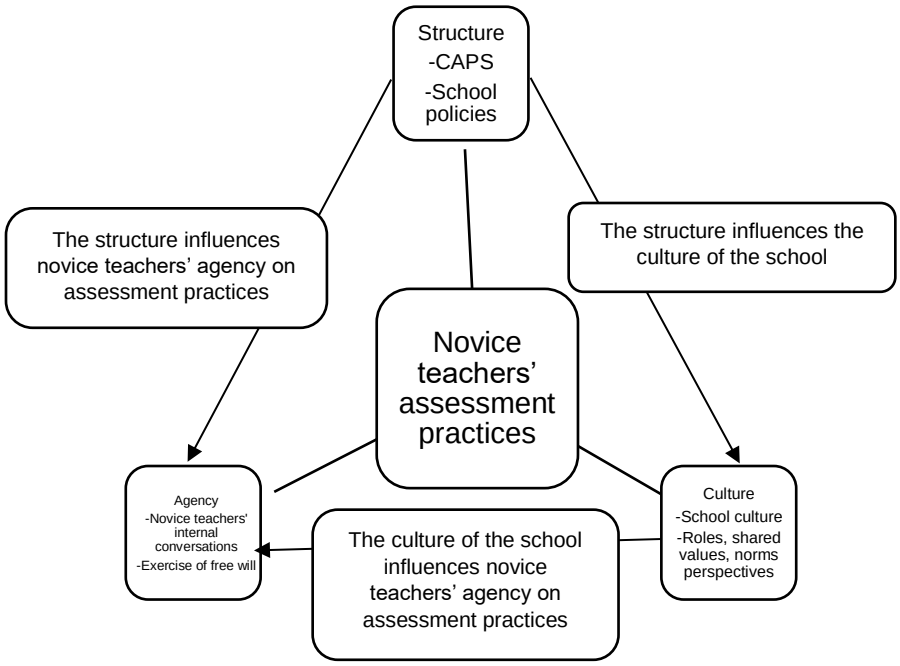


Figure 1: The interconnected model of Structure, Agency and Culture adopted from Archer (2005).

2.6. Summary of chapter

This chapter aimed to explore and enhance understanding of various aspects of assessment, focusing on novice teachers, Life Sciences assessment, assessment in township schools, and the theoretical framework guiding this study. A comprehensive literature review was conducted, revealing studies pertinent to this research. These findings suggest that many teachers possess limited assessment literacy. It is essential to consider novice teachers' sociological (environmental) and personal (intrinsic beliefs) experiences regarding assessment and pedagogy to grasp how these factors influence their comprehension of assessment's goals and its impact on assessment practices. Additionally, the implications of these studies indicate that some teachers struggle with understanding and effectively applying assessment principles.

Chapter 3: Research methodology

3. Introduction

This study primarily aims to explore the assessment practices of novice teachers in grade 10 Life Sciences CAPS across two high schools in Gauteng townships. A qualitative method was utilized as the research approach for this investigation. Below is a description of the methodology I employed and the process I followed to conduct this study.

3.1. Research paradigm

This study is situated within the interpretivist paradigm, which emphasizes the socially constructed nature of reality and the importance of understanding participants' subjective experiences. Interpretivism assumes that reality is multiple and context-dependent, shaped by human interactions and meanings (Creswell & Poth, 2018). Ontologically, this paradigm recognizes that teachers' assessment practices are influenced by socio-cultural and institutional contexts in which they operate. Epistemologically, it holds that knowledge is co-constructed between the researcher and participants through interaction, making qualitative methods well-suited to capturing the nuanced insights of novice teachers' experiences.

Interpretivism, thus, seeks to understand social behavior by examining the nuances of human interaction within social contexts (Scott, 2013). It emphasizes that individuals are uniquely shaped by their social contexts. Whereas a positivist approach would have restricted this study to broad generalizations, the interpretivist paradigm enabled a focus on specific contextual challenges faced by novice teachers (Scott, 2013). This perspective allowed me to explore how novice teachers are influenced by traditional assessment methods and the professional environments in which they work By analyzing participants' responses and observing their practices, I was able to construct meaningful interpretations that reflect authentic, real-life experiences.

3.2. Research approach

This study employs the qualitative design, which is suitable for exploring complex social occurrences within specific contexts (Merriam & Tisdell, 2016) The study focused on two Gauteng township high schools and four Life Sciences novice teachers, allowing

for an in-depth examination of assessment practices. This study approach was selected as it provides rich, detailed accounts of participants' lived experiences and enables the researcher to link the novice teachers' assessment practices to broader structural and cultural conditions.

Qualitative research also offers researchers insights into the core reasons, thoughts, opinions, and motivations of participants (Plamer & Bolderston, 2006). Through qualitative research, I was able to gather the perspectives of grade 10 Life Sciences novice teachers regarding their CAPS assessment practices at two high schools in Gauteng townships. This approach provided me with a deeper understanding of novice teachers' views on the methods and rationale behind their assessment in Life Sciences. Additionally, I looked into the support they need to carry out CAPS assessment successfully.

Qualitative research aligns with the interpretivist approach, emphasizing social sciences and observing people's behaviors in society (Scott, 2013). This perspective allowed me to grasp how and why novice teachers implement assessments in specific ways and how they select particular assessment practices by observing their behavior during these assessments.

3.3. Sampling

Bryman (2012) defines sampling as the process of choosing a segment of the population for research purposes. For this qualitative study, I employed non-random purposive sampling, strategically selecting participants to capture pertinent experiences relevant to my research (Bryman, 2012).

Four Life Sciences novice teachers with four or less years of teaching were considered for this study (Kim & Lee, 2021). I only considered teachers with a Bachelor of Education degree and a Post Graduate Diploma in Education (PGCE) as they are qualified to teach in South African schools. While the sample size is small, it is justified by the exploratory and qualitative nature of the study, which prioritizes depth of understanding over generalizability. The inclusion of two schools enabled cross-case comparisons, thereby strengthening the trustworthiness of the findings.

I chose grade 10 because I will be teaching in the FET phase and this study gave me an exposure to the field. Novice teachers of any age group are considered since a novice is defined by years of experience, not age. I am focusing on teaching grade 10 Life Science in township schools, which is the context for this study. The research was conducted in Gauteng, where I live, allowing convenient access to the participating schools. I selected four participants, two from each gender, aiming to gather diverse experiences and minimize bias by including individuals from both genders.

Classroom observations were conducted to examine the novice teachers' assessment practices in a grade 10 classroom, involving learners aged 15 to 17. Each classroom typically had over 40 students, varying by school, as they are located in township areas.

3.4. Data gathering methods

Data collection involves gathering relevant information to address research questions (Chepp & Gray, 2014). This study employed semi-structured interviews and classroom observations as its primary data collection methods. These interviews are characterized by their flexibility, enabling interviewers to ask multiple questions and encourage expansive responses from interviewees, facilitating in-depth insights (Rubin & Rubin as cited in Alshenqeeti, 2014). They helped me address various concerns while remaining focused on the study's primary objective. Through semi-structured interviews, I accessed participants' voices, thoughts, and feelings, allowing me to construct and negotiate meanings in natural environments (Cohen et al., 2009, p.29 as cited in Alshenqeeti, 2014). The flexibility of these interviews enriched my study, providing complete answers from participants regarding their experiences with CAPS assessment, which enabled me to capture their practices. I recorded the interviews with participants' consent and took comprehensive notes.

Merriam (2009) notes that researchers collect data to shape hypotheses. Classroom observations provided a deeper understanding of the data by drawing on my direct exposure to, and experience within, the field. These observations provided insight into participants' natural settings, giving me direct access to their practices and assessment conduct. This approach was valuable for my study as it enabled me to inductively analyze data, transitioning from "raw data to abstract categories and concepts"

(Merriam, 2009, p.17). Observing teachers conduct assessments in the classroom enhanced my understanding of their teaching practices and their application. I conducted these observations during assessments, with consent from parents or guardians of the students, and diligently took notes throughout the process. At the same time, these classroom observations gave me access to observe the learners' reactions and feelings towards assessment. I also observed how learners react to different methods of assessment and different assessment practices implemented by novice teachers.

3.5. Analysis

I explored the inductive data analysis method to derive meaning from semi-structured interviews and classroom observations arranged to identify themes using thematic content analysis (Merriam, 2009). A code represents a symbol or a translation of data produced by the researcher (Vogt et al., 2014, p. 122, cited in Miles & Huberman, 2020, p. 120). I applied first and second cycle coding to systematically organize and analyze the data sourced from interviews and observations, aiming to unearth meaning from this information. These codes allowed me to extract insights, which I interpreted to identify patterns, categories, and themes, thereby supporting development and theory-building (Miles & Huberman, 2020).

The priori codes derived from the literature review provided a framework for identifying relevant information within the data, which I could effectively code. I considered refining these codes based on findings from the literature review through the lens of the theoretical framework, ensuring I retained those that were pertinent and credible for this study (Miles & Huberman, 2020). Vivo coding, a component of the first cycle, involved capturing exact words or phrases observed from participants. This process highlighted recurring language referring to the participants' experiences, allowing me to derive patterns (Miles & Huberman, 2020). This coding approach was essential for understanding the assessment practices of novice teachers engaged in grade 10 Life Sciences evaluations. Consequently, I synthesized conclusions based on identified themes, enhancing my study's value by prioritizing the experiences and perspectives of novice Life Sciences teachers.

I utilized the themes discerned during the first cycle of coding as pivotal aspects of analysis for the second cycle. They provided a focal point for synthesizing conclusions, enabling me to recognize common and contrasting findings between my research and the literature review (Miles & Huberman, 2020). I employed narrative descriptions to explain the themes related to novice teachers' assessment practices, which allowed me to effectively communicate these themes using participants' direct quotes and the rationales underlying their responses. The theoretical framework also enabled the development of themes and codes through the identification of factors within the structure, factors impacting agency and culture (Archer, 2005). The revisions in the two paragraphs above aim to ensure each conveys a clear, cohesive idea, well-developed and supported.

3.6. Limitations of the study

My sample size was made up of four novice teachers based in Gauteng, there is a chance that other novice teachers have different practices of grade 10 Life sciences CAPS assessment in other township high schools, districts and provinces. This makes it a limitation to the study because I did not get exposure to other novice teachers in other township high schools, districts and provinces to collect data, analyze it and draw conclusions. However, with this compact sample size, I still managed to engage with the data provided in depth in order to engage with the matter of this study, analyze the data and draw up productive conclusions.

3.7. Trustworthiness

According to Steward and Hitchcock (2020), trustworthiness refers to the degree of trust that researchers can have in their sources and the methods used to collect data in a qualitative study. In my research, to ensure accurate outcomes, I applied Lincoln and Guba’s (1985) criteria of trustworthiness:

- Credibility was enhanced through triangulation of interviews and observations, and through member checking with participants to verify interpretations.
- Transferability was supported by providing thick descriptions of the school contexts and participants, allowing readers to judge applicability to similar contexts.

- Dependability was strengthened by maintaining a clear audit trail of data collection and analysis process.
- Confirmability was promoted through reflexive journaling, ensuring that my standing and assumptions were acknowledged.

3.8. Ethical considerations

Throughout this study, I prioritized ethics. Initially, I obtained consent from novice teachers and the parents or guardians of the learners by having them sign consent forms before data collection (see Appendix D: Consent form for participants - Teachers and Appendix E: Consent form for participants - Parents/Guardians) (Wiles, 2012). This process assured them that they could share their experiences and opinions freely, and that no harm would come to them. I respected the participants' privacy, ensuring that any information they deemed confidential remained protected. Participants were informed of their rights, including the right to anonymity and the ability to withdraw from the research at any moment, which I upheld (Wiles, 2012).

I ensured that I contacted the schools by delivering the consent letters which highlighted all the details of this study. I contacted the schools by firstly asking the principals to conduct research in the schools, delivered the GDE approval letter (see appendix A: GDE approval letter), Wits school of education Ethics clearance certificate (see appendix B: WSoE Ethics clearance certificate), participation information sheets (See appendix F: Participant information sheets, Teachers and see appendix G: participants information sheet, parents/guardians) and consent letter to the principals, which provided the details of the research. Then, I requested through the leadership to interview and observe Life Sciences novice teachers. I asked the principals to allow me to identify Life Sciences novice teachers with four years or less of teaching experience in their schools, so that I can evaluate if they were suitable for my study. I explained the aims and objectives of this study and sent them consent forms and participants information sheets when they agreed to participate in the study.

I gave novice teachers consent forms to distribute to learners so that the parents or guardians of the learners can give consent for the study to be conducted in the learners'

space during the observation of the teacher. (See Appendix D: Consent form for participants (Teachers).

I explained to participants study's purpose and procedures to ensure they understood its objectives, thus preventing confusion and feelings of deception. I made it clear that the results would inform a research project based on their feedback, which could be valuable for other scholars or a broader audience. Upholding ethical standards, I fostered an environment rooted in honesty, respect, and transparency. I also communicated that I had obtained permission from the university and the department of education, assuring participants of the study's authenticity, legality, and ethical considerations.

3.9. Summary of chapter

This study applied the qualitative method research approach to investigate the novice teachers' practices of grade 10 Life Sciences CAPS assessment in two Gauteng township high schools. A sample size of four novice teachers was selected through non-random purposive sampling technique. Data collection instruments for this study were semi-structured interviews and classroom observations. The data was analyzed through the inductive data analysis method. Thematic content analysis was applied to develop the themes of the finding and the first and second cycle of coding was also considered. The sample size of four novice teachers based in Gauteng and the application of the SAC theoretical framework might have limited the study. However, the study yielded and developed insightful knowledge of the novice teachers' practices of grade 10 Life Sciences CAPS assessment in two Gauteng township high schools.

Chapter 4: Data presentation and discussion

4. Introduction

This chapter presents and provides a discussion of the data collected from the empirical study on novice teachers' practices of grade 10 Life Sciences CAPS assessment in two Gauteng township high schools. The data in this chapter was obtained through semi-structured interviews and classroom observations with four novice teachers. The novice teachers' practices of assessment were observed through their interactions with the learners in the classroom while conducting assessment and they also shared their assessment practices through dialogue during the semi-structured interviews (See Appendix H: Table 1: Summary of semi-structured interviews data organization; Appendix I: Table 2: Summary of classroom observations data organization; Appendix J: Table 3: Novice teachers background). I used the theoretical framework by Archer (2005) to interpret and discuss the assessment practices of novice teachers.

Although learners were not formally included in the study's sampling frame, classroom observations revealed their indirect influence on assessment practices. Teachers frequently modified instructional tasks in response to learners' levels of comprehension or signs of disengagement. These adaptations underscore the dynamic interplay between teacher agency and classroom culture. The insights derived from these observations are presented as contextual interpretations rather than direct empirical data obtained from learners.

4.1. Novice teachers' CAPS assessment literacy.

Novice teachers in two township high schools highlighted and demonstrated their understanding of assessment literacy through their knowledge and understanding of the grade 10 Life Sciences assessment principles. This analysis provides insight into the level of assessment literacy that novice teachers demonstrate in relation to the structure of CAPS (Archer, 2005). Overall, some novice teachers are knowledgeable about the principles and purposes of assessment while some have limited assessment literacy.

4.1.1 Novice teachers' knowledge and understanding of Life sciences assessment principles.

Teacher Thuto expressed that learners *"learn about how living organisms interact with one another*" while Teacher Tsebo also highlighted that Life Sciences teaches "*how our bodies react to the environment".* From these two statements, it is evident that teachers have some knowledge about the aims of life sciences, which include that learners should have an understanding of the application of Life Sciences in everyday life outside of school to benefit themselves and the learners understanding and ability of application can be observed through assessment. Teacher Lwazi further highlighted that *"one of the principles of assessment is relevance, relating content knowledge to everyday lives of the learners, also, to better understand the natural world we're living in"* and Teacher Thuto validated this by stating that the subject *"gives you a knowledge of life skills in terms of science"*. From the above statements, it can be noted that novice teachers are knowledgeable about the content knowledge, relevance, and skills of Life Sciences assessment. It is essential for teachers to be knowledgeable about the content knowledge, how it should be assessed, the relevance of the tasks to the learners' context and the skills that they will gain from these assessments so that learning can take place effectively (Edwards, 2013). Reddy et al. (2022) also emphasizes the idea that teachers should design tasks that are relevant to the learners' context which increases engagement with task and content knowledge and learning so that learning can take place.

During the classroom observations, Teacher Thuto and Teacher Mfundo were conducting a practical task (See appendix O: Practical task), written under strict test conditions and the content knowledge assessed was based on life processes in plants and animals: Support and transport in plants. While Teacher Tsebo and Teacher Lwazi conducted a control test (See appendix P: Controlled test) and the content knowledge that was assessed was based on life processes in plants and animals: Support and transport in plants, support and transport system in mammals, Cell division (Mitosis).

Teacher Thuto, Mfundo and Lwazi highlighted that the learners were made aware of the assessment prior, and had time to prepare, therefore, the assessment took place under fair conditions. However, the learners in Teacher Tsebo's classroom were not informed about the assessment beforehand thus, assessment was conducted under unfair conditions. Therefore, Teacher Tsebo shows limited knowledge and understanding of Life Sciences assessment literacy, as Vandeyer and Killen (2003) highlighted assessment principles such as fairness and meaningfulness result in assessment taking place in productive and suitable environment. Notifying the learners about the assessment prior and giving them scope on what they should study, gives learners time to study and prepare for the assessment, resulting in the assessment being meaningful as the learners will understand why the teacher is assessing them while they study independently what they have learnt in the classroom. However, giving learners a chance to prepare for an assessment provides them with an opportunity to memorize science facts as suggested by Ryder (2002). Memorization of facts hinders the learners' learning as their results will not reflect their true understanding of the knowledge.

At the same time, Teacher Thuto instructed the learners that they are writing an independent assessment task in which they were not allowed get assistance from each other and from the teacher. This instruction was maintained throughout the assessment process. Teacher Mfundo also conducted the practical task as an independent task, but the learners were allowed to ask questions, and the teacher and other leaners were helping with providing answers. This is contradictory with the aim of the assessment which reflects the lack of understanding of reliability and validity of the assessment. Regarding reliability, the learners will not provide consistent results if they were to write the task independently. When validity is considered, the teacher's interference in the independent task results in the real responses of the learners being compromised as it is not a true reflection of their understanding of the content knowledge (McMillan, 2008).

Dominant social structures and systems such as universities and schools shape and limit novice teachers' options which impact their decision making in assessment and

it is manifested through assessment practices (Archer, 2005). This is an observation of Teacher Mfundo who experienced a limitation of lack of resources in the school to effectively conduct a practical assessment. Teacher Mfundo told the learners that they were supposed to do this task practically in the lab, but they do not have the resources and equipment to do so. He persisted with the assessment even under challenging conditions, fulfilling the goals of Life Sciences assessment, which aim to equip learners with the necessary knowledge, skills, and values for personal fulfillment and active participation in South African society as democratic citizens (DBE, 2011, p.4). This objective should be reached without learners facing obstacles due to their socio-economic status, race, gender, physical capabilities, or intellectual abilities.

Novice teachers have some knowledge of the aims of Life Sciences, particularly the application of knowledge to everyday life. This reflects the structural influence of the CAPS curriculum, which emphasizes contextual relevance. Teacher Lwazi noted that "one of the principles of assessment is relevance, relating content knowledge to everyday lives of the learners," while Teacher Thuto added that the subject "gives you a knowledge of life skills in terms of science." These comments demonstrate teachers' agency in recognizing assessment principles, while also reflecting a cultural orientation towards valuing knowledge that is meaningful in learners' daily lives (Archer, 2005).

During classroom observations, all teachers assessed content from the CAPS curriculum, but differences were evident in how assessments were conducted. Teachers Thuto, Mfundo and Lwazi informed learners beforehand, promoting fairness, while Teacher Tsebo did not, showing limited assessment literacy. This illustrates how agency is unevenly exercised within the same structural and cultural context. Similarly, while Thuto maintained independent assessment conditions, Mfundo allowed learners to help each other, compromising reliability and validity. Here, the cultural practice of collaboration conflicted with the structural demand for independent assessment, and teachers' agency shaped how these principles were applied. Overall, novice teachers displayed partial knowledge of Life Sciences assessment principles. Their practices reflect the ongoing interaction between

structure (CAPS requirements), culture (norms of fairness, memorization, and collaboration), and agency (teachers' individual choices and actions) (Archer, 2005).

4.2. Novice teachers' experiences of implementing grade 10 Life Sciences CAPS assessment.

Novice teachers had an opportunity to share their experiences with implementing the grade 10 Life Sciences assessment. The following captures and explains their experiences including challenges with the school infrastructure, overcrowding and discipline.

4.2.1 Challenges with the school infrastructure and resources.

Teacher Thuto highlighted that *"it has its challenges, I work in government school, so you understand the infrastructure is not good"*, science laboratory is not well maintained, there are no resources and equipment to conduct Life Sciences practical tasks, and they end up subjecting learners to written tasks. Teacher Mfundo also highlighted this challenge that the above challenge. These challenges such as not having science laboratories in the school result in the learners not having access to practical knowledge through experiments, however the teachers should find ways of closing this gap. As Halinen et al. (2014) highlights that teachers do not put effort in assessments, the teacher is aware of the conditions of the school, and he/she has the responsibility to ensure that learners still have access to these assessments and knowledge despite the infrastructure of a township school. Teachers have the responsibility to ensure that the legacies of apartheid such inefficient infrastructure in township high schools does not hinder the learners the opportunity to learn (Lubisi & Murphy, 2002). It is within their hands to actively participate in ensuring that the dominant structures highlighted by Archer (2005) do not further perpetuate inequalities in society.

While in Teacher Tsebo's classroom, the learners claimed that they have never seen some of the diagrams that were in the control test and the diagrams they were asked to draw. If the township high school had a science laboratory that is maintained well and had resources, learners would have conducted experiments and got the opportunity to see the structures through microscopes for themselves, unlike being

exposed to them on paper as diagrams. This results in assessment not being conducted with fairness to the learners, as the design of the assessment does not account for the learners' challenges and limitations (McMillan, 2008).

Teacher Tsebo indicted that *"in the school we don't have enough blank pages, so in most cases I just write it's on the board"*. The lack of blank sheets for making copies has a negative impact on their assessment practices, because Teacher Tsebo further emphasized that *"when we are doing assessment, sometimes I end up not giving them the assessment because in life sciences in most cases there are diagrams and graphs, and I cannot make copies of these diagrams"*. This hinders learners an opportunity to engage in assessment that will contribute to their learning. Teacher Lwazi also highlighted the need for resources by saying *"we need projectors because some learners learn by seeing, they're not good at listening"*, all learners need can be catered for, assessment can be conducted effectively, and learning can take place successfully.

From the findings of his study, novice teachers highlighted the lack of resources as one of the factors that hinders them from effectively conducting assessment, Beets and Louw (2011) highlight that learners in disadvantaged backgrounds are subjected to unjust assessment practices. These unfair assessment methods might stem from resource shortages. The CAPS (2011) emphasizes that learners must acquire the knowledge, skills, and values essential for self-fulfillment and active participation in society as citizens of a democratic South Africa, free from barriers related to socio-economic status, race, gender, physical ability, or intellectual capacity (DBE, 2011, p.4).

The response to the above challenges is through the concept of agency by Archer (2005) whereby novice teachers can apply their agency to ensure that learners still engage in meaningful assessments even when the conditions are not favorable. At the same time, make efforts to reach out to create change by challenging the dominant structure to ensure that learners are in well resources and maintained schools (Archer, 2005). The challenges with school infrastructure and resources lead to the following challenge, which is overcrowding and discipline. As Teacher Tsebo called attention to

lack of proper infrastructure and resources to cater for learners results in overcrowding in classrooms, and when learners are overcrowded it is difficult to implement discipline.

The lack of a functional science laboratory and resources meant that Life Sciences practical tasks were often replaced by written tasks. Teacher Mfundo also identified this as a barrier to effective teaching and assessment. These challenges illustrate the structural limitations novice teachers face in township schools, where inadequate infrastructure limits learners' opportunities for hands-on scientific engagement (Archer, 2005). Despite these challenges, teachers are expected to exercise agency by finding ways to bridge the gap. As Halinen et al. (2014) note, teachers play a critical role in ensuring learners access meaningful assessments, even within resource-poor environments. This aligns with Archer's (2005) view that while structural conditions constrain practice, teachers still have the capacity to act and innovate to avoid perpetuating inequalities.

In Teacher Tsebo's classroom, learners reported that they had never seen some of the diagrams included in the control test. This demonstrates how the absence of laboratory facilities compromises fairness, as assessments fail to account for learners' limited exposure (McMillan, 2008). Similarly, a lack of basic materials, such as blank sheets for reproducing diagrams, further disadvantaged learners, as Tsebo admitted that assessments were sometimes skipped altogether. Teacher Lwazi also pointed to the need for visual aids like projectors, noting that "some learners learn by seeing." These examples reflect how cultural expectations of fairness and inclusiveness are undermined when structural shortages persist, and teachers' agency is restricted (Archer, 2005).

Beets and Louw (2011) argue that learners in disadvantaged contexts are often subjected to unjust assessment practices due to resource shortages. This contradicts CAPS, which emphasizes equity and access for all learners. From Archer's (2005) perspective, addressing these inequalities requires teachers not only to exercise agency in adapting their assessment practices under difficult conditions but also to challenge the dominant structures that maintain unequal schooling conditions. The

resource challenges described above give rise to other challenges such as overcrowding and discipline problems (Schlebusch et al., 2023). As Teacher Tsebo noted, a lack of adequate infrastructure contributes to overcrowded classrooms, making effective discipline and assessment even more difficult. Here again, the interplay of structure (resource shortages), culture (norms of fairness and discipline), and agency (teachers' responses to constraints) shapes novice teachers' everyday practices in township schools (Archer, 2005).

4.2.2 Challenges with overcrowding and discipline.

Teacher Thuto stated that *"if it's the science stream kids, we usually have 45 learners in each classroom. If it's general stream, then it's going to be 75 in one classroom"*, as some learners in the general stream are allowed to take Life Sciences as one of their major subjects. This suggests overcrowding in the classrooms, and summative assessments such as tests are not conducted in productive conditions and environments as learners are expected to sit individually and not communicate with each other (Schlebusch et al., 2023). Overcrowding makes such conditions impossible. The infrastructure and overcrowding limits the productiveness of summative assessments, especially when considering that one teacher is expected to manage 45 or 75 learners in 1 classroom, at the same time it makes it difficult for teachers to implement discipline which results in unjust assessment practices. Beets and Louw (2011) assert that many learners lack the access necessary to benefit from resources that would help them develop and realize their full potential. This issue largely stems from their disadvantaged social backgrounds, poor educational opportunities, and unfair assessment practices.

Teacher Thuto further highlighted that the challenge with overcrowding hinders teachers the opportunity to accommodate all the learners needs when conducting assessments such as experiments, as learners who learn through demonstrations will not get the opportunity due to lack of science laboratories to accommodate large numbers of learners. It limits assessment design and implementation of teachers, as Teacher Thuto and Teacher Mfundo conducted a practical task as a test. In the classroom observations, learners in all the novice teachers' classes would suddenly

cause commotion in the classroom which leads to assessment conditions and principles being compromised, as learners would use the commotion as an opportunity to copy from each other. The challenge of learners copying each other affects the validity of assessment because the responses will not be the true reflection of their understanding of the content knowledge (McMillan, 2008).

One of the reasons behind the learners causing commotion in the classroom was due to them not understanding the content knowledge of the assessment, below is an explanation of how this case occurs. Zembylas (2005) emphasizes that science education can foster citizenship and social justice if teachers and policymakers incorporate students' diversity into the curriculum. In township schools, students often perceive science as abstract, and it is the teacher's duty to integrate this diversity into their teaching and assessment methods. This responsibility is corroborated by the studies conducted by Edwards (2013) and Ryder (2000), which state that it is crucial for policymakers and educators to ensure all learners can access scientific knowledge while respecting the citizenship associated with that context.

The above argument aligns with Archer (2005) whereby she emphasizes that the structure is made up of external social forces, institutions, norms, and systems that shape and limit behavior of individuals, in this study the educational systems and educational institutions seem to be limiting the learners access to education, as learners find themselves in overcrowded classrooms and assessment cannot be conducted effectively which affects the learners learning negatively. While the education system can ensure that learners are in conditions that are suitable for learning so that social justice can be achieved through the access of science education (Zembylas, 2005).

Overcrowding also limits novice teachers’ ability to manage discipline, leading to unjust assessment practices. Beets and Louw (2011) note that learners from disadvantaged backgrounds often lack access to supportive learning environments, which further constrains their potential. From Archer’s (2005) perspective, this represents a structural limitation, as institutional arrangements and resource shortages directly hinder effective assessment. Overcrowding also limits novice

teachers from catering to diverse learner needs. For example, learners who learn best through demonstrations miss out when laboratories cannot accommodate large groups. Classroom observations revealed frequent commotion, which compromised assessment conditions and enabled learners to copy from one another. This undermines the validity of assessments, as responses do not reflect learners' actual understanding (McMillan, 2008). Here, teachers' agencies are challenged by structural conditions that limit their capacity to enforce discipline and maintain assessment integrity.

One of the reasons behind the disruptive behaviour was learners' limited understanding of the content knowledge. Zembylas (2005) stresses that science education should incorporate student diversity to promote social justice, while Edwards (2013) and Ryder (2000) argue for equitable access to scientific knowledge. This points to a cultural dimension, as perceptions of science as abstract or inaccessible discourage learner engagement. Novice teachers, therefore, face the dual responsibility of adapting their practices (agency) and advocating for structural changes that ensure access to scientific knowledge. In Archer's (2005) terms, structure (overcrowded classrooms, lack of infrastructure), culture (norms that position science as abstract), and agency (teachers' attempts to manage and adapt) all intersect to shape novice teachers' challenges with discipline and assessment in township schools. Addressing these challenges requires not only individual teacher effort but also systemic transformation to create learning conditions that promote fairness and social justice.

4.3. Novice teachers' assessment practices.

Novice teachers in two township high schools had a platform to explain and demonstrate their assessment practices of grade 10 Life Sciences assessment. Novice teachers touched on the procedures that are being followed concerning school-based assessments and how traditional methods of assessment are being perpetuated. They engaged on how they use assessment for intervention and the extent to which they can apply their agency in assessment. Learners expressed certain emotions and feelings towards assessment due to the novice teachers'

assessment practices. We also looked at the quality of assessment administered the novice teachers' classrooms.

4.3.1 School Based Assessment (SBA) and Traditional methods of assessment.

Novice teachers used this as an opportunity to express how the assessments are sourced in from the Department of Education then presented to learners to complete, which perpetuates traditional methods of assessment. Teacher Thuto indicated that *"mostly the SBA without a doubt it is from the Department of Education, the only privilege you have is setting your classroom tests"*. Teacher Lwazi also validated what was mentioned by Teacher Thuto by saying "the problem with that is *"SBAs and tests is that they come from the facilitator"*. Teacher Lwazi further said, *"I can't answer those questions about assessment because the assessments don't come from us, they come from the department"*. While Teacher Tsebo also stated that *"only class tests, the formal ones from term two it's a common paper from the district".*

This validates that novice teachers are not involved in the design of summative assessments for learners, and this hinders the novice teachers learning process of assessment literacy and design. Kim and Lee (2021) argue that novice teachers go through the process of being assessment illiterate to assessment literate then assessment aliterate, this process indicates that the novice teachers adopted the prevailing teaching culture of the school where they teach so that they can have the sense of belonging and feel safe. At the same time, novice teachers are accustomed to the traditional methods of assessment as summative assessments are sourced in from the department of education and they are not provided an opportunity to be involved in the process of summative assessments design. They adapt to the system of how summative assessments are conducted in schools without questioning it and their ideas being considered. Novice teachers conduct these assessments that they are provided with and that is the process of how assessment had been traditionally administered in schools. This highlights how novice teachers are viewed as passive products of social structures which are schools (Archer, 2005).

Archer (2005) further argues that culture has an impact on an individual's identity, an individual can internalize cultural norms and values which provide individuals with

certain roles, values and perspectives which influence their actions and choices (Archer, 2005). The adaptation of novice teachers to traditional methods of assessment is perpetuated by culture of the schools, considering the system of how summative assessments are sourced into the school (Archer, 2005). Novice teachers find themselves conducting these summative assessments without questioning them because that is how they found the prevailing culture of the school with its cultural norms, and they adapt to the roles allocated by the schools.

Novice teachers explained SBAs are sourced from the DoE and then presented to learners, which reinforces traditional assessment methods. In this case, novice teachers adopt existing systems of assessment to gain belonging and security. From Archer's (2005) perspective, this reflects how teachers are shaped by structure (the DoE controlling assessment design) and culture (the prevailing norms of traditional assessment in schools). Which result in novice teachers conducting assessments without questioning their design, reproducing traditional practices rather than innovating. This aligns with Archer's (2005) argument that individuals can become passive products of social structures when limited by institutional arrangements. At the same time, cultural norms and values in schools reinforce compliance, positioning teachers in roles where their agency is limited. In this way, the reliance on externally designed SBAs demonstrates how structure (departmental control), culture (school norms of compliance), and agency (teachers' limited decision-making) intersect to shape novice teachers' assessment practices.

4.3.2 Using assessment for teacher intervention.

Novice teachers highlighted that they use assessment for intervention to check the learners' understanding of content knowledge, application of content knowledge and keep track of their learning. In the interviews, Teacher Thuto mentioned that *"I do something called a topic test, topic tests assist me with checking the learners' level of understanding of the topic"* and Teacher Tsebo validated this by saying *"for those things that I think they don't understand, I try by assessing so that, I'll check what they understand, and I mark, then after assessing, then go back to the topic they do not understand"*. Investing in formative assessments to prepare learners for the

summative assessment is a productive assessment strategy as the novice teacher can keep track of the learners learning and where he/she can help so that learning can take place effectively, and learners will also contribute to their learning (Kanjee & Mthembu, 2015).

Investing in formative assessment supports novice teachers in enhancing their assessment practices, particularly in the ways they design and implement assessments, as well as in selecting methods that are most appropriate for their learners. This improvement will take place as novice teachers get exposed to learners with different learning styles, and they get to create assessments that accommodate those learners. They also get the opportunity to find assessment methods that are effective to assess certain topics as they conduct topic tests. Reddy et al. (2022) support this idea by highlighting that assessment is a process of collecting valid and reliable information using various approaches that are appropriate to the context to find out the learners' level of performance compared with what they are expected to acquire. This results in improvement and established assessment practices of the teachers and identifying strategies that are appropriate for the learners (Edwards, 2013). The improvement and establishment of assessment practices of novice teachers depends on the extent they are willing to use their agency to benefit themselves and the learners within their environment (Archer, 2005). At the end both teachers and learners will understand the importance of assessment to their learning which reflects self-assessment (Edwards, 2013).

Novice teachers highlighted that they use assessment as a tool for intervention to check learners' understanding, application of knowledge, and progress. Exposure to diverse learning styles encourages teachers to adapt their assessment strategies, making them more responsive and effective. As Reddy et al. (2022) argue, assessment should involve varied approaches that yield valid and reliable information in context. This process reflects how novice teachers' agency enables them to improve their assessment literacy and tailor strategies to learners' needs (Archer, 2005).

At the same time, the emphasis on formative assessments reflects a cultural orientation towards seeing assessment as more than a grading exercise, but as a tool for supporting learning. Structurally, the CAPS framework and curriculum expectations set the standards for learner achievement, but teachers' active role in designing interventions shows that they are not merely passive implementers. Instead, they use their agency to create meaningful opportunities for learning within the constraints of their context. Therefore, using assessment for intervention shows the interaction of structure (curriculum standards), culture (valuing assessment for learning), and agency (teachers' proactive use of formative assessment) in shaping novice teachers' assessment practices (Archer, 2005).

4.3.3 Novice teachers' agency in assessment.

During the semi-structured interviews, novice teachers got an opportunity to convey if they can apply their agency in assessment. Teacher Thuto said that *"I have a lot of things that are blocking me"*, these include overcrowding, no right equipment in the sciences laboratory and the sciences laboratory is not conducive and there are hazardous products. However, Teacher Mfundo stated that *"I usually do group work"* and Teacher Tsebo indicated that they "have groups of five and then each group will come and present to us about the topic". While Teacher Lwazi said, *"I use charts to explain diagrams and photos"*. This gives me an idea that novice teachers apply their agency in different ways while some find themselves restricted by challenges within the dominant social structure to apply their agency.

The above findings of this study align with the theoretical framework of this study by Archer (2005), whereby the structure is made up of external social forces, institutions, norms, and systems that shape and limit behavior of individuals. The educational systems and schools limit the extent to which novice teachers can exercise their agency in assessment, as Teacher Thuto highlighted that overcrowding and no right equipment in the sciences laboratory are blocking her from applying her agency (Archer, 2005). While Teacher Mfundo can use assessment practices and Teacher Tsebo can use available resources as a form of agency to enhance their assessment practices, this happens when novice teachers reflect on their circumstances, choosing

values and options that are suitable for them and evaluating how they can act in benefit of the learners learning (Archer, 2005). At the same time, novice teachers can exercise their agency to reassure learners and foster a sense of confidence in their ability to reach their full potential through the application of assessment practices that are responsive to learners' needs the same way Teacher Mfundo did (Beets & Louw, 2011). The Learners will also feel empowered through science education as highlighted by Zembylas (2005) when they engage with the content knowledge with confidence when teachers apply assessment practices that benefit the learners.

However, the agency of novice teachers is also restricted by the dominant social structure as they are not given an opportunity to participate in the design of summative assessment (Archer, 2005). This challenge was stated previously as Teacher Thuto indicated that *"mostly the SBA without a doubt it is from the Department of Education, the only privilege you have is setting your tests"* and Teacher Lwazi indicated that *"I can't answer those questions about assessment because the assessments don't come from us, they come from the department"*. Therefore, novice teachers can only apply their agency on formative assessment preparing learners for summative assessments as highlighted by Teacher Lwazi during the classroom observation as Teacher Lwazi explained that the formative assessments that the learners were completing were for the preparation of summative assessments. With all these limitations influenced by the dominant social structure, novice teachers act intentionally, make choices, and exercise their agency and create change in a scope that they can through formative assessments (Archer, 2005).

During the classroom observations, Teacher Mfundo applied his agency by providing learners with guidance on the questions he noticed that the learners were misinterpreting and not understanding. However, there were cases whereby Teacher Mfundo provided the learners with answers when they were writing an independent task, which sabotages the learners learning (Kim & Lee, 2021). Boasting the learners' confidence by helping them with answers in a task does not reflect agency of the teacher, but it hiders learners an opportunity to learn (Vandeyer & Killen, 2003). The novice teacher aiding the learners during an independent task tempers with the

reliability of the assessment as the learners will not provide consistent results if they were to write the task independently, as this was discussed previously (McMillan, 2008).

Novice teachers exercise agency in creative ways, adapting within their limitations to enhance learning opportunities for their learners (Archer, 2005). Such practices show that agency depends on teachers' ability to reflect on their circumstances and choose strategies that benefit learners. For instance, group work and visual aids allow teachers to address learner diversity and promote engagement despite resource shortages. However, novice teachers' agency is not without limits. Novice teachers reported being excluded from summative assessment design, which indicates how structural control over summative assessment restricts teachers' agency, leaving them with influence mainly in formative assessment, where they prepare learners for externally designed tasks (Archer, 2005).

Classroom observations further revealed mixed expressions of agency. For example, Teacher Mfundo guided learners through misunderstood questions, which reflected supportive intervention. However, in some cases, he provided answers during an independent task, which compromised validity and hindered learners' opportunities to learn (Vandeyer & Killen, 2003; McMillan, 2008). While well-intentioned, such actions highlight the tension between teachers' agency and the cultural expectation of fairness and independence in assessment. Overall, these findings show that novice teachers' agency is shaped and limited by the interplay of structure (curriculum control, overcrowding, resource shortages), culture (norms of fairness, collaboration, and compliance), and agency (teachers' adopting strategies and practices) (Archer, 2005). Teachers act intentionally to create meaningful opportunities for learners, but their scope of influence remains limited by systemic limitations.

4.3.4 Learners' behavior and feelings towards assessment and novice teachers' assessment practices.

Novice teachers expressed the learners' feelings towards assessment which sometimes are influenced by how novice teachers present assessment to the learners and how novice teachers conduct assessment. During the classroom observation,

learners showed a certain behavior in response to assessment, which I will discuss below. Also, learners' behavior and feelings towards assessment can impact their performance on assessment. During the interviews, Teacher Thuto said, *"there are certain kids who are nervous whenever they hear the word test"* and she further argued that *"the word 'test' is a scary, they become anxious, so, I prefer that they present."* Similarly, Teacher Mfundo indicated that "*maybe the exam environment can be the problem, I think they get scared and those type of things, yeah that's what most of the learners say that the test was fair, however, they panic."* This develops an idea that assessment can trigger learners' anxiety, therefore, teachers need to find ways to make learners comfortable with assessment. These findings align with the argument by Mguni (2018) that learners might be compared against each other based on the outcomes of the assessment which causes discomfort in the classroom whenever it is time for assessment. The idea that learners might be compared against each other emphasizes that assessment can be used as a tool for grading as argued by Brookhart (2018).

This was further validated in the classroom observations, as the learners in Teacher Thuto's classroom were uncomfortable about writing the practical task which resulted in commotion in the classroom and the learners copying from each other. In Teacher Mfundo's classroom, the learners also showed discomfort and asked if the task is going to be difficult like the ones they have written in the past. This shows that the learners' past experiences with assessment affect them in the future. Eventually, the learners seemed reassured and confident that their teacher was there to help them with the test. The teacher supporting the learners is a positive practice because learners will perform good when they are supported, but it can also be a negative practice because learners will eventually write exams and there will be no support from the teacher. From the findings above, I can deduce that the assessment practices of novice teachers that form part of the prevailing school culture influence the learners' identity, whereby learners in these schools internalized their past experiences with assessment such as assessment for grading and this results in learners developing negative feelings and behaviors towards assessment (Archer, 2005).

Teacher Thuto also introduced a punishment by deducting marks when learners submit late, which resulted in the learners being sad and commotion in the classroom. The learners took this as a threat as they might be fruitless and that is not what they wish for. This is due to instilling the idea that assessment is for grading, as Teacher Mfundo kept on emphasizing that the practical task is important because it contributes to the learners' final mark. Therefore, learners will participate in assessment with the main goal of passing which results in discomfort, anxiety, and sadness on the learners, instead of focusing on learning. Using punishment such as deducting marks from assessment impacts the values of assessment as highlighted by Kanjee and Mthembu (2015) especially if learners were not made aware of such consequences prior the assessment which also affects the fairness of that assessment as highlighted by Vandeyer and Killen (2003). This will discourage the learners and give them the impression that assessment is for grading instead of learning (Reddy et al., 2022). Also, constantly reminding learners that they are writing a task that contributes to their final marks can give them the impression that assessment is solely for grading (Brookhart, 2018).

Novice teachers shared some of the triggers learners have due to assessment which include anxiety, which is linked to experiences of comparison and grading (Mguni, 2018; Brookhart, 2018). Classroom observations confirmed this, which indicates how past cultural experiences of assessment shape learners' current attitudes (Archer, 2005). At the same time, novice teachers' actions influenced learners' feelings. support and reassurance helped learners feel more confident, but it also created a dependency that may disadvantage them during independent examinations. Archer (2005) argues that individuals internalize cultural norms and values, which in this case means learners absorb the school's prevailing culture of assessment for grading, developing negative feelings such as anxiety and sadness. While intended to encourage responsibility, these actions such as deducting marks for learners as punishment framed assessment as inflicting punishment, instead of perpetuating learning (Kanjee & Mthembu, 2015; Vandeyer & Killen, 2003; Reddy et al., 2022). Therefore, learners engaged in assessment primarily to avoid failure rather than to develop knowledge.

Overall, learners' behavior and feelings towards assessment reflect the interaction of structure (grading systems, school norms), culture (shared expectations about assessment as punishment or competition), and agency (teachers' strategies of support or discipline) (Archer, 2005). These dynamics shape learners' identities as anxious, showing how deeply assessment practices influence classroom experiences.

4.3.5 Quality assessment.

Novice teachers in this study demonstrated a developing understanding of quality assessment, associating it not only with curriculum conformity but also with its broader impact on learners' lives and societal contribution. For instance, Teacher Thuto remarked, "I feel like when we teach certain topics that are relevant for the country, it should result in employment." This response reflects a perception of quality assessment as one that contributes to social transformation, aligning with the broader aims of the CAPS curriculum, instead of perpetuating memorization. CAPS identifies social transformation as a key principle, whereby Life Sciences should empower learners with knowledge, skills, and values that are essential for both personal development and active citizenship in a democratic South Africa (DBE, 2011). From this perspective, quality assessment is viewed not just as a measure of academic performance, but as a tool for preparing learners to engage meaningfully in society, including the world of work.

This learner-centered, context-relevant view of assessment aligns with Edwards (2013), who argues that science assessments should connect with learners' everyday experiences, enabling them to apply scientific knowledge to solve real life problems. In this sense, Teacher Thuto's view resonates with the belief that quality assessments should promote authentic learning which is learning that is relevant, meaningful, and transferable beyond the classroom.

Teacher Mfundo brought attention to the importance of cognitive demand in designing quality assessments, noting, "always check the cognitive levels and the ATP (Annual Teaching Plan)" emphasizing the need for alignment with learners' developmental stages. Similarly, Teacher Tsebo stated, "based on what I've experienced, observed, then I assess them based on this," suggesting that quality

assessment requires a responsive understanding of learners' capabilities and needs. These responses reflect awareness of the CAPS requirement that assessment tasks in Life Sciences must cater to diverse cognitive levels and be appropriate for the age and developmental stage of learners (DBE, 2011). This supports the view of quality assessment as being both differentiated and developmentally appropriate, acknowledging that learners vary in how they acquire and apply knowledge (Heritage, 2010).

Beyond technical alignment, the novice teachers also showed awareness that assessment design is an intentional pedagogical act. Effective assessment involves more than following policy prescriptions, it requires a reflective understanding of learners and context. This echoes Shepard (2000), who highlights that quality assessment is a learning tool, not merely as a measure of achievement. When Teacher Mfundo checks the ATP and cognitive levels, and when Teacher Tsebo adapts based on learner observation, they engage in formative assessment practices to support learning in the classroom through assessment.

Anchoring this analysis within Archer's (2005) SAC theoretical framework, novice teachers' perspectives of quality assessment can be understood as shaped by structural limitations, cultural expectations, and agency. CAPS (structure) highlight the content knowledge, pacing, and assessment tasks, which novice teachers consider to be norms (culture) for quality. For example, Teacher Mfundo's focus on ATP and cognitive levels shows that he is conforming to the structural guidelines, which shows how policy structures shape what is perceived as quality assessment. Meanwhile, Teacher Thuto's emphasis on employment outcomes suggests a culturally influenced belief that education and assessment should contribute to social empowerment, a value reinforced by CAPS. However, within these structural and cultural influences, novice teachers still exercise agency by interpreting, adapting, and implementing assessments based on their observations and classroom realities. This dynamic indicates how novice teachers are not

merely passive implementers of policy but active agents negotiating what quality assessment means within their specific contexts (Archer, 2005).

4.4. Support novice teachers need to improve grade 10 Life Sciences assessment practices.

During the semi-structured interviews and classroom observations novice teachers emphasized the need for support from workshops and their Head of departments (HOD) to improve their grade 10 Life Sciences assessment practices in two township high schools.

4.4.1 Workshops, novice teachers' practice development and support from the HOD.

From the semi-structured interviews, novice teachers mentioned that they attend workshops, however there is a need for workshops that are specific for novice teachers, as Teacher Thuto stated that *"the only workshops that I know of that are available, are the ones where they are preparing you for teaching matriculants"*. There is also a need for workshops to emphasize the development of assessment practices of novice teachers as Teacher Lwazi mentioned that *"no, they just bring the SBA, and we don't even see the SBA before the learners write"* when asked if they are involved in assessment design during workshops. The process of designing assessments should be done attentively so that the knowledge and skills are accessible to learners and be able to apply them in their everyday lives, which will result in assessment being a learning experience instead of being reduced to a tool for grading (CAPS, 2011). It is essential for assessment design workshops to be hosted for novice teachers so that they are involved in the process, and they understand the assessment they conduct in the classrooms. This will contribute to the novice teachers' assessment literacy as Kanjee and Mthembu (2015) found that there are low levels of assessment literacy, meaning in the workshops novice teachers need to be taught the purposes of assessment, practices of assessments and identifying learners' needs.

Novice teachers indicated efforts from their HOD in a form of support which can be efficient for their teaching development. Teacher Thuto mentioned that *"my HOD has a file where every single month, she has to come to your class to observe you, also,*

she takes some of the learners' books to check whether you have given them enough informal assessments and classwork". This shows that the Head of Department is interested in and keeps track of the novice teacher's development and in how the novice teachers keep track of the learners learning in her classroom through formative assessment. Teacher Thuto further stated *that "after observing you she's going to pull you on the side and let you know which areas in which you need to improve"*, the HOD also provides support by making recommendations on how the novice teacher can improve their teaching practices. Teacher Thuto also indicated that *"we do have meetings within the department where we talk about our results"* which shows that the HOD involves them in discussions and reflections of the assessments and holds them accountable for the learners' performance. HODs can also provide support for novice teachers by exposing them to strategies that are responsive to current challenges and the interests of the locals (Ryder, 2000). Also, encourage novice teachers to conduct assessments that are relevant to the learners' contexts or everyday lives whereby they can apply scientific knowledge to solve their societal challenges they have in the townships (Edwards, 2013).

Referring to the concept of Culture by Archer (2005), novice teachers have adapted to the cultural norms of having workshops as a form of support and contribution towards their improvement and development of assessment literacy. However, novice teachers in this study indicated that they are not receiving the expected support from workshops regarding assessment literacy. One of the novice teachers indicated a certain culture of support that she receives from her HOD, which contributes to her assessment literacy, when the HOD keeps track of the learners results and holds accountable and makes recommendations of assessment practices that are relevant to the learners.

Purposeful workshops could strengthen novice teachers' skills in designing valid, meaningful assessments that extend beyond grading and promote learning. Through Archer's (2005) lens, workshops and HODs support reflect cultural and structural influences on novice teachers' development. The prevailing culture of workshops assumes generic professional development, which novice teachers have internalized,

yet they recognize the lack of targeted guidance in assessment. By contrast, HODs embody a more responsive culture of support, providing individualized feedback and reinforcing assessment practices relevant to the school context. Within these structures, novice teachers exercise agency by adapting feedback and reflecting on their practices, even as their opportunities to shape workshops remain limited (Archer, 2005).

4.5. Summary of chapter

Chapter 4 presented and discussed the data collected from the empirical study on novice teachers' practices of grade 10 Life Sciences CAPS assessment in two Gauteng township high schools.

The findings of this study highlight that novice teachers are influenced by the principles of CAPS to determine what quality assessment is and its outcome, they are expected to adhere to these principles. In this chapter, it was discussed that novice teachers lack assessment literacy which was deduced from their knowledge and understanding of the grade 10 Life Sciences assessment principles. As novice teachers were expressing their experiences of implementing grade 10 Life Sciences CAPS assessment, they indicated some challenges which include lack of infrastructure and resources, overcrowding and discipline which hinder them to practice assessment to its fullest potential.

Novice teachers explained and demonstrated their assessment practices of grade 10 Life Sciences assessment which include being excluded from the planning of summative assessment, conforming to the traditional methods of assessment and using assessment as a tool for teacher intervention. Novice teachers further indicated that their agency towards assessment has been limited by the structure which is CAPS and schools. At the same time, the schools influence their culture onto the novice teachers which limit their agency. During the classroom observations, learners portrayed negative behavior and feelings such as anxiety, sadness, nervousness and discomfort towards assessment because of their past experiences with assessment, assessment outcomes and teachers' assessment practices such as deducting marks as punishment.

The argument of quality assessment was also raised whereby novice teachers argue that assessment is considered of quality depending on how it impacts the learners as

individuals and their everyday lives in society. In this way transformation will be perpetuated, as learners get opportunities to participate in assessments that are relevant to their contexts or everyday lives, and they can apply scientific knowledge to solve their societal problems. They also argue that the cognitive demands of assessment should be suitable for age and developmental level of learners of a specific grade and Life Sciences assessment should accommodate for different cognitive levels and abilities of the learners.

Chapter 5: Conclusions and recommendations

5. Introduction

The fundamental objective of this study was to investigate the novice teachers' practices of grade 10 Life Sciences CAPS assessment in two Gauteng township high schools. This study was also intended to provide an understanding of the principles and purposes of CAPS assessment and the novice teachers' experiences of implementing CAPS assessment. Another focal point of this study was to investigate how novice teachers assess grade 10 Life Sciences learners, and the kind of support do novice teachers need to improve assessment practices. This chapter considers the discussions of the literature review, presentation, and discussion of the findings of this study to formulate conclusions. This chapter will further make recommendations to the education system, teacher training institutions, schools and future research.

5.1. Conclusion

This study revealed that, while novice teachers understood basic assessment principles, their practices were shaped and limited by structural inequalities, limited professional support, and insufficient preparation during teacher training. Within Archer's (2005) SAC framework, these findings highlight the interplay of systemic structures, school culture and teacher agency in shaping assessment practices.

Novice teachers found room to indicate their practices of grade 10 Life Sciences CAPS assessment in township high schools.

The first research question was: *What understandings of assessment principles do novice Life Sciences teachers hold?*

The literature gathered in this study reveals that while CAPS makes an emphasis on differentiating between formative and summative assessment, Carless (2015) promotes the learning-orientated position of assessment which combines different methods of assessment which yields to more learner critical thinking and engagement. The purpose of self-assessment and self-regulation is to ensure that learners are empowered to control and facilitate their learning (Taylor, 2009). While scholars (Brookhart, 2018; Kanjee & Mthembu, 2015) argue that some novice and experienced teachers have limited

assessment literacy, which result in applying assessment methods where grading in assessment is prioritized than learning. This limitation of the understanding of assessment purposes is also evident in this study whereby competition in assessment was initiated by the novice teacher and that led to the learners focusing their grades than learning.

The data of this study reveals that some novice teachers are knowledgeable of the assessment principles and purposes such as the Life Sciences content knowledge being applicable, relevant and meaningful to the learners' everyday lives. Edwards (2013) and Reddy et al. (2022) advocate for a teachers' being knowledgeable of the content knowledge that they assess so that they can grant learners opportunities to access knowledge and skills as they engage in tasks so that learning can take place successfully. However, some novice teachers showed a limited understanding of principles and purposes of Life Sciences assessment, principles such as fairness were compromised and learners had opportunities to partake in memorization which affects the validity of the assessment and reliability of the results (McMillan, 2008). While some novice teachers in the semi-structured interviews emphasized the significance of ensuring that they conduct authentic assessments that engage with the learners' needs resulting in critical thinking and citizenship (Villarroel et al., 2018).

The second research question was: *How do novice teachers apply CAPS assessment guidelines in practice?*

Novice teachers often adapt to traditional methods of assessment of schools, this tendency limits their agency to design assessments that they consider to be relevant and meaningful to the learners' learning. The data indicates that the outcome of this limitation results in novice teachers reducing assessment as a tool for grading instead of prioritizing learning. The adoption of traditional methods of assessment by novice teachers limits their agency consequently restricting their professional growth in assessment (Archer, 2005). However, novice teachers utilize formative assessment to assess the learner understanding and learning of the Life Sciences content knowledge and use it to determine if intervention is required.

Authors such as Beets & Louw (2011) and Lubisi & Murphy (2002) argue that legacies of apartheid, socio-economic backgrounds and policies are one of the constraints that limit the novice teachers' ability to conduct assessment effectively, especially socioeconomic backgrounds and policy constraints. In the semi-structured interviews, novice teachers highlighted challenges such as overcrowding, lack of proper infrastructure and resources to accommodate all learners in township high schools, which are part of legacies of apartheid, whereby there is still unequal distribution of resources amongst different people and communities according to equity. Overcrowding in classrooms affects classroom discipline, there is chaos in the classrooms because the teacher-to-learner ratio is imbalanced. The above-mentioned challenges or experiences hinder novice teachers' opportunities to conduct assessment effectively.

However, there are some novice teachers who still put in effort in conducting assessments effectively under unfavorable circumstances within the structure (school), this is evident when one novice teachers in the classroom observations conducted a practical task while there is a limitation of resources in the school. This novice teacher applied his agency by managing the resources he had and ensured that all learners are exposed to Life Sciences knowledge, even though their skills were not trained as they did not practically conduct the tasks by themselves. The demonstration by the teacher granted learners opportunity to observe Life Sciences skills and values that will allow them to participate in society as citizens of South Africa and for self-fulfillment (DBE, 2022).

The third research question was: *What challenges and constraints shape assessment practices of novice teachers in township high schools?*

CAPS was introduced with the intention that curriculum is implemented in a manner that all learners have access to knowledge, skills and values that allow them to be meaningful participants in society despite their backgrounds (DBE, 2022). Although, some novice teachers have limited opportunities to apply this objective in their assessment practices due to structural constraints. Novice teachers find themselves in a position whereby they are expected to administer old examination questions recommended by the Department of Education, these old examination questions lack relevance to the learners' current

world/everyday lives. This matter is evident when the novice teachers indicated that they receive SBA from the facilitator, then they are expected to implement them while they were not involved in the assessment design. This is also an indication of how the Department of Basic education as a structure limits the novice teachers' agency in assessment planning and design as they are not involved in this process (Archer, 2005). Resulting in novice teachers having limited opportunities of developing their assessment literacy through practice.

Furthermore, novice teachers experience assessment aliteracy whereby they conduct assessments that they lack understanding of their fundamental purposes. This is evident in the study by Kim and Lee (2021), a similar observation was also made in this study whereby novice teachers adopted the schools' culture of assessment by continuing to conduct assessment from the Department of Education without questioning them. Novice teachers tend to adopt the culture of the school to have a sense of belonging and feel safe. Succumbing to the school culture limits the novice teachers' opportunities to exercise their agency and develop themselves professionally (Archer, 2005).

The findings of this study also indicate that novice teachers' assessment practices influenced by the existing school culture can shape the learners' identity towards assessment (Archer, 2005). This is evident when learners internalize their past experiences with assessment, which is made up of assessment being limited to a tool for grading which plants a seed of negative feelings and behavior towards assessment. One of the novice teachers in the classroom observations, would deduct learners' marks as a form of punishment, this practice would discourage the learners causing discomfort, anxiety and sadness. This practice also affects the values of assessment, in this case learners were not informed about such consequences prior to the assessment (Kanjee & Mthembu, 2015). Such practices disregard the fairness of the assessment because of inconsistencies in practice (Vandeyer & Killen, 2003).

The final research question was: *What forms of support do novice teachers require to improve their assessment practices?*

At the stage of the study, novice teachers indicated that more and sufficient involvement and inclusion in assessment design and planning would create opportunities and

empower them in a sense that they are able to implement assessments that are aligned with the CAPS and relevant to the learners' real world/everyday lives. The school culture and the Department as a structure apply pressure on the novice teachers as they have high expectations regarding the learners' performances. Novice teachers indicated that these expectations can be met if they are provided with sufficient support and involved in decision making regarding assessment planning and design.

The involvement of novice teachers in these decision-making processes through workshops will contribute to the novice teachers' professional development and their assessment literacy will be improved. Workshops facilitated to accommodate novice teachers would ensure that novice teachers are knowledgeable about identifying learners needs, purposes and practices of assessment that are relevant to the learners to eradicate the low levels of assessment indicated by Kanjee and Mthembu (2015).

In the semi-structured interviews, some novice teachers highlighted that they do receive support from their HODs in a way of monitoring their progress, providing recommendations and holding them accountable for the learners' performance. HODs can also provide support to novice teachers through exposing them to assessment strategies that are relevant to the current affairs and interests of the learners' real world/everyday lives whereby they apply scientific knowledge to solve their societal challenges within the context of a township (Edwards, 2013; Ryder, 2000). Workshops, training and mentoring from HODs regarding assessment can be incorporated into school culture, to provide novice teachers with support that is relevant to their needs without imposing the traditional methods of assessments on them (Archer, 2005).

5.2. Recommendations

The recommendations presented below highlight necessary alterations and modifications aimed at enhancing both assessment practices in Life Sciences and future research. They are informed by the study's findings and seek to address existing gaps while offering strategies to strengthen implementation within the South African educational context:

5.2.1. Education system

The education system as a structure dictates majority of activities that take place in the classroom, including assessment which affects the assessment practices of novice teachers. Therefore, my recommendation to educational systems is that they should design policies that clearly stipulate guidelines and expectations of assessment practices, and the purposes and principles of assessment in the classroom. At the same time, be open to novice teachers' application of agency on how these assessments can be implemented effectively in their contexts (Archer, 2015). Establishing workshops, training and mentorship programs specifically for assessment, would contribute to the novice teachers' professional development in assessment. In these workshops, training and mentorship programs, novice teachers should also be granted to engage with experienced teachers so that they receive fruitful support.

Additionally, the Department of Education should ensure that it invests in schools in the manner that the challenges with the infrastructure and resources allocation are a thing of the past. They can build more schools and hire more teachers to avoid overcrowding in classrooms, when the learner to teacher ratio is 1:30 discipline can be implemented, teaching and learning can take place effectively. This will lessen the challenge of overcrowding in classrooms, then novice teachers will manage to keep discipline in their classrooms and assessment will take place effectively. Investing in schools in the form of introducing programs that are focused on assessment techniques that are relevant to the learners' real world/everyday lives, considering their context of being a township experiencing challenges such as poverty (Carless, 2015).

5.2.2. Teacher training institutions

This study revealed that indeed teacher training institutions shape and influence novice teachers' assessment literacy and practices, I would recommend that teacher training institutions pay special attention on providing sufficient knowledge and training of assessment practices for novice teachers. So that in the process of shaping and influencing novice teachers, they are exposed to the purposes of assessment that will guide their pedagogy into practicing authentic assessment (Villarroel et al., 2018).

Exposing novice teachers to the dynamics of assessment during their teacher training course is essential. It prepares them for what to expect in schools, how they might find themselves in positions where they end up succumbing to the traditional methods of assessment and how the application of agency can mitigate such circumstances. They will engage in discussion of assessment practices that result in quality assessment in science (Edwards, 2013).

I further recommend that teacher training institutions should consider building relationships and partnerships with schools in different contexts so that during teaching practical's, students get to be exposed to different contexts of schools, how assessment is practiced and how they can apply their agency in these contexts for assessment to take place effectively. This will also contribute to the novice teachers' assessment literacy as they figure out which assessment practices are more efficient in certain contexts to ensure that all learners are empowered by scientific knowledge despite their contextual limitations as they collaborate with experienced teachers (Beets & Louw, 2011).

5.2.3. Schools

Kim and Lee (2021) argued that novice teachers assessment practices are not objective, but they are related to the school culture, influenced by colleagues and institutions, a similar observation has been made in this study whereby novice teachers adopt the traditional methods of assessment of the schools they are based in. My recommendation on this matter is that schools should be conscious of their assessment culture, the extent which assessment culture is imposed on novice teachers and if it contributes to their professional development and its impact on learning. Schools should consider being open to novice teachers applying their agency on assessment so that they can cater for the learners' needs, ensure that their assessment practices are relevant and grant learners opportunities to access scientific knowledge that they can apply to solve their societal problems (Edwards, 2013).

Professional development regarding assessment literacy is necessary, because novice teachers need to be knowledgeable of the diverse assessment practices and how they affect learning. Schools can contribute to novice teachers' professional development of assessment literacy through providing constructive feedback to novice teachers on their

assessment practices consistently from HODs and their experienced colleagues. Schools can collaborate with other schools to develop moderation structures that improve the consistency and reliability of assessment.

5.2.4. Future research.

A long-term study on the outcomes of workshops for assessment literacy designed to support novice teachers would provide comprehensive knowledge on novice teachers professional development of assessment. Mentorship can also be explored, whereby novice teachers are allocated mentors that are responsible for developing their assessment practices in different contexts so that we can be provided with an understanding of the support that is best fit for novice teachers related to their assessment practices. Other researchers can also find out how assessment is conducted in other contexts such as private schools, so that there can be a comparison assessment literacy of novice teachers in different contexts and the reasoning behind those differences.

5.2.5. Contribution to knowledge.

This study contributes to the growing literature on novice teacher development by centralizing assessment practices within the unique context of township schools. It demonstrates the value of Archer's (2005) SAC framework in analyzing how teachers' agency is shaped by structures and cultures, and it highlights the need for systemic support to enable effective assessment practices.

5.2.6. Limitations.

The sample size of this study is small which limits generalizability and the exclusion of learners as formal participants restricts perspectives on how assessment impacts learning. Nonetheless, the findings provide valuable insights into the lived realities of novice teachers in township schools. This study is also open for a much big sample size for other perspectives.

5.2.7. Theoretical implications.

By applying the SAC theory by Archer (2005), the study underscores the significance of examining assessment not only as an individual practice but also as a socially embedded activity shaped by broader systemic and cultural factors. This perspective

can inform future research and policy development aimed at improving educational equity in South Africa.

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Appendices

Appendix A: Gauteng Department of Education approval letter

GAUTENG PROVINCE
Department: Education
REPUBLIC OF SOUTH AFRICA

8/4/4/1/2

GDE RESEARCH APPROVAL LETTER

Date:	**01 August 2023**
Validity of Research Approval:	**08 February 2023– 30 September 2023** **2023/302**
Name of Researcher:	**Masowa N**
Address of Researcher:	**239 Maokeng Section**
	Tembisa
Telephone Number:	**0838813344**
Email address:	**masowangoakoana@gmail.com**
Research Topic:	**Grade 10 Life Sciences novice teachers' perspectives of the significance of CAPS Assessment in two Gauteng township high schools.**
Name of University:	**Wits**
Type of qualification	**Masters**
Number and type of schools:	**2 Secondary Schools**
District/s/HO	**Johannesburg East**

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

01/08/2023

The following conditions apply to GDE research. The researcher may proceed with the above study subject to the conditions listed below being met. Approval may be withdrawn should any of the conditions listed below be flouted:

Office of the Director: Education Research and Knowledge Management
7th Floor, 17 Simmonds Street, Johannesburg, 2001
Tel: (011) 355 0488
Email: Faith.Tshabalala@gauteng.gov.za
Website: www.education.gpg.gov.za

1. *Letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.*
2. *The District/Head Office Senior Manager/s must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.*
3. ***Because of the relaxation of COVID 19 regulations researchers can collect data online, telephonically, physically access schools or may make arrangements for Zoom with the school Principal. Requests for such arrangements should be submitted to the GDE Education Research and Knowledge Management directorate.***
4. ***The Researchers are advised to wear a mask at all times, Social distance at all times, Provide a vaccination certificate or negative COVID-19 test, not older than 72 hours, and Sanitise frequently.***
5. *A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher/s have been granted permission from the Gauteng Department of Education to conduct the research study.*
6. *A letter / document that outline the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Senior Managers of the schools and districts/offices concerned, respectively.*
7. *The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, and chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.*
8. *Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Director (if at a district/head office) must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.*
9. *Research may only commence from the second week of February and must be concluded before the beginning of the last quarter of the academic year. If incomplete, an amended Research Approval letter may be requested to conduct research in the following year.*
10. *Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.*
11. *It is the researcher's responsibility to obtain written parental consent of all learners that are expected to participate in the study.*
12. *The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.*
13. *The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations.*
14. *On completion of the study the researcher/s must supply the Director: Knowledge Management & Research with one Hard Cover bound and an electronic copy of the research.*
15. *The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned.*
16. *Should the researcher have been involved with research at a school and/or a district/head office level, the Director concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.*

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards

.....

Dr. Gumani Mukatuni
Acting CES: Education Research and Knowledge Management

DATE: 01/08/2023

Office of the Director: Education Research and Knowledge Management
7th Floor, 17 Simmonds Street, Johannesburg, 2001
Tel: (011) 355 0488
Email: Faith.Tshabalala@gauteng.gov.za
Website: www.education.gpg.gov.za

Appendix B: Wits School of Education Ethics clearance certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG | WSoE Wits School of Education

SCHOOL OF EDUCATION ETHICS COMMITTEE

CONSTITUTED UNDER THE UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: 2023ECE049M**
PROJECT TITLE	Grade 10 Life Sciences novice teachers' perspectives of the significance of CAPS assessment in two Gauteng township high schools.
INVESTIGATOR	**NGOAKOANA MASOWA**
SCHOOL/DEPARTMENT OF INVESTIGATOR	WSoE
DATE CONSIDERED	07 August 2023
DECISION OF THE COMMITTEE	Approved unconditionally
RISK LEVEL	Minimal Risk
EXPIRY DATE	Date of submission of the Research Report
ISSUE DATE OF CERTIFICATE	25 August 2023
CHAIRPERSON	Dr. Batseba Mofolo-Mbokane

cc: Dr. Emure Kadenge

DECLARATION OF INVESTIGATOR

To be completed in duplicate and **ONE COPY** returned to the Chairperson of the School/Department ethics committee.

I fully understand the conditions under which I am are authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee.

Signature **Date** 25 / 08 / 2023

Appendix C: TRREE (Training and Resources in Research Ethics and Evaluation) Certificate



TRREE

Zertifikat
Certificat
Certificado
Certificate

Promouvoir les plus hauts standards éthiques dans la protection des participants à la recherche biomédicale
Promoting the highest ethical standards in the protection of biomedical research participants

Certificat de formation - Training Certificate

Ce document atteste que - this document certifies that

Clinical Trials Centre
The University of Hong Kong

Ngoakoana Masowa

a complété avec succès - has successfully completed

Introduction to Research Ethics

du programme de formation TRREE en évaluation éthique de la recherche
of the TRREE training programme in research ethics evaluation

Release Date: 2023/07/24

Professeur Dominique Sprumont
Coordinateur TRREE Coordinator

APPROVED BY SIWF ISFM

Foederatio Pharmaceutica Helvetiae FPH Programmes de formation postgraduée et continue

Ce programme est soutenu par - This program is supported by :

Appendix D: Consent form for participants (Teachers)

Title: Novice teachers' practices of grade 10 Life Sciences CAPS assessment in two Gauteng township high schools

Name of researcher: Ngoakoana Masowa.

I, , consent to participate in this study project.

I consent to the following:

(Please circle the relevant options below)

I was given an explanation of the research study, and now I grasp its purpose.	YES	NO
I acknowledge that I have the option to volunteer for participation in the study.	YES	NO
I concur that we can record the audio of the face-to-face interview.	YES	NO
I consent to the use of direct quotes from my interview in the researcher's report.	YES	NO
I understand that my involvement will be kept confidential (the researcher will not include my name in their report).	YES	NO
I acknowledge that other researchers can utilize the information from my interview, contingent upon obtaining their own ethics clearance. However, my name and any personal details will remain confidential and will not be shared.	YES	NO

…… (signature)
…… (name of participant)
…… (date)

…… (signature)

…… (name of researcher/person seeking consent)

…… (date)

Appendix E: Consent form for participants (Parens/Guardians)

Title: Novice teachers' practices of grade 10 Life Sciences CAPS assessment in two Gauteng township high schools.

Name of researcher: Ngoakoana Masowa.

As the parent/guardian of ……, I consent to his/her participation in this research project.

I consent to the terms below:

(Kindly circle the applicable options below)

I was briefed on the research study and grasp its purpose.	YES	NO
I acknowledge that the learner has the option to volunteer for the study.	YES	NO
I concur that the learner's involvement will stay anonymous (the researcher will not include the learner's name in their report).	YES	NO
I agree that other researchers might utilize the information provided by the learner during the classroom observation (subject to their own ethics clearance), but the learner's name and any personal details will not be shared or disclosed.	YES	NO

…… (signature)
…… (name of parent/guardian)
…… (date)

…… (signature)

…… (name of researcher/person seeking consent)

…… (date)

Appendix F: Participant information sheets (Teachers)

Dear Sir / Madam

My name is Ngoakoana Masowa, and I am pursuing a Master's degree in Education at the University of the Witwatersrand in Johannesburg. Under the supervision of Dr. Amai Emure Kadenge, I am conducting research to explore the practices of novice teachers in Grade 10 Life Sciences regarding CAPS assessment at two township high schools in Gauteng.

I invite you to participate in an interview. If you choose to engage, the semi-structured interview will last about 30 minutes, followed by a 60-minute classroom observation. The interview will be conducted face-to-face at the school after hours, and we can arrange a time that suits your schedule. The classroom observation will occur during the Grade 10 Life Sciences period.

With your consent, I would like to audio record the interview. This recording will be securely stored on my password-protected laptop for five years and then deleted. Only I, Ngoakoana Masowa, will have access to this data.

During our conversation, I will ask for your personal insights and practices regarding CAPS assessment. Please be assured that the interview will be confidential and anonymous. Your name or any identifiers will not be included when sharing the research findings. If authorized, other researchers may utilize the data collected, though your identity and personal details will remain protected. Should any data be shared, it will solely serve research purposes aimed at enhancing the curriculum and supporting novice teachers.

Participation in this study is entirely voluntary. You are not obligated to partake, and you may withdraw at any time. If you prefer not to answer any questions, that is completely fine. There are no direct benefits for participating in this study, and you will not forfeit any services, benefits, or rights by opting out. Participation will incur no costs, and you will not receive any payment for being involved.

The potential risks associated with this research are comparable to everyday experiences, though some questions may touch on sensitive topics that could evoke sadness or discomfort. If this occurs, I will pause the interview to continue at a later time.

Should you require support or counseling after the interview, these services are available at no charge through LifeLine. You may reach their 24-hour toll-free national counseling service at 0861 322 322.

The findings of this study will culminate in a research report. If you wish to receive a summary of the report, I would be pleased to send it to you.

If you have any questions about this research, either during or after your participation, please don't hesitate to reach out to me or my supervisor using the contact information provided below. If you have any concerns or complaints about the ethical procedures of this research study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrecnon-medical@wits.ac.za.

Yours sincerely,

Ngoakoana Masowa

Researcher:

Ngoakoana Masowa, 1886441@students.wits.ac.za, 0838813344.email

Supervisor:

Amai Emure Kandenge, emure.kadenge.wits.ac.za, Wits phone number 011 717 3870

Appendix G: Participant information sheets (Parents/Guardians)

Dear Sir / Madam

My name is Ngoakoana Masowa, and I am pursuing a Master's in Education at the University of the Witwatersrand in Johannesburg. My supervisor is Dr. Amai Emure Kadenge. I am conducting research to explore the practices of novice teachers in Grade 10 Life Sciences regarding CAPS assessment in two high schools located in Gauteng townships.

I invite your child to participate in a classroom observation as part of my study. If you permit your child's involvement, the observation will last approximately 60 minutes and take place face-to-face at their school during the Life Sciences class.

The data collected during this observation will be securely stored on my password-protected laptop for five years and will then be deleted. Only I, Ngoakoana Masowa, will have access to this data.

During the observation, I will be focusing on how novice Teacher Tsebo conducts assessments, specifically observing assessment practices and principles. All observations will be confidential and anonymous. When I report on the study's findings, no names or identifying information about the learners will be included. With your consent, other researchers may utilize the data for their studies, but personal information or names will not be disclosed. If data is shared, it will only be for research aimed at enhancing the curriculum and supporting novice teachers.

Participation in this study should be a voluntary decision. Students are not required to take part and may withdraw at any point. There will be no direct benefits for participating, and students will retain all services and rights, regardless of their decision to participate. Joining the study will incur no costs for you or your child, and there will be no payment provided for participation.

The risks associated with this research are minimal, akin to everyday situations, although some aspects of the observation may cause feelings of sadness or discomfort. If such situations arise, I will pause the observation and reschedule it. Should your child require support or counseling services after the observation, these are available at no cost through LifeLine. You can reach this 24-hour toll-free national counseling service at 0861

322 322 or contact ChildLine toll-free at 080 005 5555.

This research will culminate in a formal report. I would be happy to send you a summary of my findings if you are interested.

If you have any questions regarding this research study, please don't hesitate to contact me or my supervisor using the information provided below. If you have any concerns or complaints about the ethical procedures of this research study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrecnon-medical@wits.ac.za.

Yours sincerely,

Ngoakoana Masowa

Researcher:

Ngoakoana Masowa, 1886441@students.wits.ac.za, 0838813344.email

Supervisor:

Amai Emure Kandenge, emure.kadenge.wits.ac.za, Wits phone number 011 717 3870

Appendix H: Table 1: Summary of semi-structured interviews data organization

Questions	Code 1	Code 2	Code 3	Themes
What are the principles and purposes of CAPS assessment?	"Learn about how living organisms interact with one another" "Gives you a knowledge of life skills in terms of science because I think life science." "I would say there's a relation of Life sciences and Life Orientation." "Fairness" " Relevance, relating content knowledge to everyday lives of the learners"	• Biodiversity • Skills development • Lack of knowledge of Life Sciences principles and purposes • Mindfulness approach to learning • Raise awareness. • Fairness • Authenticity • Appropriateness • Relevance • Environmental studies • Assessment design	• Novice teachers' knowledge and understanding of Life sciences assessment principles.	• Novice teachers' CAPS assessment literacy
What are the novice teachers' experiences of implementing CAPS	"infrastructure, the number of kids in classrooms." " I'm learning" "I have to be a lifelong	• Government school challenges with infrastructure, overcrowded classrooms.	• Challenges with the school infrastructure	• Novice teachers experiences of implementing CAPS

assessment?	learner as well." grade 10 kids, but I'm trying by all means to do my best." "The assessments and the ATP lately have cut down on a lot of content."	• Life-long learning experience • Discipline • Cutting down of topics and assessments on the ATP	• Overcrowding • Challenges with overcrowding and discipline • Teacher development • Development of the ATP	assessment
How do novice teachers assess grade 10 Life Sciences learners?	"Mostly the SBA without a doubt it is from the Department of Education, the only privilege you have is setting your tests" "The Annual Teaching Plan, I know the teaching plan gives you a guideline of how much content you must teach" "Topic tests assist me with checking the learners' level of	• SBA • Privilege of setting tests • ATP • Topic tests • Anxiety caused by tests. • Relevance to everyday lives. • Societal issues • Prioritize passing instead of learning. • Traditional methods of assessment	• School Based Assessment (SBA) and traditional methods of assessment • Using assessment for teacher intervention • Novice teachers' agency • Learners' behavior and feelings	• Novice teachers assessment practices

	understanding of the topic" "you need to find interesting ways to make them understand the topics" "There are certain kids who are nervous whenever they hear the word test." "In every topic that I teach from the heart to the kidneys, they can apply in their everyday life" "I feel like when we teach certain topics teach topics that are relevant for the country." "Our lab does not have the right equipment". "then go back to the topic they do not understand."	• Impacts of overcrowding on assessment • Lack of lab equipment • Low quality assessments • Lack of improvement of assessment questions • Intervention • Teacher agency • Teachers access to learners' formal assessments. • Repetition of assessment questions • Access to resources	towards assessment • Novice teachers' assessment practices • Quality assessment.	

	"class test" "Most of them they fail." "No, they just bring the SBA" "Sometimes I combine with the textbook activities." "I use different resources." "Practical are provided in the Re-lab" "The problem with that is that SBAs and tests are coming from the facilitator" "the assessments don't come from us, they come from the department." " I use charts the charts to explain diagrams and photos."			
What kind of support do novice teachers need to improve assessment	"workshops." "come to your class to observe you. Also, she takes some of the learners'	• Workshops • Classroom observations • Feedback and recommendations	• Workshops • Novice teachers practice development.	• Support novice teachers need to improve grade 10 Life Sciences

practices in grade 10 Life Sciences?	books to check” “let you know which areas in which you need to improve” “Meetings within the department where we talk about our results.” “we don't have enough blank pages” “they check exercise books and the ATP.’ “Sometimes they informally visit classrooms and make recommendations after so that I can improve.” “We need projectors”	• Department group meetings • Resources • Teacher practice development	• Support from the Head of Department (HOD) • Resources	assessment practices

Appendix I: Table 2: Summary of classroom observations data organization

	What the teacher said?	What the Teacher did?	The learners' response	Codes	Themes
At the beginning of the assessment	Teacher told the learners that they are going to write a practical task under strict test conditions. The teacher told them about how the tests he used to make them write were preparation for this The teacher told the learners that they were supposed to do	Teacher fixed the learners sitting arrangement. She tried to ensure there's space between them, but it was impossible due to the class being overcrowded. Teacher handed the practical task to the learners, together with answer sheets.	Some learners showed discomfort about writing the practical task, even though they were informed prior. There was a bit of commotion in the classroom.	• Classroom management • Resources • Novice teachers' knowledge and understanding of Life sciences assessment principles. • Learners' response to assessment	• Novice teachers' CAPS assessment literacy • Novice teachers' assessment practices

	this task practically in the lab, but they do not have the resources and equipment to do so. Teacher told them not to copy from each other, if they do, they will be penalized.				
During the assessment	The teacher kept on reminding the learners of the importance of the task and telling the learners to keep quiet and write.	The teacher was moving around the classroom monitoring the learners. Trying to enforce order and neutralize the commotion that was taking place. The teacher provided no	The learners started copying from each other, even when they knew that it was not allowed. They kept on asking	• Assessment for grading • Assessment for learning • Classroom management • Independent task • Learners' response to	• Novice teachers' CAPS assessment literacy • Novice teachers' assessment practices

	The teacher kept on telling the learners to ask questions if they are confused or need any help.	help when the learners asked for assistance as this is supposed to be an independent task. He provided guidance on the questions he noticed that the learners were misinterpreting and not understanding. The teacher moved around the classroom assisting learners that needed assistance. He provided guidance on the questions he noticed that the learners were misinterpreting and not	the teacher for clarity on some of the questions. The learners seemed reassured that their teacher is there to help them with the test. The learners looked confused and defeated while writing.	assessment.	

		understanding.			
At the end of the assessment	She told the learners that they are out of time, and they must submit. She further told them that she will deduct marks from them if they do not submit now. He told the learners that he is giving them extra 15 minutes because he noticed that some of them are not done.	She collected the scripts even though some learners were not done. She was writing minus 10% on the scripts of learners who were submitting late. The teacher waited for the learners to finish writing and collected the scripts after the extra 15 minutes he gave the learners.	There was more commotion in the classroom when the learners realized that they were out of time. They were begging each other for answers. Most of them were sad when they saw that the teacher is going to deduct marks because of submitting late. The learners looked relieved	• Novice teachers' knowledge and understanding of Life sciences assessment principles. • Classroom management • Leaners response to assessment • Content knowledge of the assessment.	• Novice teachers' CAPS assessment literacy • Novice teachers' assessment practices

			when they were told that they had an extra 15 minutes. They claim that they do not understand the questions and they were not taught some of the content.		

Appendix J: Table 3: Novice teachers background

Life Sciences novice teachers	Years of teaching experience	Age group and Gender	Qualifications	Phase and grade	Topic assessed	Type of assessment
Teacher Thuto	2 years	20+ Female	Bachelor of Education, majoring in Science Education	Further Education and Training (Grade 10-12)	Life processes in plants and animals: Support and transport in plants.	Practical task, written under strict test conditions
Teacher Mfundo	2 years	25+ Male	Bachelor of Education, majoring in Science Education	Senior and Further Education and Training (Grade 8-12)	Life processes in plants and animals: Support and transport in plants.	Practical task, written under strict test conditions
Teacher Tsebo	7 months	20+Female	Bachelor of Education, majoring in Science Education	Senior and Further Education and Training (Grade 8-12)	Life processes in plants and animals: 1. Support and transport in plants 2. Support and transport system in mammals 3. Cell division	Control test

					(Mitosis)	
Teacher Lwazi	3 years	30+ Male	Bachelor of Education, majoring in Science Education	Further Education and Training (Grade 12)	Life processes in plants and animals: 1. Support and transport in plants. 2. Support and transport system in mammals 3. Cell division (Mitosis)	Control test

Appendix K: Semi-structured interview questions and schedule

Semi-structured interview questions

1. When did you start practicing the teaching profession?
2. How is the experience so far?
3. When did you attain your Bachelor of Education degree?
4. Why did you choose to teach Life Sciences?
5. What are the purposes of Life Sciences mentioned in the CAPS document?
6. Do you get to create all the assessments for your learners?
7. How do you choose assessment methods?
8. How do you decide that a certain assessment is appropriate and relevant to your learners?
9. What are the principles of assessment?
10. Whose interest do you think Life Sciences CAPS assessment perpetuates?
11. How can learners apply the knowledge, skills and values they have learnt from these assessments in their everyday lives?
12. What kind of individuals do you think CAPS assessment will produce in the future?
13. How can you apply your agency in assessment?
14. What kind of support do novice teachers need to improve assessment practices in grade 10 Life Sciences?

Interview schedule

Participants	Time	Date	Location
Teacher Thuto	14:30	13/09/2023	Approved school
Teacher Mfundo	14:30	13/09/2023	Approved school
Teacher Tsebo	15:00	14/09/2023	Approved school
Teacher Lwazi	15:00	14/09/2023	Approved school

Appendix L: Semi-structured Interview guide

Part 1:

Semi-structured interview process

Introduce myself and explain the main aims and objectives of this research. Explain the consent form to the novice teacher then request teacher to sign consent form if they agree. Request novice teacher's permission to voice record the interview, then ask the teacher to create a pseudonym for confidentiality.

Part two:

Face-sheet

Interviewer:

Location:

Date:

Start Time:

End Time:

Demographics questions:

Gender:

Male: Female:

Age:

Certificate/Diploma/ Degree Course of Study:

School:

Class:

Position:

CAPS experience:

Part three:

Conduct the interview questions and record responses by note taking.

Part four:

Post-Interview Summary

Date:

Length of the interview:

1. What are the general practices of novice Life Sciences teachers in grade 10 regarding CAPS assessment?

2. How would you evaluate the quality of the interview?

3. Did the interviewee provide any valuable or intriguing responses to each question?

4. What aspects of the answered questions were particularly interesting?

5. Suggestions for follow-up in the second interview.

Appendix M: Classroom observation guide

Part 1:

Classroom observation process

I will introduce myself and outline the primary aims and objectives of this research. Explain the consent form to the novice teacher then request teacher to sign consent form if they agree and learners to provide consent forms signed by parents. Request novice teacher's permission to take notes during the observation, then ask the teacher to create a pseudonym for confidentiality.

Part two:

Face-sheet

Observer:

Location:

Date:

Start Time:

End Time:

Demographics questions:

Gender:

Male: Female:

Age:

Certificate/Diploma/ Degree Course of Study:

School:

Class:

Position:

CAPS experience:

Part three:

Conduct the classroom observation and take notes.

Part four:

Post classroom observation Summary

Date:

Length of the classroom observation:

1. What assessment practices do grade 10 Life Sciences novice teachers follow in relation to CAPS?

2. How would you evaluate the quality of the classroom observation?

3. Did the novice teacher provide meaningful or insightful responses to each question?

4. What observations stood out as intriguing?

5. Suggestions for following up with another novice teacher after the classroom observation.

Appendix N: Classroom observation schedule

Research questions:

- What are the principles and purposes of CAPS assessment?
- What are the novice teachers' experiences of implementing CAPS assessment?
- How do novice teachers assess grade 10 Life Sciences learners?
- What kind of support do novice teachers need to improve assessment practices in grade 10 Life Sciences?

Criteria	Not yet knowledgeable and understanding	Beginning of novice teacher's knowledge and understanding	Novice teacher's developing knowledge and understanding	Novice teacher's thoughtful insightful knowledge and understanding	Observer comments
1.Knowledge and understanding of Life Sciences CAPS assessment purposes					
2.Clear knowledge and understanding of Life Sciences CAPS assessment practices					
3.Knowledge and understanding					

of assessment principles					
4.Sufficient knowledge and understanding of assessment practices					
5.Appropriateness of assessment in relation of the content assessed and context which the assessment is conducted					
6.Relevance of assessment in the learners' everyday lives					
7.Easy accessibility of knowledge, skills and values of assessment conducted					
8.Novice teachers' ability to be transparent with the benefits of assessment to the learners					
9.Knowledge and understanding					

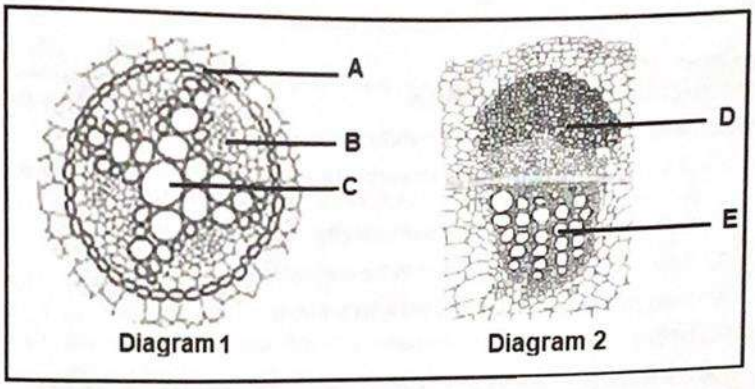
of future implications of assessment on learners					
10.Novice teacher's ability to apply agency in Life Sciences assessment					

Appendix O: Practical task

1.5 Draw a labeled diagram of a cell of tissue **D**. (5)
(13)

QUESTION 2

Study the electron micrographs of plant tissues below and answer the questions that follow.



2.1. Which diagram represents a cross section through a dicotyledenous root? (1)

2.2 Give labels for the following:
- a) **A** (1)
- b) **B** (1)
- c) **D** (1)

2.3 Write the LETTERS and NAME of the tissue that transports water. (3)

2.4 Tabulate TWO differences between Xylem and Phloem. (5)
(12)

QUESTION 3

Read the following extract from a practical investigation and answer the questions that follow.

Research was done to determine the effect of temperature on stomata activity in leaves. The plants were well watered and placed in a growth chamber where the light and CO_2 concentration were kept constant. The temperature was changed between a range of 19-48 °C and the stomata activity was recorded.

3.1 Identify the following:
- a) Independent variable (1)
- b) Dependant variable (1)

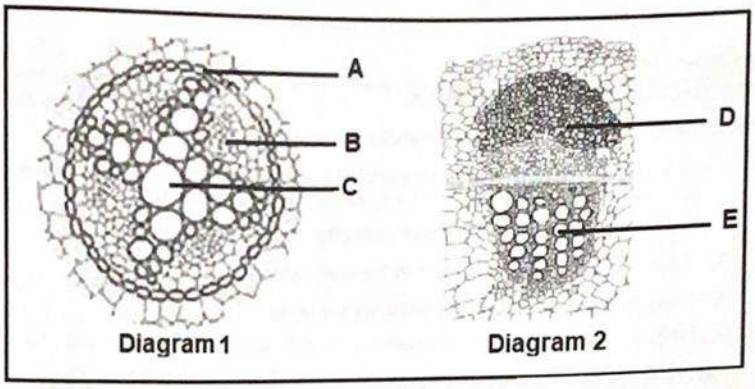
3.2 Name THREE ways in which validity was ensured in this experiment. (3)
(5)

TOTAL: 30

1.5 Draw a labeled diagram of a cell of tissue **D**. (5)
(13)

QUESTION 2

Study the electron micrographs of plant tissues below and answer the questions that follow.



2.1. Which diagram represents a cross section through a dicotyledenous root? (1)

2.2 Give labels for the following:
- a) **A** (1)
- b) **B** (1)
- c) **D** (1)

2.3 Write the LETTERS and NAME of the tissue that transports water. (3)

2.4 Tabulate TWO differences between Xylem and Phloem. (5)
(12)

QUESTION 3

Read the following extract from a practical investigation and answer the questions that follow.

Research was done to determine the effect of temperature on stomata activity in leaves. The plants were well watered and placed in a growth chamber where the light and CO_2 concentration were kept constant. The temperature was changed between a range of 19-48 °C and the stomata activity was recorded.

3.1 Identify the following:
- a) Independent variable (1)
- b) Dependant variable (1)

3.2 Name THREE ways in which validity was ensured in this experiment. (3)
(5)

TOTAL: 30

education
Department: Education
GAUTENG PROVINCE

Weighting: Practical Skills

Practical Skills						
Follow instructions	Handle equipment	Make observations	Draw a diagram	Calculation	Interpret	Design/Plan
		✓	✓		✓	✓

Weighting: Cognitive Levels & Degree of Difficulty

Question	Cognitive Levels				Levels of difficulty			
	Level A	Level B	Level C	Level D	Easy	Moderate	Difficult	Very difficult
	Knowledge	Understanding	Application	Evaluate, analyse & synthesize				
1.1(a)	1					1		
1.1(b)	1					1		
1.2			2				2	
1.3(a)		1				1		
1.3(b)	1				1			
1.4	1		1			2		
1.5	4		1			5		
2.1		1			1			
2.2	3					3		
2.3	1		2			1	2	
2.4		4	1		4			
3.1(a)				1	1			
3.1(b)				1	1			
3.2.				3				3
Total	**12**	**6**	**7**	**5**	**8**	**14**	**4**	**3**
Percentage	**40**	**20**	**23**	**17**	**27**	**47**	**13**	**10**

Appendix P: Controlled test

LIFE SCIENCES CONTROL TEST

14th SEPTEMBER 2023

GRADE 10

TIME : 1 hour 15 minutes

MARKS: 75

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions

1. Answer ALL the questions in your ANSWER BOOK.
2. Number the answers correctly according to the numbering system used in this question paper.
3. ALL drawings should be done in pencil and labeled in blue ink.
4. Write neatly and legibly

Total number of pages: 8

SECTION A

QUESTION 1

1.1 Various possible answers are provided for each of the following questions. Indicate only the letter that corresponds with the correct answer on your answer sheet.

1.1.1. How many cells will division of one cell by mitosis produce?

A. Two cells, each of which has a chromosome number half that of the parent cell.
B. Four nuclei, each of which has a chromosome number half that of the parent nucleus.
C. Two cells, each of which has the same number of chromosomes as the parent cell.
D. Four nuclei, each of which has the same number of chromosomes as the parent nucleus.

1.1.2. ... is the structure that attaches a leaf to the stem.

A. Lamina.
B. Peduncle.
C. Pedicel.
D. Petiole.

1.1.3. Which of the following statements is true about the pericycle?

A. Consists of cells containing casparian strips.
B. Differentiates into root hairs.
C. Encloses the endodermis.
D. Gives rise to lateral roots.

1.1.4. What is the total number of cells produced when a body cell divides three times in succession?

A. 3.
B. 6
C. 8
D. 16

1.1.5. The function of chlorenchyma tissue is to ...

A. provide support to aerial parts of a plant.
B. trap radiant energy for photosynthesis.
C. transport water and mineral salts.
D. prevent water loss from plants. (2x5) (10)

1.2 Give the correct biological term for each of the following descriptions. Write only the term next to the question number (1.2.1 to 1.2.3) in your ANSWER BOOK.

1.2.1. The area in the centre of the plant stem made of parenchyma tissue.

1.2.2. The phase during mitosis where the chromosomes arrange themselves along the middle of the cell and are attached to the spindle fibres.

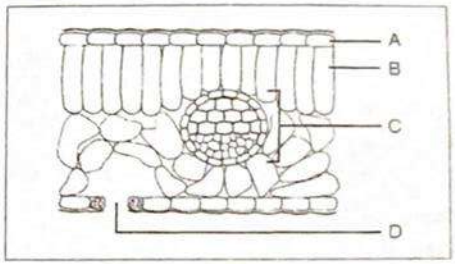
1.2.3. The organ that anchors the plant in the soil. (3)

1.3 Indicate whether each of the statements in COLUMN 1 applies to **A only, B only, both A and B** or **none** of the items in COLUMN 2. Write **A only, B only, both A and B** or **none** next to the question number (1.3.1 to 1.3.3).

	COLUMN 1	COLUMN 2
1.3.1.	The stage in the cell cycle when the cell performs its normal functions.	A. Interphase B. Cytokinesis
1.3.2.	Modified epidermal cells in the leaf of a plant.	A. Root hairs B. Guard cells
1.3.3.	Osteoblasts	A. Bone B. Cartilage

(3x2) (6)

1.4 Study the diagram of the internal structure of a dicotyledonous leaf and answer the questions that follow.



1.4.1. Provide **labels** and **one function** for the parts labeled B, C and D. (6)

TOTAL SECTION A: 25

SECTION B

QUESTION 2

2.1Study the diagrams below and answer the questions that follow.

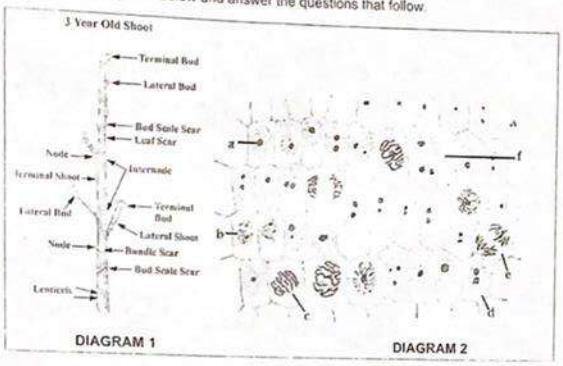


DIAGRAM 1 DIAGRAM 2

2.1.1. Identify by naming **two** places on diagram 1 where the tissue of diagram 2 can be found. (2)

2.1.2. Name the tissue in diagram 2 and describe the distinguishing characteristics of this tissue. (4)

2.1.3. In diagram 2, identify:
a) prophase,
b) anaphase and
c) telophase with their respective letters and give a reason for each answer. (6)

2.1.4. Draw and label a cell in metaphase. The cell should contain **four** chromosomes (4)

2.1.5. Define a node. (1)

2.1.6. What does the absence of leaves indicate about the type of plant in diagram 1? (1)

2.1.7 What observable evidence is there that the shoot did have leaves? (1)

[19]

2.2. Complete the table below that is comparing tissue found in the human body. Write the answer next to the number in your answer book. DO NOT REDRAW THE TABLE.

Type of tissue	Location	Function
Striated muscle	2.2.1.	2.2.2.
2.2.3.	Breathing passages	2.2.4.
2.2.5.	Covers end of bones at a joint.	2.2.6

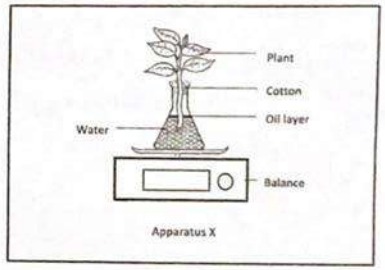
[6]

TOTAL QUESTION 2: 25

QUESTION 3

3.1. **An investigation was carried out to study the effect of light intensity on the opening and closing of the stomata.**

1. Apparatus **X** (shown in the diagram be ow) was used to measure the rate of water loss from the leaves at several light intensities.
2. At each light intensity, the apparatus was left for 15 minutes before starting measurements.
3. The water loss was recorded in the dark and at four different light intensities.
4. 200g of water was added to the glass flask



Apparatus X

The results of this investigation are shown in the table below:

Light intensity (kilolux)	Loss of water (g/hour) from 200g
0	1
10	15
20	20
30	22
40	20

3.1 State a hypothesis for this investigation. (2)

3.1.1. In the above investigation, state the
(a) Independent variable (1)
(b) Dependent variable (1)

3.1.2. What evidence supports the statement that the stomata are fully open at a light intensity of 30 kilolux? (2)

3.1.3. What is the purpose of the oil layer over the water surface in the flask? (2)

3.1.4. Why is the apparatus left for 15 minutes at each new light intensity before starting the measurements? (1)

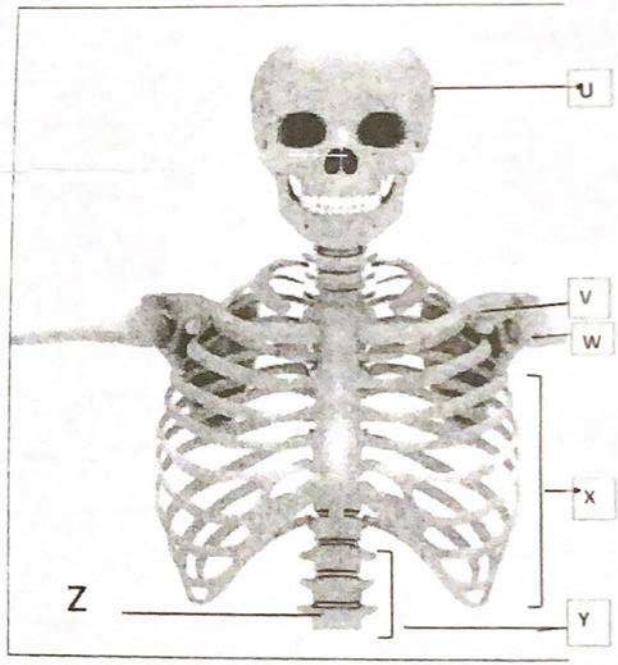
3.1.5. Predict the effect on the results if the investigation was carried out at a lower temperature. (1)

3.1.6. Give a reason for your prediction in QUESTION 3.1.6. (2)

3.1.7. Describe **one** way in which the reliability of the results obtained at each light intensity could have been improved. (2)

3.1.8. Calculate the percentage of water lost by the twig during the investigation. (3)
[17]

3.2 The diagram below shows part of the human skeleton. Study it and answer the questions that follow.



3.2.1 Using **letters** only identify the part that plays a vital role in preventing physical damage to...
(a) the spinal cord.
(b) the heart (2)

3.2.2 Explain the significance of having fibrous cartilaginous tissue at location Z. (2)

3.2.3 Write down **two letters** that show **two** bones that are part of the appendicular skeleton. (2)

3.2.4 Apart from protecting internal organs, state **two** other functions of the human skeleton. (2)

[8]

TOTAL QUESTION 3: 25

GRAND TOTAL MARKS: 75

Appendix Q: Permission letter to schools



University of the Witwatersrand,
Wits school of Education, 011 717 3003

Name of School

Name of Principal

Address of school

Date

Dear Principal

Re: Permission to conduct research at xxxxxx High School.

I am pursuing a Master's degree at the University of the Witwatersrand's School of Education. I am requesting permission to conduct my research at xxxx High School.

My study focuses on the practices of novice teachers in grade 10 Life Sciences regarding CAPS assessment in township high schools. This research aims to provide novice teachers a platform to share their experiences with CAPS assessment. I will explore whether CAPS assessment effectively equips learners with the essential knowledge, skills, and values necessary for personal fulfillment and active citizenship in a democratic South Africa. Additionally, I will identify how grade 10 Life Sciences novice teachers can exercise their agency in the assessment process. The research will involve semi-structured interviews with novice teachers and classroom observations during assessments.

I chose this topic because I am a novice Life Sciences teacher, and this research will help me understand what to expect as I begin my teaching career, including how to address challenges teachers face in implementing CAPS assessment. It will also provide me with insights into the high school environment. I believe this study will benefit my fellow novice

teachers, researchers, and stakeholders involved in curriculum design and improvement. I selected xxxx High School because of its strong performance, as reflected in its matric results, and its location in a township. The school has significant potential, despite the challenges presented by its context. I believe there is valuable information to uncover in this setting.

The research will involve gathering data from novice teachers at the school. I will invite novice teachers specifically from your school to participate in this study. If they agree, they will each take part in an individual interview that will last no longer than an hour. These interviews will occur on school premises after hours, and the participants' responses will be audio recorded.

Participants will be asked to provide written or verbal consent before the research begins. Their contributions will be kept confidential, and their identities (including their names and the school's name) will remain anonymous unless expressly stated otherwise. Individual privacy will be upheld in all published materials resulting from this study. Consent from parents will also be required for their children to participate in the classroom observations.

The findings will be included in my research project submitted to the University of the Witwatersrand.

Participants will not receive any advantages or disadvantages for their involvement. They will be assured that they may withdraw their consent at any point during the project without penalty. There are no anticipated risks associated with participating in this study, and participants will not receive payment.

All research data will be stored securely on my password-protected laptop for five years, after which it will be destroyed. Other researchers will need to obtain ethical clearance to access this data.

Thus, I request written permission to carry out my research at your school. The permission letter should be on your organization's letterhead, signed, dated, and specifically mention my name and the title of my study.

Please let me know if you need any additional information. I look forward to your timely response.

Yours sincerely,
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