



## **Dissertation**

for

### **MASTER OF EDUCATION**

with the title:

The role played by Life Sciences Curriculum Advisors in ensuring that schools conduct practical work in the Western Cape, Cape Flats.

### **FACULTY OF EDUCATION**

**Candidate** : Ms Asanda Hlamandana  
**Student Number** : 213144255  
**Supervisor** : Dr Kwanele Booie  
**Co-supervisor** : Ms Vanessa Van Staden

## **ABSTRACT**

The poor performance in the Life Sciences Practical work in the Cape Flats township schools in the Western Cape is a result of a lack of resources to perform such tasks. For teachers and learners to conduct practical work effectively depends highly on curriculum advisors. Curriculum advisory is the process of overseeing and providing interventions to overcome curriculum challenges that schools face.

This study investigated the role played by Life Sciences Curriculum Advisors in ensuring that schools conduct practical work in the Cape Flats in the Western Cape. Five Life Sciences curriculum advisors of the Western Cape, specifically working in the Cape Flats, were interviewed and shared documents relating to their roles. The quantitative data collected by document analysis and questionnaires were analysed. Findings showed that curriculum advisors were doing their work as per their job descriptions; however, a lack of budget, lack of manpower, and time constraints interfered with this.

Key words : Curriculum Advisors, Life Sciences , Practical work, Teacher support , Monitoring , Support

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Finally, I want to praise myself for working hard and pushing through the days when I did not have the energy to read or work. Blessings from the All-Powerful God.

## DECLARATION

I, Asanda Hlamandana, declare that the work presented in this dissertation with the title: **“The role played by Life Sciences Curriculum Advisors in ensuring that schools conduct practical work in the Western Cape, Cape Flats”** is my own work and where other sources were used for reference, were acknowledged and referenced according to the Harvard system of referencing.

Name: Asanda Hlamandana, at Cape Peninsula University of Technology (South Africa)

Signature: *A Hlamandana*

Date: 23 September 2023

## **LIST OF ACRONYMS**

### **ACRONYMS**

CAs	Curriculum Advisors
CAPS	Curriculum and Assessment Policy Statements
DBE	Department of Basic Education
DoE	Department of Basic Education
FET	Further Education Training
McREL	Mid-Continent Research for Education and Learning
PCK	Pedagogical Content Knowledge
PHE	Policy Handbook for Educators
SGB	School Governing Body
WCED	Western Cape Department of Education

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# **CHAPTER 1: OVERVIEW OF THE STUDY**

## **1.1. Background of the study**

Curriculum Advisory can be defined as a method of supervision in education. Supervision is defined as “the regular/periodic oversight of individuals or entities, which uses the results of the evaluation (and sometimes inspection) to inform and direct action of those supervised,” (World Bank, 2010). In some cases, supervision overlaps with evaluation and inspection as well as supporting advice. According to Bernard and Goodyear (2004). Curriculum advisory refers to concerted effort made by a senior academic or subject expert to a junior member of a profession in which the former assesses and improves the knowledge and skills of the latter. Therefore, education supervision is a process which emphasises on the collaborative work of subject advisors and subject teachers with aim of improving performance when discharging their skills and knowledge in teaching and learning (Ncube, Tshabalala, Muranda & Mapolisa, 2015)

Literature shows that the main purpose of supervision in educations is to improve standards and the quality of education, and this means that programmes for improving schools should always have supervision (Wanzare, 2002). Okendu (2012: 23) views supervision as “the process of enhancing the professional growth of the teachers, the curriculum and improving the techniques of teaching in the classroom through democratic interactions between the teacher and the supervisor.” Supervision in education entails thorough planning which requires a strong corporation between curriculum advisors and subject teachers (Ololube, 2014). Education supervision can enable the monitoring of the work of each Life Sciences teachers so that appropriate support is given to improve the

performance of the concerned teachers. According to the perspective of more experienced education specialists, Curriculum Advisory incorporates many activities intended to give direction and feedback to teachers or educationists who may not have enough experience.

There have been developments worldwide to monitor the standards and quality of education systems in different countries (Wanzare, 2002). The monitoring process involves school visits, simple evaluative research of a school, self-evaluation in school supervised by education inspectors or subject advisors. Kithuka (2015) suggests that subject monitoring plays a two-fold role whose purpose is school improvement and as well as enforcing accountability among subject teachers and school principals. Furthermore, monitoring is intended to enable schools to improve performance by providing controls to check how teachers operate to achieve the set objectives. This implies that statutory goals of monitoring and supervision are designed to control and arouse the motivation to improve the quality of education offered mostly in public schools (Inggris, 2012). Therefore, educational supervision can be viewed as the “art and science of maintaining and improving teaching and learning”, (Harris, 2002:28).

Similarly, Whitworth and Chiu (2015) emphasise of the importance of understanding how school with the assistance of subject advisors view teacher professional development in their daily work as well as the variables that affect their decision-making when it comes to selecting and creating professional development. Understanding these elements can help explain the professional development districts decide to offer teachers. External oversight emphasises learner outcomes, instructional effectiveness, leadership, learner

requirements, and the capacity of schools to identify and address key areas of strength and weakness (World Bank, 2010). Similarly, Sule (2013) argues that all forms of school supervision can be used as instruments to improve educational achievements in Nigeria in response to critics of the quality of education as well as acting as a gauge of improvement on the stark decreasing trend in educational success.

When providing support and developing teachers, curriculum advisors do make observation they use to provide constructive advice to teachers and strategies for continued progress based on identified developmental needs. It is expected that the strategies be selected properly to meet the skills set of teachers (UNESCO, 2007). curriculum advisory is critical in facilitating the professional growth of a teacher, mainly giving feedback to teachers about classroom interaction and assisting teachers to make teaching effective based on the given feedback (Glatthorn, 2004).

Given the initiation of practical work in high school science education in the early 1800s, high school science education aims to offer scientific knowledge for all learners as part of broadminded education and to prepare learners for further studies and work. Practical work is often used in teaching and learning science disciplines, especially in a broad spectrum of biological sciences (Bethanie, 2015).

In South Africa, Life Science education is different from other school subjects due to the nature of practical work and activities involved. The practical work and activities provide learners with an opportunity to manipulate real objects and materials while observing how they behave. Therefore, teachers, curriculum advisors, and others (particularly scientists)

often see practical work as crucial to the appeal and efficiency of science teaching and learning. Therefore, practical work plays a vital role in reinforcing the content taught in the classroom. It is argued that the effectiveness of practical work is encouraged through learners' direct experimentation rather than the teacher's demonstration (Reid & Shah 2007). Practical work offers a distinctive method for teaching and learning in science education (Hofstein & Lunetta 2003). Science educators have suggested that there are rich benefits in learning that accrue from using laboratory activities.

Practical work enhances fruitful learning in Life Sciences and other science disciplines, where teachers give learners opportunities to control apparatus and material in an environment suitable for them to construct their knowledge (Hofstein & Lunetta 2003). Furthermore, practical work has a perspective of expediting the learning of science concepts and skills. In the dispensation of reform in science education, both content and pedagogy of science learning are being scrutinised to advance the new meaningful science education. Hofstein and Lunetta (2003) advocate for the emphasis on rethinking the role and practice of practical work in teaching and learning science.

The national school curriculum, Curriculum Assessment Policy Statement (CAPS), emphasises that among the curriculum policy aims of the Life Sciences curriculum is to do practical work in support of the nature of the Life Sciences discipline (DoE, 2011). Apart from the philosophy of this curriculum, which advocates for merging content knowledge with practical skills, experimentation and practice are substantial to help learners have a better understanding of content work. Therefore, the science Curriculum Advisor can play an essential role in upskilling and improving the quality of science

teaching in South African schools. As such, this study investigates the supposed functions of Life Sciences Curriculum Advisors in ensuring that teachers can conduct practical work.

The curriculum Assessment Policy Statement (CAPS) document asserts:

“Assessment is a continuous planned process of identifying, gathering, and interpreting information about the performance of learners, using various forms of assessment. It involves four steps: generating and collecting evidence of achievement, evaluating this evidence, recording the findings, and using this information to understand and assist in the learners’ development to improve the process of learning and teaching. Assessment should be both informal (Assessment for Learning) and formal (Assessment of Learning). In both cases, regular feedback should be provided to learners to enhance the learning experience. School-based assessment (SBA) forms part of the formal assessment component. It is a purposive collection of learners’ work that tells the story of the learners’ efforts, progress, or achievement in attaining knowledge (content, concepts, and skills) in the subject. The advantages of school-based assessment can be summarised as follows:

- It provides a more balanced and trustworthy assessment system, increasing the range and diversity of assessment tasks.
- It improves the reliability of assessment because judgments are based on many observations of the learner over an extended period.
- It empowers teachers to become part of the assessment process and enhances collaboration and sharing of expertise within and across schools.
- It has a professional development function, building up practical skills in teacher assessment which can then be transferred to other areas of the curriculum.

School-based assessment forms part of a year-long formal Programme of Assessment in each grade and subject. The assessment tasks should be carefully designed to cover the content of the subject as well as the range of skills and cognitive levels that have been identified in specific aims. Tests, practical tasks, assignments, and projects make up the SBA component in Life Sciences. Teachers should ensure learners understand the assessment criteria and have extensive experience using it for self-and peer assessment in informal situations before conducting a planned formal assessment activity. Teachers should also have used these criteria for informal assessment and teaching purposes before they conduct any formal assessment so that learners are familiar with the criteria and the assessment process.” (DBE, 2011: 5-6).

## **1.2. Research Aim**

This study aimed at establishing the role played by the Life Sciences school curriculum in ensuring that Life Sciences teachers conduct practical work at the FET phases and how they play a supportive role in ensuring that practical work is done adequately by teachers. Challenges identified by Curriculum Advisors were explored, and how they were ameliorated in ensuring that Life Sciences teachers conduct practical work as one of the pedagogies.

### **1.2.1 Objectives**

- To explore the perceptions of Life Sciences teachers of the role of the CA in ensuring that practical work forms part of the teaching and learning of Life Sciences at schools in the Cape Flats in the Western Cape.
- To identify the challenges experienced by Life Sciences teachers at schools in the Cape Flats in the Western Cape in the effective execution of practical work.
- To explore the Curriculum Advisors' roles in assisting with challenges experienced by Life Sciences teachers at schools in the Cape Flats in the Western Cape to ensure that they are supported to conduct practical work adequately.

### **1.3. Research Question**

What role are Life Sciences Curriculum Advisors playing to ensure that Life Sciences teachers efficiently and effectively conduct practical work at the Cape Flats schools?

#### **1.3.1 Sub-questions**

1. How do the Curriculum Advisors assist Life Sciences teachers in ensuring that practical work is thoroughly conducted at the Cape Flats Schools?
2. What are the Curriculum Advisors' perceived challenges for educators in incorporating practical work when teaching Life Sciences at the Cape Flats Schools?
3. How do Curriculum Advisors investigate and solve challenges teachers experience when teaching Life Sciences practical work at the Cape Flats schools?



#### **1.4. Literature Review**

For educational development in the twenty-first century, science subjects are crucial. Any educational system must train, mentor, and prepare its inhabitants to compete globally. Life sciences is a subject of science that necessitates specific educational techniques to help learners operate specialised tools and apparatus to improve their comprehension of a particular subject. Practical laboratory work is an essential technique for teaching Life Sciences learners how to understand the actual operation of scientific laws and prove ideas using their own reasoning. Practical work in the laboratory enables learners to build up their knowledge through tests they carry out by adjusting equipment. Many researchers have conducted studies into the value of doing practical labour and investigating natural occurrences (Woodley, 2009; Perry, 2015). However, some academics argue that practical work overburdens the time allotted for teaching and learning, preventing teachers from completing all the curriculum's required assignments (Killbridge & Teffo, 2014; Rotto & Teffo, 2014; Perry, 2015). Practical practice is expected to be an essential component of yearly scientific study in South African schools (DoE, 2011). Basic laboratory facilities are lacking in many South African schools, notably those in lower-income and rural areas. This study examined interventions to increase learners' preparedness for the laboratory environment and the assistance provided considering the gap between the conditions at underprivileged schools and the anticipated life sciences training facilities.

### **1.4.1. Background to Laboratory and Practical work in teaching and learning of Life sciences**

Developing nations remain typically linked with glaring inequalities among societal classes, while developed countries, like Britain, have class forms with equivalent polarity. Oxfam estimates that a 6% minority elite controls 86% of Britain's wealth (Woodley, 2009). However, when historical wealth is concentrated in the hands of an aristocracy or plutocratic minority, the root of vast disparities in nations like South Africa is not inherited. Governments in developing nations that embrace Western political models without scrutiny or reflection frequently contribute to social stratification in these nations (Bokana and Tewari, 2014; Booyse, Le Roux, Seroto & Wolhuter, 2011). Often, the widespread acceptance of foreign structures or the colonial imposition of ineffective forms of administration polarises society.

Settlement sentiments from European motherlands like England or Holland were reproduced in this split. To address the inequities brought about by the previous regimes, the democratic dispensation of 1994 instituted, in theory, equal education for all the nation's citizens (DoE, 1998). As a result, inequalities have been eliminated in several places, and certain adjustments have been successful. However, the gaps between schools serve as a painful reminder of the ongoing inequalities. The uncritical absorption of foreign ideas and the continued existence of institutions that did not emerge naturally from the historical roots of its own cultures and people have particularly affected South Africa. Citizens are consequently frequently categorised and condemned based on their social and economic status. These social classes have worsened the disparities in educational backgrounds brought on by the quintile system and the classification of

schools according to various societal groups. Prior to the democratic era, there were severe racial and social divisions within the South African educational system (CHE, 2013; Fisher & Scott, 2011; Booyse, Le Roux, Seroto & Wolhuter, 2011).

A single, unified education system for all residents was created, at least on paper, because of legislation for the democratisation of education in South Africa. Researchers in education curricula have recently referred to these paradigm shifts as "the education for the 21st century" (Meyer & Land, 2003). Although the act of parliament altered the educational system, instruction in schools and tertiary institutions has not always shifted from one institution to another. In many respects, the divide between wealthy and poor schools has been accentuated by the classification of schools into quintiles. Redressing discrepancies was a key component of the problem of addressing anomalies left over from the previous administration; this process has proven more successful than initially anticipated. Practically speaking, many times, particularly in underprivileged rural schools, the quality and condition of schools and tertiary institutions have stagnated (Meyer & Land, 2003).

Wealthy and middle-class parents who have saved enough money prefer to enrol their children at ex-model C schools because they are already well-resourced. Functional libraries and laboratories, as well as trained instructors who can impart subject-matter expertise to learners to improve their performance in scientific subjects, are some advantages these institutions can provide (Meyer & Land, 2003; Booyse *et al.*, 2011). Due to a lack of such resources, matriculants from underprivileged schools do poorly. A broad group of learners enrol in Life Sciences at the postsecondary level because of the stark

difference between quintile 1 and quintile 5 schools. Some learners have first-hand experience working in a lab, whilst others have never entered one, much less mastered fundamental practical skills like lighting a bunsen burner. Most underprivileged learners are forced to attend underfunded institutions with underqualified instructors who fail to communicate discipline information in Life Sciences classes due to a lack of Life Sciences laboratories or, in many cases, underfunded Life Sciences laboratories (Botha & Reddy, 2011, Meyer & Land, 2003; Booyse *et al.*, 2011).

The Society of Biology, an organisation that advocates for biology education in schools, colleges, and universities, contributed research-based literature for this study (Musante & Potter, 2012). This organisation emphasises the importance of imparting biology knowledge and skills at all levels. This group presents biology as a practical science; they maintain that the keys to improved learning, clarification, and consolidation of the theory are high-quality suitable biology experiments and study (Sharma, 2017). The Society holds that by engaging in studies that pique interest and support learning and retention, practical activities allow learners to apply and broaden their grasp of the biology curriculum. The Society of Biology views practical work as a means of assisting learners in expanding their knowledge through experiments and observation to direct them on the processes of how information is formed. Research has shown that successful practical work encourages learners' engagement and attention as well as the development of a variety of fundamental scientific concepts, demonstrating the value of practical work in science (Woodley, 2009).

The Society of Biology defines practical work as a *“key factor in engaging, enthusing and inspiring learners, thus stimulating lifelong interest in science, high quality, appropriate practical work is the central work to effective learning in science”* (Society of Biology, 2010).

According to the Society of Biology, practical work is believed to help in several ways: it encourages active learning and problem-solving; fosters learner engagement with the scientific method; fosters creativity, curiosity, and critical thinking; provides chances to gather and evaluate data and use mathematical abilities; and supports and illustrates concepts, knowledge, and principles.

#### **1.4.2 Theoretical Framework**

The theoretical framework was situated under Bourdieu's Theory (Bourdieu, 2005) and pedagogical content knowledge (PCK), which was first presented by Shulman in the 1980s and is the merging of pedagogy and topic content knowledge. He said that the concept of PCK was nothing new because, as early as the 1950s, content and pedagogy were seen to be one cohesive body of knowledge, with content focusing on what is known and pedagogy on how to teach it (1986b). Shulman was introduced because, compared to other jobs, teaching is frequently seen as a non-professional one. These theories consider socioeconomic concerns that affect how knowledge is acquired in the academic setting.

The social field and social space, where learners come from various backgrounds, affect how their knowledge and abilities relate to one another and the environment. This interdependence affects the coping mechanisms that Life Sciences learners use to broaden their disciplinary, scientific, and cultural knowledge. Scientific capital is defined as the disciplinary knowledge that endows learners of the life sciences with unique abilities that are influenced by their surroundings. Due to their varied backgrounds, life sciences learners are differentiating agents of the discipline field's scientific and cultural capital. As agents, individuals gain the ability to question their knowledge acquisition processes and assess their peers' perceptions of their talents (Bourdieu, 2005). This inquiry suggests that learning happens in a graded fashion. Learners behave within the bounds of a specific disciplinary field's rules – in this case, the Life Sciences – and progressively develop the ability to ask thoughtful, organised questions about their surroundings.

In this study, the PCK theory was used to examine the various ways that Curriculum Advisers support Life Sciences teachers as they seek to carry out practical activities (Bashkir, 1994a: 170). According to Bourdieu, the "habitus" – which he defines as a characteristic of social agents (whether people, groups, or organisations) that compose "a structured and structuring structure" – contains the social nature of knowledge. Individuals' present and historical circumstances, such as their family background and educational experiences, "shape" their habits. Habitus suggests that each learner's practices individually shape "structure." The ability to operate equipment and carry out practical experiments in a life sciences laboratory is an example of practice, which refers to the relationship between a learner's habitus or disposition and the scientific and cultural

capital of the subject. The Cape Flats, in this case, is the milieu in which learners find themselves, and according to this idea, it shapes knowledge practices that are influenced by habitus. It is impossible to separate the acquisition of knowledge from the current conditions and settings.

Applying Shulman's theory is one method that this study tries to make sense of the roles that curriculum advisers play in ensuring that instructors and learners can carry out real-world investigative activities and their knowledge practices. According to Shulman (1987), a teacher must possess seven knowledge bases to instruct learners successfully. The seven knowledge bases are as follows: knowledge of the subject matter; knowledge of general pedagogy; knowledge of curriculum; knowledge of pedagogical content; knowledge of learners and their characteristics; knowledge of educational contexts; and knowledge of educational ends, purposes, and values. This claim assists in defining the function of curriculum advisers in ensuring that practical work is done in classrooms.

## **1.5. Methodology**

### **1.5.1. Introduction**

Research methodology is the systematic, theoretical analysis of the methods applied in this research study (Iguanangu, 2016). It incorporates notions such as paradigms, theoretical models, phases, and qualitative techniques. According to Iguanangu (2016), the methodology does not set out to provide answers to the problem, but it offers the theoretical foundation for understanding which method is suitable for a study. Methodology as a general research strategy outline how a research project is undertaken

(Iguanangu, 2016). Amongst other things, it identifies the methods used in this study. The method elucidated in the methodology skeletons the mode of data collection and how the results were measured (Kielmann *et al.*, 2012). Mishra and Alok (2017) contend that methodology does not define the study's method but focuses on the nature of the study and the kind of procedures to be followed to attain the aims and objectives of the study.

### **1.5.2 Research approach: design and paradigm**

This research project was positioned within an Interpretivist/constructivist paradigm qualitative approach to understand the world of human experience using laboratory work to suggest that reality is socially constructed (Mackenzie & Knipe, 2006). Interpretivist /constructivists intend to rely on the participants' view of the situation being investigated and recognise the impact on the research of their background and experiences (Mackenzie & Knipe, 2006). Study design refers to the approach that helps the researcher choose the correct and appropriate research method (Kielmann *et al.*, 2012). This study will use the qualitative method. Kielmann *et al.* (2012) define qualitative research as an inquiry that explores a social or human problem. The choice of the qualitative research approach was to strengthen the understanding of the reasons behind the rationale that led to this study. The nature of this study requires a constructivist view of the actual situation. Mishra and Alok (2017) suggest that the reality is in the eyes of Life Sciences educators, who know the situation better than any other teachers. According to Kielmann *et al.* (2012), there is no single reality for this kind of research method (qualitative), but it unveils reality that can only be captured using the subjective and naturalistic method.



### **1.5.3 Data collection instruments**

Data collection instruments refers to the tools that researchers use to generate data from various sources to answer research questions or understand the phenomenon (Leech & Onwuegbuzie, 2010). The type of data needed in a study determines the data collection instrument to be used. In a qualitative study, qualitative data are collected using an instrument that should guarantee trustworthiness qualities such as integrity, credibility, and dependability of the data (Rossman & Rallis, 2003). According to Hardy and Bryman (2004), trustworthiness is crucial in any qualitative study and the researcher should design data collection instruments to meet this quality.

The data collection instruments influenced the data collection strategies used in this qualitative study. For this study, data was collected using two questionnaires consisting structured questions with options for the participants to choose options that matched preferred responses. Qualitative data was collected using inquiry-informed development approach as encouraged by O’Cathain, Murphy and Nicholl (2010). Data was collected from individual interviews and this aimed at expanding information gathered using questionnaires.

### **1.5.4 Sampling strategy**

A sample is a “small group of subjects or participants from whom data is collected” (McMillan & Schumacher, 2010: 19). The importance of specifying sample size in a study is emphasised by Leech and Onwuegbuzie (2010) who encourage researchers to put in

place methods of sampling suitable for the study and the number of participants to be used. Charmaz (2014) is of the view that the sample criterion for a study should be determined before the data collection process is started. This study uses a sampling model for research formulated by Onwuegbuzie and Collins (2007). The sampling model elucidates a simple typology of a research sampling method classified as to (a) the time orientation of the components occur, either concurrently or sequentially, and (b) the how connected are the qualitative samples to be used. The researcher has to compare different samples such as identical and parallel or nested and multilevel.

This study used the sequential design which prompted the researcher to choose an identical relationship typology in which the same participants were involved in both qualitative phases of the study. This implies that data used in this study was collected from the same participants using questionnaires as well as individual interviews. Purposive sampling was preferred over other sampling techniques because qualitative data was collected from participants who the researcher thought were able to provide the data needed to answer questions in this study. Furthermore, data was to be collected from the participants from their natural settings where participants were able to express their thoughts and beliefs freely. The use of purposive sampling in qualitative studies is emphasised by Patton (2002) who advises researchers to decide how they would sample participants prior to data collection.

Patton (2015) is another author who values the use of purposive sampling in qualitative data collection. The author observes that purposive sampling can enable the researcher to justify the selection of information-rich participants that will be used in an in-depth study.

Such a decision was likely to assist the researcher to have clear insights into the issue of importance addressed in the study. In this study, data was collected mainly through interviews from participants and focus groups. This was achieved by purposively selecting participants considering the knowledge they have in the issue being researched and their ability to explain a group or sub-cultures they belong to (Van Manen, 2014). Therefore, the researcher selected the participants based on the knowledge she/he has of each of them, and how they participated in Life Sciences teaching in the cluster. It was expected that each of the participants has rich and relevant information of the subject matter on which most of the research questions were based particularly the quality-of-Life Sciences practical work teaching (Yin, 2011).

The samples used in this study comprised of five Life Sciences Curriculum Advisors. All sampled participants worked in the same geographical location but in different metros, making it easy to collect data and replace the participants who could have left the study before the end of the data collection process.

The involvement of curriculum advisors in this study provided the most relevant data on the support and supervision provided as they are the ones that provide leadership to Life Sciences educators.

#### **1.5.5. Data Analysis**

Themes were developed from the coded transcripts of the interview data using an open coding technique to help the researcher determine how much of the empirical research

findings are contained in the themes. Categories, themes, and implications derived from the themes discovered were used to examine the data. To triangulate the information from the interviews, information from the Likert scale was utilised to investigate any gaps in the information from the interviews and vice versa. The study's conclusions were derived using both sets of data.

### **1.5.6 Trustworthiness**

According to Kumar (2005), a research tool's ability to measure the specific thing it was designed to measure determines its reliability. Smith (1991:106 in Kumar 2005) defined trustworthiness as the degree to which the researcher has measured what she set out to test. The researcher had to ensure that she collected information from interviews with the curriculum advisors.

### **1.5.7 Ethical Considerations**

Ethics must always be considered when conducting research. The researcher's ethics influence a study's validity and reliability. Despite the established guidelines for ethical concerns, the actual ethical practice depends on the values and ethics of the researcher (Merriam, 2009). For this study, informed consent, confidentiality, data access, and ownership were considered ethical issues. Participants were also told of the study's goal and procedures (Patton, 2002).

### **1.5.7.1. Debriefing participants on the purpose of the study and methods**

After gaining ethical approval to collect the data, appointments with participants were scheduled to discuss the study's goal and data-collection procedures. At these meetings, questionnaires were distributed to the participants.

### **1.5.7.2 Informed consent**

People must have insights into what it means to engage in a research study to make an informed decision about whether to do so. This is accomplished through informed consent. It entails requesting consent from participants to take part in the study, claims Kumar (2005). Forms of consent were given to participants, who were asked to sign them and provide a duplicate to the researcher.

### **1.5.7.3. Confidentiality**

Confidentiality refers to how information is handled while protecting the identities of the parties and the institutions involved (Punch, 2006). Measuring the risks of a certain situation to a given group, much alone to an individual, is not always simple or even practical. Smythe and Murray (2000) stress the importance of listening to people when they describe what is significant in their life. Additionally, they illustrate how ethical dilemmas can arise for qualitative researchers because their engagement in participants' lives is sometimes personal. There may be discrepancies among participants' interpretations and the researcher's subject interpretation since the researcher constructed meaning based on the stories of the participants (Smythe & Murray, 2000). Permission letters for participants provided a guarantee of data confidentiality. The

location and participants were noted on paper in accordance with the regulations (McMillan & Schumacher, 2010).

#### **1.5.7.4. Data access and ownership**

Both the data provided, and the name of the participant would be kept confidential. The participants' identities were never disclosed and were never stored in unsecured computer files or notebooks (Patton & Cochran, 2002). Responses by participants were will not be shared with anyone. All information was retyped and entered a computer. The university will not have access to the study until the study's findings have been made public and disclosed.

#### **1.6. Position of a researcher in the study**

The researcher worked closely with participants to direct the data collection process and was involved in the analysis and writing of the thesis and other research outputs (supervisors).

#### **1.7. Preliminary Chapter Division**

Chapter 1: Background to the study

Chapter 2: Literature study including conceptual framework and theoretical framework

Chapter 3: Methodology

Chapter 4: Presentation and discussion of results

Chapter 4: Conclusions and recommendations

Chapter 5: References

## CHAPTER 2 LITERATURE REVIEW

### 2.1. Introduction

For educational development in the twenty-first century, science subjects are crucial. Any educational system must train, mentor, and prepare its inhabitants to compete globally. Life Sciences is a discipline of science requiring certain teaching and learning techniques to enable learners to operate specialised tools and apparatus to improve their comprehension of a particular subject. Practical laboratory work is essential for teaching science learners how to understand the actual operation of scientific laws and prove ideas using their own reasoning. Practical work in the lab enables learners to build up their knowledge through tests they carry out by adjusting equipment. Many researchers have conducted studies into the value of doing practical labour and investigating natural occurrences (Woodley, 2009; Perry, 2015). However, some academics argue that practical work overburdens the time allotted for teaching and learning, preventing teachers from completing all the curriculum's required assignments (Killbridge & Teffo, 2014; Rotto & Teffo, 2014; Perry, 2015). Practical practice is expected to be an essential component of yearly scientific study in South African schools (DoE, 2011). Many South African schools, especially those in townships like the Cape Flats in the Western Cape, lack even the most basic laboratory equipment.

The Policy Handbook for Educators (PHE) states that teachers should follow the advice of Curriculum Advisers (CAs) to achieve successful outcomes. In addition to promoting the values of impartiality and equity in the workplace, curriculum advisors' advice involves the construction of an atmosphere that generates and fosters commitment and confidence among co-workers and teachers. Additionally, CAs must exercise professional leadership by helping teachers recognise, evaluate, and cater to learners' needs. They promote the use and distribution of good practices in all fields of employment in this way (ELRC, 2003). To effectively communicate with principals, other staff, parents, and school governing bodies (SGBs); to ensure prompt feedback from institutions; to consult with all stakeholders on decisions that affect them; to clearly explain the goals of any

intervention(s) to learners, teachers, and others; and to lead workshops, case conferences, and meetings as necessary are just a few of the key communication-related aspects outlined in the PHE (DoE, 2003b). The deployment of staff and resources to facilitate teaching and learning, the provision of guidance and counselling to learners upon request, collaboration with schools and parents to improve teaching and learning, the development of systems of monitoring and recording the progress made towards the achievement of learner progress targets, and facilitating curriculum were among the core curriculum advisor responsibilities that had an impact on curriculum delivery.

This study looked at interventions made to improve learners' preparedness for the laboratory environment and the support given to teachers by Curriculum Advisors to ensure schools in the Western Cape, particularly the Cape Flats, can conduct practical work effectively. This was done considering the discrepancy between the desired facilities and training of the sciences and the actual conditions at poor schools.

## **2.2. Background to Laboratory and Practical work in teaching and learning of Life Sciences.**

According to Woodley(2009) It is unclear what the goal of laboratory and practical work is in the teaching and learning of sciences. One well-known objective of practical work – teaching learners how to build "experimental skills" – is said to be best understood as having a distinct knowledge base connected to an understanding of scientific evidence. It is explained how comprehending the evidence for employment in science, engineering, and with reference to scientific literacy in the community has implications and value. The recommended knowledge base material is supported by evidence, and instructional strategies are taken into consideration. Even though many other teaching strategies can be employed, practical work plays a crucial part in the teaching of evidence, provided that the kind of practical work is appropriately chosen with a specific goal in mind.

Although so-called developed nations like Great Britain have class structures with comparable polarities, developing countries are frequently associated with stark



differences between social classes: Oxfam estimates that a 6% minority elite controls 86% of Britain's wealth (Woodley, 2009). However, when historical wealth is concentrated in the hands of an aristocracy or plutocratic minority, the root of vast disparities in nations like South Africa is not inherited. Governments that embrace Western political models in developing nations without scrutiny or reflection frequently contribute to social stratification in these nations (Bokana & Tewari, 2014; Booyse *et al.*, 2011). The widespread adoption of foreign institutions or the colonial imposition of ineffective forms of administration frequently polarises society into socioeconomic status-based classes (Fisher & Scott, 2011; Bokana & Tewari, 2014).

The ways in which a department of education, as the custodian of curriculum, designs, administers, and evaluates its curricula, can be seen as examples of such economic polarisation and social inequality. The uncritical absorption of foreign ideas and the continued existence of institutions that did not emerge naturally from the historical roots of its own cultures and people have particularly affected South Africa. Citizens are consequently frequently categorised and condemned based on their social and economic status. These social classes have worsened the disparities in educational backgrounds brought on by the quintile system and the classification of schools according to various societal groups. Prior to the democratic era, there were severe racial and social divisions within the South African educational system (CHE, 2013; Fisher & Scott, 2011; Booyse *et al.*, 2011). Settlement sentiments from European motherlands like England or Holland were reproduced in this split. To address the inequities brought about by the previous regimes, the democratic dispensation of 1994 instituted, in theory, equal education for all the nation's citizens (DoE, 1998). As a result, inequalities have been eliminated in several places, and certain adjustments have been successful. However, the gaps between schools serve as a painful reminder of the ongoing inequalities.

A single, unified education system for all residents was created, at least on paper, because of legislation for the democratisation of education in South Africa. Researchers in education curricula have recently referred to these paradigm shifts as "the education for the 21st century" (Meyer & Land, 2003). Although the act of parliament altered the

educational system, instruction in schools and tertiary institutions has not always shifted from one institution to another. In many respects, the divide between wealthy and poor schools has been accentuated by the classification of schools into quintiles. Redressing discrepancies was a key component of the problem of addressing anomalies left over from the previous administration; this process has proven more successful than initially anticipated. In actuality, the state and condition of many schools and tertiary institutions have stagnated, particularly in underprivileged rural schools (Meyer & Land, 2003).

Rich and working-class parents who have saved enough money prefer to enrol their children in ex-model C schools that are already well-resourced. These schools provide several advantages, including working libraries and laboratories and skilled teachers who may impart subject-matter expertise to learners to improve their performance in scientific fields (Meyer & Land, 2003; Booyse *et al.*, 2011).

Poor schools lack these amenities, which causes their matriculants to perform poorly.

The fact that a broad group of learners enrol in Life Sciences at the tertiary level is one effect of the significant gap between quintile 1 and quintile 5 schools. Some learners have first-hand experience working in a lab, whilst others have never entered one, much less mastered fundamental practical skills like lighting a Bunsen burner. Most underprivileged residents are forced to attend underfunded institutions with underqualified instructors who fail to communicate discipline information in Life Sciences classes due to a lack of Life Sciences laboratories or, in many cases, underfunded Life Sciences laboratories (Botha & Reddy, 2011, Meyer & Land, 2003; Booyse *et al.*, 2011).

The Society of Biology, a body that advocates for biology as a science that must be taught in schools, colleges, and universities, produced literature from research that was considered in this study (Musante & Potter, 2012). This organisation emphasises the importance of teaching biology material and useful information at all levels. This group views biology as a practical science, believing that the best biology experiments and research are the keys to improving learning and solidifying theory (Sharma, 2017). The Society holds that practical activities allow learners to put their knowledge of biology into practice and deepen their understanding of it by engaging them in studies that spark their

interest and help them learn and retain it. The Society of Biology views practical work as a technique of assisting learners in expanding their knowledge through experiments and observation to help them understand the processes of how information is formed. There is broad consensus regarding the value of hands-on learning in science; studies have shown that it helps learners become more engaged and interested in their studies while fostering the development of several fundamental scientific ideas (Woodley, 2009).

The Society of Biology describes practical work as an "essential aspect in engaging, enthusing and inspiring learners, therefore fostering lifelong interest in science" and the "primary work to effective learning in science" (Society of Biology, 2010).

Practical experience is thought to be beneficial in several ways, according to the Society of Biology:

supports and exemplifies concepts, knowledge, and principles; encourages active learning and problem-solving; permits collaboration; and offers opportunities for data collection and analysis using mathematical skills. These are just a few ways it stimulates creativity, curiosity, and critical thinking.

### **2.3. Curriculum Advisory Background**

Curriculum advisory is a method of supervising education. The World Bank (2010) classifies supervision as "the regular/periodic oversight of individuals or entities, which uses the results of the evaluation (and sometimes inspection) to inform and direct action of those supervised." It also has commonality with assessment and inspection, and habitually also with support. Bernard and Goodyear (2004:45) purport that the relationship between a senior and junior member of a profession is "evaluative, extends over time, serves to enhance the skills of the junior person, monitors the quality of the services offered by the junior person, and acts as a gatekeeping to the profession". According to Ncube *et al.* (2015), curriculum advisory is a process in which supervisors work with needy subject teachers with the aim of improving their performance and professional duties.

A study by Wanzare (2002) show that curriculum advisory focuses on the progress of “standards and quality of education” and must be a fundamental part of a school enhancement program. Okendu (2012) argues that supervision is intended to enrich the professional growth of the subject teachers in curriculum matters to improve the teaching techniques using acceptable interactions between the curriculum advisors and teachers involved. Curriculum advisory necessitates extensive planning, thus demanding a joint venture between curriculum advisors and teachers (Ololube, 2014) emphasising on the performance of (Life Sciences) teachers enabling advisors to identify areas where help could be needed, can be provided. This process involves a variety of endeavours that seek to provide guidance and feedback to less skilled teachers based on what experienced supervisors expect to be done.

Currently, several monitoring techniques of quality and standards exist in education globally (Wanzare, 2002). The methods used by curriculum advisors involves visiting schools, conducting simple evaluative research in schools, asking schools to perform self-evaluation. According to Kithuka (2015) advisory is a two-fold. It is a process of school improvement (supervisory and advisory) as well as a mechanism of enforcing accountability (auditory). Advisory can be used to assist schools improve their operations and performance. Advisory is also aimed at controlling how teacher operate (external auditor). The legal aims of advisory are to control and inspire the quality education provided by public schools (Inggris, 2012). In this case subject advisory serves to maintain and improve teaching and learning in schools (Harris, 2002).

According to Whitworth & Chiu (2015:14), there is a dire need to understand school and “district leaders’ views of professional development in their practices and the factors that influence school and district leadership in choosing and designing professional development”. Having an understanding of these factors gives insights into the types of teacher professional development programmes that districts usually unilaterally choose for teachers to undergo. Literature shows that external supervision focuses much on learner outcomes, “the quality of teaching and school leadership, learners’ needs, and the schools’ abilities to detect and address their strengths and weaknesses” (World Bank,

2010:19). Advisory is seen as an important instrument in assuring quality teaching and learning. This is demonstrated by a study conducted in Nigeria by Sule (2013) as response to critics of the quality of education and as a measure of improvement on the conspicuous downward trend in educational achievement. According to Sule (2013) curriculum advisory was provided essential service for checking teachers' performance in their operations.

When supporting and developing teachers, curriculum advisors tend to rely on methods such as observation and inspection which provide immediate positive feedback for teachers and approaches for continuing progress that can identify developmental needs. Suitable advisory strategies can be chosen to satisfy the needs of teachers (UNESCO, 2007). The subject advisory process is important in enabling teacher professional growth, primarily by giving the teacher informative feedback pertaining to classroom interactions (Glatthorn, 2004). The feedback is essential in assisting teachers to improve their teaching approaches (Glatthorn, 2004).

#### **2.4. Historical development of curriculum advisory**

Back in the day, the responsibility of subject advisors was to examine if teachers performed as expected and report to the district education offices. In Kenya curriculum advisory were viewed as inspectors whose job was to identify deficiencies and then recommend punitive measures. Curriculum advisors were faultfinders mainly interested in reporting teachers who have faults to the Department of Education without giving advice to teachers so that they improve teaching methods. In many cases, the visits by curriculum advisors were always a surprise and erratic, but emphasised on fault fining. In most cases, advisory had unwanted influences on teachers because they felt being mistrusted and unfit to perform their jobs because they were being spied on. This led to poor working relationship among teachers and curriculum advisors leading to teachers not cooperating at times. The same is experienced in many African countries and abroad (Mwinyipembe & Orodho, 2014). The mandate given by the district has always been

characterised as 'inspection' or 'supervision', but recently has it been transformed to support for teachers (Mavuso, 2013).

The term inspector is still used in some countries such as Nigeria as reported in some international studies. Furthermore, the terms inspection and supervision have often been used synonymously in schools. According to Kithuka (2015), the primary role of inspection is act as form of control over subordinates, while supervision is intended to guide or provide support to struggling teachers. There is a general feeling that inspection should be open and inspectors should not be faultfinders. The purpose of any type of inspection or supervision of teachers should be improving the quality of teaching in each school subject. Challenges associated with inspectors has seen changes in the designation of inspectors in Kenya. Currently inspectors in Kenya are regarded as quality assurance and standards officers who focus on teacher development and support (Mwinyipembe & Orodho, 2014). This Kenyan innovation has been imported to South Africa and African and international countries where inspectors were distasted in schools. According to Inggris (2012), school inspection system used in the Netherlands and Indonesia are designed to enhance educational quality by using controls that promote school improvement through proper teacher development programmes.

Some countries have responded to the demand of teacher guidance and support from supervisors by adopting the term curriculum advisor over inspector. For example, in Malawi the term "education methods advisor" is used, while in Uganda they use "teacher development advisor" (De Grawue & Carron, 2007). Similarly, the term inspection has been changed to subject advisory in South Africa (Adendorff & Moodley, 2014).

## 2.5. Description of Life Sciences Curriculum Advisor

Understanding how district leaders select and implement teacher professional development programmes can be used to identify areas in which school and district leaders should focus in professional development (De Grauwe, 2012). Curriculum advisors play an essential role in improving teaching and learning in cluster and district schools across South Africa. These advisors are tasked to oversee curriculum management and implementation in schools with the aim of improving the quality teaching and learning, ultimately leading to better performance of learners (Adendorff and Moodley, 2014).

Currently, all Life Sciences curriculum advisors in South African schools are subject specialists (Stephen, 2018). These individuals operate from district or circuit offices. Their main job is to facilitate curriculum implementation in specific subjects in schools allocated to them. The main aim of their operations is to improve the quality of the teaching and learning by assisting subject teachers in content delivery, assessments and managing marks for assessment tasks (Stephen, 2018). Curriculum advisors regularly visit schools, consult and advise school principals and teachers on curriculum matters in specific subjects (DBE, 2013). In this way, curriculum advisors become part of a District Curriculum Support Team, whose purpose is to oversee the implementation of quality Life Science education, ultimately improving subject teaching and learning, the main services offered by schools. The appointment and responsibilities of subject supervisors is provided for in *The Policy on Organisational Roles for Districts (2012)*, and are consistent with the Occupation Specific Dispensation (OSD) (DBE, 2013; Stephen, 2018).

Curriculum advisors are regarded as curriculum leaders and managers whose main responsibilities are to provide support for teachers with subject teaching and heads of department (HoDs) with subject management (KZN Strategy, 2012; Stephen, 2018). Curriculum advisors account for their roles by through written progress reports indicating areas that teachers face challenges and need staff development as well as ensuring accountability from the subject HoDs in various schools in the districts they operate.

## **2.6. Theoretical framework**

The theoretical framework is located within Bourdieu's theory (Bourdieu, 2005) and Shulman's pedagogical content knowledge (Shulman, 1980). These theories deliberate on societal issues that contribute to knowledge acquisition processes in the academic environment.

The social field and social space, where learners come from various backgrounds, affect how their knowledge and abilities relate to one another and the environment. This interdependence affects the coping mechanisms that Life Sciences learners use to broaden their disciplinary, scientific, and cultural knowledge. Scientific capital is defined as the disciplinary knowledge that endows learners of the life sciences with unique abilities that are influenced by their surroundings. Due to their varied backgrounds, life sciences learners are differentiating agents of the discipline field's scientific and cultural capital. As agents, individuals gain the ability to question their knowledge acquisition processes and assess their peers' perceptions of their talents (Bourdieu, 2005). This inquiry suggests that learning happens in a graded fashion. Learners behave within the bounds of a specific disciplinary field's rules – in this case, the Life Sciences – and progressively develop the ability to ask thoughtful, organised questions about their surroundings.

The CPK theory of Shulman was deployed in this investigation to examine the varying roles of curriculum advisors in helping Life Sciences teachers when they attempt to execute practical tasks. These two theories complement each other, especially when Bourdieu states that the social nature of knowledge is encapsulated in the "habitus", which he defines "as a property of social agents (whether individuals, groups, or institutions) that comprise "a structured and structuring structure". The habitus is "structured" by an individual's past, and present circumstances: such as family upbringing and educational experiences. Habitus implies that "structuring" is shaped by an individual learner's practices. The relation between the habitus or disposition of a Life Sciences learner, and



the scientific and cultural capital of the Life Sciences discipline, is tantamount to practice: denoting, in this case, being able to manipulate apparatus and conduct practical experiments in a Life Sciences laboratory. Proponents of this theory assert that it informs knowledge practices conditioned by habitus: the context in which learners find themselves and from which they are drawn. Knowledge acquisition cannot be divorced from prevailing circumstances and environments.

One way this study attempted to make sense of Curriculum Advisors' roles in ensuring that learners and teachers can perform practical investigative tasks and their knowledge practices was by using Shulman's framework to understand learning and teaching by a trained teacher. Teachers' subject matter knowledge is only part of the theory; however, good teaching skills are also needed. PCK represents the knowledge teachers use in the process of teaching.

## **2.7. Summary**

The ever-altering curriculum requires curriculum advisors to orientate new and old Life Sciences teachers in the FET phase and continually mediate it to teachers who need support in implementing the practical work. The direction given at once-off subject meetings should be supported by frequent backing and content development during school visits and workshops. The role of the subject advisor may not have been clearly defined years ago, but with this research, the researcher seeks to research the impact or role of curriculum advisors.

## **CHAPTER 3 RESEARCH DESIGN AND METHODOLOGY**

### **3.1. Introduction**

This chapter unpacks methods used to collect data to answer the study's research questions. The research paradigm and biographical information of the purposively sampled participants are highlighted in this chapter. Questionnaires and interviews were used for data collection, and themes derived from the data collected are presented in line with research methods selected as appropriate for this study.

### **3.2 Research paradigm, approach, and design of the study**

This study was conducted using an interpretive paradigm. According to Cohen, Manion and Morrison (2017), interpretivism seeks to understand the subjective world of human experience. Smith (2019) explains interpretivism as a paradigm that gives relevant information to the researcher in terms of subjective reasons and meanings that lie behind social activities. The interpretivism research paradigm best suits this study because it permits the researcher to get close to the participants, gaining their expressions, feelings, and understandings from their point of view (Thanh, Thi & Thanh, 2015).

Furthermore, the research design prompted the choice of an identical relationship typology for this study, where the same participants were involved in the qualitative phases of the study.

### **3.3. Population and sampling strategy**

According to Cohen, Manion & Morisson (2015), the accessibility to the population in a research study is based on the closeness of sampling, that is, a sample that will accommodate the purpose of the study. Therefore, the choice of the schools was based on the proximity to the area where the researcher works, and they were chosen randomly to extract different ideas for data analysis.

A sample is a small group of subjects or participants from whom data is collected (McMillan & Schumacher, 2010). Leech and Onwuegbuzie (2010) emphasise the importance of specifying a sample size for all qualitative phases in mixed research. The criterion of the sample for this study was established before entering the field (Charmaz, 2014). Onwuegbuzie and Collins (2007) formulated a sampling model for mixed method research which provides a typology in which mixed research sampling designs can be classified according to (a) the time orientation of the components (that is whether the qualitative phases occur concurrently or sequentially) and (b) the relationship of the qualitative samples (i.e., identical vs parallel vs nested vs multilevel). The researcher disseminated questionnaires to all districts in the Cape Flats district offices for all Curriculum Advisors to participate in the research.

However, a purposive sampling strategy was used to select individuals who were available and willing to participate in the study to collect data for qualitative study (in-depth interviews). This was in keeping with the advice of Patton (2002) to researchers about purposive sampling; as such, the researcher first had to state the selection criteria for choosing the people or site for the study. Since each district consists of one Curriculum Advisor, the researcher selected five Metro districts in the Cape flats in the Western Cape to conduct in-depth interviews to elicit data that would answer the main research question, namely, what is the role played by Life Sciences Curriculum Advisors to ensure that Life Sciences teachers efficiently and effectively conduct practical work at the Cape Flats schools?

Patton (2015) adds that purposive sampling in qualitative data collection has the power and the logic to select information-rich cases for in-depth study and that its use can assist the researcher in learning a great deal about the issue of central importance to the purpose of the inquiry. All sampled participants were chosen based on their active role in Curriculum and Life Sciences hence the anticipated richness and relevance of information about the study's research questions about the quality-of-Life Sciences teaching at Cape Flats schools (Yin, 2011). All sampled participants worked in the same geographic area but different Metros, making it easy to collect data and replace participants who might have lost interest during the study. The same sample was used for all data collection procedures through all phases.

The involvement of curriculum advisors in the study provided the most accurate data on the support provided to educators in conducting practical work as they provide leadership for curricular activities to Life Sciences educators.

### **3.4. Data collection instruments**

Data collection instruments are tools used to gather information required for the study and should establish the reliability and validity that the researcher needs. Leech and Onwuegbuzie (2010) describe collection instruments as tools used to gather information required for the study. For qualitative data collection, semi-structured interview questions, the CAPS document for the FET phase, and documents at participants' disposal were used to show the frequency of in-service teacher training to conduct practical work prescribed in the school curriculum and strategies used to enforce and monitor whether these tasks are conducted and their assessment plan.

For qualitative data collection, questionnaires were designed to obtain a general picture of how Curriculum Advisors execute their role of ensuring that practical work is conducted at all schools situated in the Cape Flats in the Western Cape according to the school curriculum policy, CAPS (DBE, 2011).

A structured questionnaire was issued first, and questions were arranged based on the five-point Likert scale, and biographical questions were used to present the demographical information of all participants. A reasonable return rate of questionnaires was made possible by the researcher physically collecting data in the form of filled-in answers.

### **3.5. Data Analysis**

Themes were developed from the coded transcripts of the interview data using an open coding approach to help the researcher determine whether the themes represent the findings of the upcoming empirical study. Categories, motifs, and implications resulting from the themes found in the data were examined. Finally, themes and categories were used to present the findings of the study. The assumption underpinning the above statement was that findings obtained from this qualitative method would yield similar findings.

### **3.6. Trustworthiness**

According to Kumar (2005), a research tool's ability to measure the specific thing it was designed to measure determines its reliability. Trustworthiness is described by Smith (1991:106 in Kumar 2005) as the extent to which the researcher has measured what she set out to measure. This researcher needed to guarantee that both interview data and questionnaire, as well as the document analysis, ensured the integrity of the findings of the study. Therefore, in this study, the researcher collected documents from Curriculum Advisors that document how they interpret policy guidelines on how practical work must be done in teaching and learning strategies to teach Life Sciences adequately and the frequency of training and scaffolding of educators to enforce this curriculum requirement. Data elicited through documents were analysed to support findings obtained from interviews with participants. The trustworthiness of data instruments also assists in establishing reliability (whether a variable measure what it is supposed to measure) and the consistency of data collected (Hardy & Bryman, 2004). Johnson and Turner's (2003) typology is adapted in designing data collection instruments for this study.

### **3.7. Ethical considerations**

Every study requires a set of ethical considerations. The validity and reliability of a study depend upon the ethics of the researcher. Despite the set rules of ethical considerations, actual ethical practice comes down to the individual researcher's values and ethics (Merriam, 2009). Ethical considerations for this study included explaining the purpose of the study and methods to participants, informed consent, confidentiality, data access, and ownership (Patton, 2002).

#### **Explaining the purpose of the study and methods to participants**

After obtaining ethical clearance to collect data, appointments were made with participants to explain the purpose of the study and the methods of collection used to collect data. Questionnaires were issued at these sessions and mediated to participants.

### **3.7.1 Informed consent**

Informed consent ensures that people understand what it means to participate in a research study so they can consciously and deliberately decide whether they want to participate. According to Kumar (2005), it involves seeking permission from participants to participate in the study. Participants were issued consent forms and requested to sign them and submit a copy to the researcher.

### **3.7.2 Confidentiality**

Confidentiality involves the way the information is safeguarded, and the identity of the people and the institutions involved are protected (Punch, 2006). It is not always easy or even possible to measure the dangers of a certain context to a given population, let alone to individuals. Smythe & Murray (2000) emphasise the need to pay attention to people's own words about what is important in their lives. They also show how qualitative researchers may be ethically conflicted as it involves some degree of personal involvement of researchers in the lives of participants. The researcher engaged in constructing meaning based on participants' accounts which may result in contradictions between participants' interpretations and the interpretive understanding of the researcher (Smythe & Murray, 2000).

Assurance of the confidentiality of data was included in permission letters for participants. Therefore, the setting and participants were not identified on paper as per requirements (McMillan & Schumacher, 2010).

### **3.7.3 Data access and ownership**

It is essential to protect the identity of the person from whom information is gathered during research, as well as the data provided. The identities of the participants were always protected and not left lying around in notebooks or unprotected computer files (Patton & Cochran, 2002). Responses from data collection instruments were not shared

with anyone. All data collected verbatim were retyped and saved on a computer. Access to the study will only be provided to the university once the results of the study have been released and published.

### **3.8. Position of the researcher**

As a Life Sciences education researcher whose topic needs to probe deeper into the role of Curriculum Advisors in ensuring that practical work is being conducted in Cape Flats schools, the position of the researcher in this study was to interview Curriculum Advisors purposively sampled to participate in this research, request necessary documents that would corroborate the information obtained through in-depth interviews, and disseminating questionnaires to the entire population of Curriculum Advisors in the Cape Flats Metros. The researcher was directly involved in the data collection and the analysis and write-up of the thesis and other research outputs. The researcher took a neutral stance to ensure that business is not an issue at any stage of data collection, analysis, and report writing of the dissertation. The researcher endeavoured to treat participants with the utmost respect, and if needs be, data collected would be made available to any of the participants. The researcher informed the participants that the research report would be made available to participants when the study was completed.

### **3.9. Summary**

This study utilised an interpretive paradigm, as described in chapter 3. According to Cohen, Manion, and Morrison (2017), interpretivism aims to comprehend the subjective realm of human experience. According to Smith (2019), interpretivism is a paradigm that provides the researcher with pertinent knowledge about the subjective motivations and meanings that underlie social behaviours. Because it allowed the researcher to get close to the participants and learn their expressions, sentiments, and understandings from their point of view, the interpretivism research paradigm is the one that best fits this study (Thanh, Thi & Thanh, 2015).



The purpose of this study, from a qualitative perspective, was to explore and comprehend a real-life phenomenon deeply, seek the participants' lived experiences, and through an investigative process, comprehend how meaning was formed (Creswell, 2009). The realities – i.e., the support CAs provide to schools in the Cape Flats in the western region to do practical work – were then ascertained using this information, along with the difficulties that hindered them from being efficient CAs. The methods used in this exploratory case study were observations, interviews, and document analysis. Over a two-month period, data was gathered. The primary method for acquiring data was chosen to be semi-structured interviews. For this study, Five CAs from were interviewed.

The research methods used for this research have been discussed in detail. Data collected and treated in this chapter is presented and discussed in the following chapter. Ethical considerations have been thoroughly discussed, and the position of the researcher is outlined in this chapter. Data collection has also been done in line with the theories that underpin this research.

# **CHAPTER 4: PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS**

## **4.1. Introduction**

This study aimed to determine the function of the Life Sciences school Curriculum Advisors in ensuring that Life Sciences teachers carry out practical work at the FET phases and how they serve to support teachers in ensuring that practical work is adequately conducted according to the requirements of the CAPS curriculum. The preceding chapter covered the research methodology and design, data gathering methods, data analysis methodologies, and ethical considerations.

This chapter presents the research findings, based on the results of qualitative data analysis methods, as well as the discussions of the research findings. The views of Curriculum Advisors on ensuring that teachers indeed undertake practical investigations in Life Sciences teaching and learning are a subject of discussion, and the supportive role they lend to teachers in ensuring that practical work is being executed at schools as required by the CAPS curriculum is explored.

I addressed the study's main question in this chapter by summarising the research findings. The findings from Chapter Four will be examined by addressing the three areas that guided this study. These findings explicitly outline how Curriculum Advisors assisted teachers and schools in ensuring that practical work is conducted in Life Sciences, whether there were any difficulties in providing teachers with curriculum support, and what solutions were or might be employed to deal with any difficulties in curriculum advisory. To ensure a clear understanding during discussions, the discussions of the findings established a connection between the findings in this chapter and the pertinent literature reviewed on the stance of Curriculum Advisory support in ensuring that practical work is conducted in the FET Life Sciences at the districts.

## 4.2 Presentation of Results

The table below presents themes emanating from the questions asked to the Curriculum Advisors to try to address key questions of the study.

**4.2 Table 1: Themes emanating from the data collected through interviews.**

<b>CATEGORIES</b>	<b>Themes</b>	<b>Support</b>
<b>SUPPORT</b>	<b>COACHING</b>	Advisors have briefing sessions with Life Sciences educators. Advisors inform and invite Life Sciences educators to content knowledge workshops Advise & Offer Life Sciences Learner Teacher Support Materials (LTSMs)
	<b>MONITORING/OBSERVING</b>	Curriculum advisors ensure that they do visit schools. Advisors ensure that teachers adhere to policies (teaching plans, assessment policies and types & promotional) Advisors ensure that tests and examinations follow the CAPS document.
	<b>CONTROL/ MODERATION</b>	Advisors check teachers' & learners' work and files continuously. Check school-based assessments (SBA)
<b>CHALLENGES</b>	<b>LACK OF RESOURCES</b>	There is a lack of manpower when it comes to curriculum advisors. One advisor must oversee over ten schools per district.

		There are inadequate photocopying machines, printers, papers, updated computers, and internet access.
	<b>KNOWLEDGE OF CAPS</b>	Teachers are not familiar with the CAPS document.
	<b>TEACHERS</b>	The scarcity of qualified and knowledgeable teachers. Schools swapping teachers around every term/year.
SOLUTIONS AND SUGGESTION	<b>EQUIPMENT</b>	Request the department to supply schools with the necessary machinery. Recruit and train more teachers to apply for CA positions to lessen the burden on strained CAs.
	<b>TEACHER TRAINING</b>	Advisors to provide more training, workshops, and engagements.
	<b>ENGAGEMENT</b>	To encourage schools in the circuit to form subject committees where educators share teaching methodologies and SBA tasks and offer each other help.

Theme and topic are covered in the following parts, and utterances (quotations) from the interviewees' text are included. The five participants I interviewed are designated in this chapter by the designations CA1, CA2, CA3, CA4 and CA5.

A specific point regarding the format of the participant interviews: the participants chose to write their responses rather than have the researcher record and transcribe them.

In this study, CAs outlined the importance of practical work in Life sciences. CA1 responded to the questions:

**1. 'In your view, is there a need for practical work in Life Sciences? If so, why?'**

*"Yes, practical work helps learners to improve their understanding, develop their skills in solving problems and understanding the nature of Science."*

**2. What do teachers in schools located in the Cape Flats need to do to conduct practical work?**

*"Schools located in the Cape Flats don't have enough resources (microscopes, chemicals, etc.) Also, teachers in the Cape Flats have limited knowledge on practical work. More workshops focusing only on practical work are needed."*

CA2 and 3 gave similar responses to the following question: **Are there any challenges that teachers in these schools have raised with you? If yes, what are those challenges, and how are you helping the teachers to overcome them?**

*"Yes, there are some challenges as followings paired with the possible ways of how.*

*they are dealt. The problem of gathering all the laboratory and this only dealt with the ordering the equipment well in advance. The classes are too big to carry out experiments at one time and this best dealt by dividing one class in two or three groups for a strict observation by learners and the aspect of the insight. Lack of funds to purchase the equipment from the Department of Education and this can be solved by approaching the School Governing Board to intervene. Some teachers for one or the other reason are not well versed with the desired process of the experiment and in that case, there is a purpose or reason to have teamwork as teachers before and during the experiment."*

**Would you perhaps have any recommendations for possible research about how Life Sciences teachers can be trained and supported to conduct practical work effectively?**

*"Science as a subject is ever developing day in day out. The teachers must be kept abreast of new information and a series of workshops are a necessity even at cluster*

*level. Constant visits to schools empower the teachers and tasks to researched by them enhances the development orientation type of position.”*

Another factor that came to play was gangsterism. CA5 answered Question below as follow:

**Do you think it is possible to do all the practical work prescribed in the CAPS documents in schools in the Cape Flats? Why?**

*“No. The CAPS document has too much content for educators to cover and learners to absorb. What ends up happening is a rat race ensuing to complete all the content and learners only retain the information for a short period of time. No effective teaching and learning takes place. That leaves practical work to be done after school hours and many learners simply cannot stay after school because of the volatile gangsterism in most areas.”*

#### **4.3. The kind of support Curriculum Advisors offer teachers.**

In this study, CAs appeared to be supporting teachers in various ways. Those ways are as follows:

##### **4.3.1 Training of teachers**

It was believed that it was difficult for a CA to facilitate workshops throughout the year due to, among other things, the inadequacy of time and lack of resources. They could not offer workshops throughout the year because they were constantly preoccupied with moderation. Additionally, no funding is available for teacher workshops. Here, Shulman's theory is relevant since it favours giving instructors the tools they need to instruct. How would this be possible without government funding for teacher development? Their uncertainties are exacerbated by the demands of the government, the WCED, specifically.

##### **4.3.2 Monitoring**

All CAs believe that this function is essential for assisting and supervising teachers. The department and district expect CAs to assist all schools throughout the school year. From their perspective, this appeared to be unworkable. It was impossible due to inadequate staffing, commuting to and from schools, and other commitments. As a result, CAs were

required to develop strategies for assisting schools. CA1 claimed that when they fell ill, especially during Covid, it was challenging to locate someone to cover for them, pay them visits, or even offer support while they were away. The lack of resources for learners to undertake practical work was also mentioned, even though the CAs frequently contacted the department about it. Therefore, how do CAs support and oversee in this regard?

CA2, 3 and 5 also emphasised that high enrolment made it challenging to carry out practical work at schools with only some of the required resources. This study found that in the Cape Flats, monitoring through school visits appeared to be influenced by results and thus more focused on two issues: high enrolment and underperforming schools. This seemed to be in opposition to the district-created document that focused on the support roles of CAs. It mandated that CAs in the district visit each school equitably.

Checking that the teachers followed the policies (plans for instruction, informal and formal evaluations, including final exams), which CAs would have provided teachers with, was critical during these school visits to ensure that teachers implemented policies as intended by the department. This might aid in enhancing outcomes.

According to Watts (1992), successful administrators implement monitoring instruction as a crucial task in districts with high learner accomplishment. In line with Krug's dimension on monitoring, all CAs acknowledged the value of support through monitoring, as doing so would motivate teachers to meet the requirements of learners in Cape Flats schools. The importance of frequently visiting schools was a significant area of attention for the CAs in relation to monitoring teaching. The CAs believed that their monitoring-related responsibilities were substantial and that they should take up a sizable portion of their free time, as specified in the work plans. Following a comprehensive review of leadership strategies that raised learner achievement in a sizable urban school district, Haglund (2009) made a similar discovery and emphasised the significance of administrator engagement in teacher monitoring.

The researcher thought CAs were trying to provide timely help that would favourably affect teachers and impact the teaching strategies they used in their classrooms by stressing and highlighting support through monitoring for teachers. Additionally, by highlighting the value of teacher monitoring and support, CAs would work to create and implement a culture in which teachers would follow departmental policies, feel safe to try new initiatives, and would not face the consequences for doing so even if it did not work out well. This culture would also foster a community of learners who learn from one another and share best practices.

These findings concur with those of Marzano and Waters (2009), who stated that raising learner achievement required encouraging teachers to try new approaches and providing them with enough resources. This is in line with the targeted monitoring CAs that are available in schools. They visited schools using the Grade 12 year-end results. Schools with high enrolment and poor performance were the focus. This seems to go against the policies. The districts expected CAs to monitor schools in the following ways: schools with performance ratings below 30% were expected to receive visits and support at least three times per term, schools with performance ratings below 50% were expected to receive visits and support at least twice per term, and all other schools were expected to receive visits and support at least once per year. Due to several typical and contextual difficulties, it seemed hard for CAs to achieve these expectations. Nevertheless, all the CAs indicated how important it was for them to be a highly active and visible role model when it came to monitoring teaching, even as they struggled to create and use a systematic focus on monitoring and assistance. The relevance of teacher instruction is strongly impacted by a CA who is very visible and regarded as a powerful role model, according to Peterson (1999), who also underlined this topic. This required the CAs in this study to visit schools to oversee learners' performance before providing support while they engaged in practical work. Because CAs believed that most teachers valued their leadership and work in providing a good example of community learning, they saw the need for this straightforward technique.



### **4.3.3 Moderation**

The CAs clarified that one strategy utilised to encourage instructors was moderation. After teachers complete their assessments, moderation is used to review the consistency of their conclusions and to find and address any discrepancies. Quarterly moderation takes place. It was mentioned that learner portfolio files for SBA (School Based Assessment) should be moderated, computerised grade sheets should be reviewed, and promotional schedules should be checked. Then, in front of the teachers, CAs would complete them.

However, due to the volume of files that needed to be reviewed by CAs each quarter, moderation appeared to take excessive time. In addition, the compliance of teachers with assessment policies – the tasks assigned, the marking, and the recording – was also examined by CAs during moderation. Since moderation takes time, CAs found it challenging to balance it with classroom visits.

The participants named moderation one of their most important responsibilities in curriculum support. Moderation is used to make sure that teachers are evaluating standards consistently. To do this, they must share a common knowledge of the requirements for a given standard so that a learner's response, when given a certain level of achievement, possesses the same qualities regardless of who marks it. CAs oversaw confirming instructors' remarks following teacher marking. According to this report, CAs had too many files to manage every quarter. CAs clarified that each quarter's moderation process was required. Despite this duty, CAs believed that moderation took up too much time and interfered with their ability to perform other duties. The district's lack of CAs brought this on. Even though the district lacked enough CAs, they were nonetheless required to serve in the capacities of moderator and assessor to guarantee the calibre of teachers' work. Due to the scarcity, teaching moderation quality assurance may suffer.

### **4.4 Challenges faced by Curriculum Advisors**

CAs revealed several challenges which hinder them from executing their daily duties successfully.

#### **4.4.1 Overload due to shortage of Curriculum Advisors**

The participants in this study complained about overload in their district. They highlighted that there were several schools to be visited by one CA at a time.

**CA1:**

*“I am overloaded as I must oversee two subjects which are Natural Sciences and Life Sciences, in this district. Sometimes I spend the whole day in one school and fail to visit all schools in the stipulated time. During COVID-19 I sometimes did virtual visitations because there is a COVID-19 case at the school and I have underlying chronic conditions. Virtual are not necessarily effective and there is hardly anyone else to stand in for me.”*

Curriculum Advisor 1 gave the impression that their lack of support to all schools due to overload could impact the results target deplorably. They believed that due to this, “we are unable to visit all schools in one year” because there were other things to do besides visiting schools, for example, moderation, as mentioned above. In agreement, CA2 explained, *“We must submit a lot of things in writing to the department. We write reports. This can be time consuming because each school has a different report compared to the other.”* The study’s participants implicated that overload was because of a shortage of CAs.

The lack of manpower made it difficult for CAs to support all schools. According to my understanding, the shortage of CAs is because no replacements are employed by the Western Cape Department of Education (WCED) when CAs are sick or, unfortunately, deceased. The vacancies left by these CAs were not filled, making it impossible for CAs to support the number of schools given.

**4.4.2 Lack of resources**

This study showed that CAs lacked adequate resources to carry out their duties. It was challenging for CAs to carry out their duties properly due to a lack of duplicating machines, printers, paper, obsolete computers, and inadequate internet. In addition, it was extremely challenging for CAs to determine whether this was done because the schools lacked the necessary tools for conducting practical work.

### 4.4.3 Challenges from teachers

#### 4.4.3.1 Unqualified and lack of teachers

In order to answer the question of the quality of teachers, the education they offer and the lack of teachers, the researcher asked the CAs the following question:

**Do you think Life Sciences teachers in your district are fully trained to carry out practical work as prescribed by CAPS? If not, what actions have you taken to ensure that teachers are trained and able to carry out practical work?**

CA2: *“No. Teachers receive practical experience during school holidays at various institutions on the Cape Flats.”*

CA3: *“They are fully trained. But the department continues to give teachers support via workshops.”*

CA5: *“We say all day long: “life sciences is a practical subject...” Most kids leave school without touching any type of apparatus of any kind. In most of the Cape Flat schools, educators are the ones actively “doing” the practical work. Thus, it’s a practical subject to teachers, the kids don’t necessarily feel that way. Also, how are we (CAs) providing curriculum support with min. 3 visits a year? With primary focus on just the grade 12s in most cases? This makes room for much neglect in the grade 10 and 11 cohort especially pertaining to decent practical work being done. The curricula allow for very little room to just do practical work in order to stimulate their scientific brains, we need the WCED to assist novice teachers with practical work training too. Especially those who didn’t specialize in the subject but are forced to teach it (is a mess) I mean, the scientific methods really aren’t general knowledge like that. We need educators in that kind of position to know that the WCED can/will assist throughout the year.”*

CAs believed that teachers are not pursuing further education and are not conversant with the most recent teaching philosophies. The only difficulties teachers seemed to present to CAs were unfamiliarity and reluctance to change. Teachers in certain schools were not putting the new policies into practice, according to CAs. The CAs held that teachers do not adhere to certain issues that are in the policy document, known as CAPS, in each

subject. Since instructors had received training in it, this did not sit well with CAs. Due to their lack of attention, some teachers were discovered to be unaware of new policies. It was assumed that they preferred "Traditionalist" methods of instruction. SBAs are based on the current assessment practices; hence this had a detrimental impact on the learners. Regardless of whether they had all the tools needed to do the practical work, learners with such teachers were sure to fail.

As a result, CAs, with their overloads, may even go the extra mile to attend classes and assist such schools. However, this is not encouraged since it may create a wrong impression on other stakeholders.

#### **4.4 Solutions and suggestions from Curriculum Advisors**

##### **4.4.1 Solutions**

CAs appeared to employ modest tactics to lessen the difficulties they encountered. The following paragraphs discuss the tactics that CAs employed.

##### **4.4.1.1 Engagement/Teamwork**

To overcome their deficit, the CAs rely on cooperation among one another. They visited neighbouring schools in bunches and congregated there. This is considered a successful strategy for helping as many schools as possible. According to the conversation I had with CA2, providing individualised school support took some time due to the lack of CAs, and because most schools went years without being visited or receiving support, they tended to cluster.

##### **4.4.1.2 Equipment/Resources**

All participants agreed that the district's WCED ought to hire more CAs. The department needs to hire more curriculum advisors, according to CA2: *A subject advisor for a certain subject must be assigned to each circuit. Not in the circumstance we currently find ourselves in, when one CA oversees a cluster with many schools.*"

According to CA1, the WCED should prioritise supplying schools in the Cape Flats with the equipment they need to conduct practical lessons, such as microscopes and chemicals, as they have gotten little to no equipment for years.

All participants agreed that the district's WCED ought to hire more CAs. The department needs to hire more curriculum advisors, according to CA1. A subject advisor for a certain subject must be assigned to each circuit, which is not the circumstance we currently find ourselves in, where one CA oversees a cluster with many schools.

According to CA5, the WCED should prioritise supplying schools in the Cape Flats with the equipment they need to conduct practical lessons, such as microscopes and chemicals, as they have gotten little to no equipment for years and they cannot always take learners to other institutions for practical activities, as evident in the questions below:

**What do teachers in schools located in the Cape Flats need to do to conduct practical work?**

*“Usually, they must improvise with normal household items or buy apparatus from their own pocket. Many times, teachers must borrow chemicals/apparatus from neighbouring schools. As a last resort, teachers play videos of the said experiment on platforms such as YouTube.”*

**Are all the schools in your district fully equipped to carry out the practical work prescribed in CAPS? If not, what actions have you taken to ensure they are fully equipped?**

*CA 4: No. Certain schools like Spes X and Y are examples of schools who have had their labs upgraded. Sadly, most other Cape Flats schools do not enjoy this luxury. I send mobile labs to schools, and I also try to get teachers to make use of stores like BMS Education, a store which supplies lab equipment, situated in Rondebosch East.*

CAs also emphasised that the department should consider how many learners are enrolled in the Life Sciences classes and whether one teacher can deliver practical instruction in overloaded classes.

#### **4.4.1.3 Teacher training**

While waiting for the government to provide equipment, CAs recommended that there should be additional teacher training, including more workshops, talks, and meetings on how to do practical work efficiently in these schools.

Since teaching must go on during this time, teachers should receive training on making the most of the little resources they have. CA1: *"The reality is that we might have to wait for a very long time before all of these schools are properly equipped. If necessary, clusters might even lend their neighbouring schools a lab on specific days or share a lab (or any other relevant resource needed for practical work)."*

**Are all the schools in your district fully equipped to carry out the practical work prescribed in CAPS? If not, what actions have you taken to ensure they are fully equipped?**

*"No. Many of the problems are structural so they will take time to fix."*

Supporting teaching is a crucial activity carried out by CAs in school districts and made a significant contribution to schools with high learner accomplishment, according to Watts (1992). In this research, most CAs acknowledged the value of counselling and motivating teachers to go above and beyond to fulfil learners' requirements when doing practical work. However, the importance of receiving financial support for training requirements was a major area of concern for CAs in relation to supporting teaching. The CAs believed that their role in training was significant and should take up a sizable portion of their free time. I discovered it to be true that each organisation's operations are influenced by the training its staff members receive. Employee training must be of a high calibre if they are to work effectively and efficiently.

The fact that CAs said they also recommended and provided teachers with LTSMs was impressive. By giving them LTSMs and including some teachers in topic committees, the CAs in this study pushed teachers to establish a favourable environment for teaching and learning. The majority of CAs emphasised how important it was for them to be a highly active and visible role model when it came to assisting teachers, despite the challenges

they experienced in cultivating and implementing a total focus on training and growing together as a community. According to Peterson (1999), who also emphasised this topic, the importance of teaching is strongly impacted by a CA who is highly visible and regarded as a powerful role model. This means, to varied degrees, alerting the district's main stakeholders about how they would like to be involved in training activities for the CAs in this research. The CAs intended to host as many support meetings and workshops as possible; however, during 2020 and 2021, this became increasingly difficult as the country was on lockdown. Nevertheless, the CAs believed this tactic was essential because they believed that teachers respected their leadership and work in providing a good example of community learning. During support meetings, I noticed that teachers seemed immensely encouraged by CAs' commitment to enhancing their subject knowledge and instructional strategies, which is why CAs want these types of sessions to remain ongoing. Most of the time, CAs were present, putting aside their monitoring duties to concentrate more on having professional conversations with instructors.

Leithwood (2008) claims that a district with curriculum directors that engaged in more formal interactions with teachers was one that was performing well. Additionally, CAs claimed that teachers valued their contributions. Supporting teaching was a priority, as shown or represented by CAs' focused duties and annual goals. Although the CAs are aware of their responsibility for educating teachers, they have not used their leadership abilities as effectively as they had hoped. This was discovered while assessing the CAs' efficacy as curriculum leaders in terms of assisting teachers with practical tasks. Even though these district documents designate supporting teaching in a variety of ways as a priority, CAs believed that the multiple challenges they faced prevented them from performing the task of training as intended. Certainly, teachers' knowledge and abilities should be improved through orientation, training, and support as part of continuing professional development (Coetzer, 2001). Bredenson (2003) contends that for professional teacher preparation to be successful, it must be an ongoing process that advances education. It works best as a continuous process that includes suitable, well-planned training and one-on-one follow-up. Teachers can broaden and delve deeper into their teaching through continuing professional development (Teacher Professional Model, 2003).



The key findings from this study are discussed in the following sections concerning CA's assistance procedures.

#### **4.5 Challenges faced by Curriculum Advisors**

In general, all participants encountered comparable difficulties that limited their ability to use curriculum support techniques and abilities to the fullest. Overall, these difficulties reduced the amount of time CAs had to finish their advising responsibilities. Hoyle *et al.* (2005) noted that interruptions that took away from the time given for curriculum leadership responsibilities were frequent and annoying. These challenges with curriculum advising matched those highlighted by these authors.

##### **4.5.1 Overload due to shortage of Curriculum Advisors**

According to the study's findings, there is a lack of CAs, which CAs have confirmed. According to one participant, posts left vacant by retirement and deaths were not filled, contributing to the current CAs' workload being overloaded. As a result, more schools were assigned to CAs to help. I also discovered that some circuits lack CAs. CAs were expected to carry out their demanding duties of offering different forms of curriculum assistance and advising responsibilities to schools and teachers despite being underfunded. The lack of CAs made the moderator's job tedious and time-consuming. Every term, CAs were expected to moderate all the teacher files to verify that the work was of a high standard. Given the understaffing of CAs, it is evident and can be argued from the study's findings that moderating teachers' work from all the district's schools was a challenging undertaking. The pressure these staff members experienced during the moderation period compromised both the quality of the moderation process itself and the crucial work they conducted as subject matter experts to provide support by visiting schools.

##### **4.5.2 Lack of resources**

After carefully examining the facts in this subject, I realised that the role of a CA has gotten more complex as a direct result of more demands and less help, especially now with the

change to the SBAs brought about by Covid-19. In other words, CAs today strive to accomplish more with less. The replies provided by CAs suggested that the lack of resources was a significant factor in their inability to assist teachers in the classroom. They have to deal with inadequate photocopiers, printers, papers, internet, microscopes, chemicals, and other stationery challenges, like outdated computers. After assistance, it was challenging to write insightful reports and other outputs due to a stationery shortage. Given the number of schools, the prevalence of underperformance and the high enrolment in the district's schools, support was ideally expected to be provided consistently. Due to insufficient funding, support for schools has, unfortunately, been patchy. Participants claimed that as a result, many schools had not been visited in a term, semester, or year, which had contributed to the decline in several schools in the Cape Flats, which already had problems.

#### **4.5.3 Challenges from teachers**

The most significant school-based factor influencing learner achievement is likely teacher quality (Sawchuk, 2011). If teachers are qualified to teach what they do, it will be evident in quality education. Although teachers may be credentialed, Parker (2011) contends that they instruct learners in subjects for which they are not trained. These teachers lack subject-matter expertise. Teaching requires both content understanding and proper teaching techniques. Villegas-Reimers (2003) states that teachers' professional standing is related to the knowledge base needed to carry out their duties, including topic knowledge and pedagogical expertise. Although it is now well acknowledged that topic knowledge alone is insufficient for effective teaching, placing too much focus on classroom management and technique at the expense of substance can also degrade instruction. Teachers need to get balanced preparation in both subject matter and pedagogy. A highly educated workforce with expertise at all levels in their specialised fields will be required if South Africa is to compete successfully in the international science arena. This survey also clarified that the lack of trained teachers in some academic areas impacted CAs. They had nobody at school to help them. As a result, the CAs occasionally travelled to these institutions to instruct learners. Considering their various positions, this

was a taxing effort. This element of untrained teachers led to the assignment of new unqualified teachers to disciplines. Participants said that because it required so much labour on their part, this practice was bad. Additionally, it impeded the continuity process.

#### **4.6 Solutions and suggestions from Curriculum Advisors**

##### **4.6.1 Solutions: Some CAs had a few strategies they used to deal with the challenges they faced.**

##### **Teamwork**

To mitigate the detrimental effects of the CA shortage, the study participants worked as a team. In the words of Cohen and Bailey (1999), an employee team is a group of people who collaborate on tasks and are accountable for the results. Teams allow members to work together, develop their own skills, and give constructive criticism without interfering with one another (Jones, Richard, Paul, Sloane & Peter, 2007). An organisation's ability to operate smoothly depends on its ability to work as a team. Teamwork is a primary priority for many businesses because most organisational operations grow complex for various reasons. According to a research study (Pfaff & Huddleston, 2003), teamwork is essential for all types of companies, even non-profit ones. Working in teams helps team members develop their abilities, knowledge, and skills (Froebel & Marchington, 2005). Through cooperation, teams can increase the productivity of individuals. Teams of workers establish themselves as the norm for the company (Alie, Beam & Carey, 1998). It is a way to increase the use of labour and perhaps boost individual performance. On the other hand, teams that are unable to function as cohesive units are rarely successful in achieving goals and objectives. A group's efficacy can be hampered by a variety of behaviours and attitudes, which can also have a negative influence on morale and overall job satisfaction. A lack of structure for tasks and projects or positions with unclear responsibilities can both lead to unproductive teamwork. If CAs organise themselves into groups based on the schools closest to them, their teams will likely perform well on support visits to the schools. However, their team was probably ineffectual if CAs mixed with each other regardless of which schools were closest.

## **4.6.2 Suggestions**

Since most of the challenges faced by CAs are district oriented, CAs suggested two main things that the district must address:

### **4.6.2.1 Employ more Curriculum Advisors**

The participants recommended that the department recruit more CAs. This study has demonstrated the district's severe CA shortage. I believe that the WCED has a duty to swiftly remedy this issue by making money available to fill open positions. The work was too overwhelming for the available CAs, who were required to perform a range of duties. Participants in this study indicated that most problems facing the curriculum sub-directorate would be resolved if more CAs were employed. I also believe that schools and teachers would receive better quality curricular support more frequently as they implemented policies.

### **4.6.2.2 Funding**

The majority of CAs requested that the department increase funding for the curriculum sub-directorate to enable CAs to operate efficiently. This would allow them to conduct workshops, support meetings, and school visits frequently. They encouraged the department to give them the tools they needed, including photocopiers, computers, printers, paper, and all the stationery needed by Cape Flats schools to perform practical work, as well as the resources they needed. In this study, CAs demonstrated that a lack of resources made their jobs challenging. In addition to the immediate effects on production, a shortage of resources also indirectly affects morale which should not be disregarded (DeYoung, 1994). It is tremendously upsetting for CAs to put everything into their profession but be hindered by a lack of resources. As a result, they may become less motivated to complete their assignment, which will sap their vitality. Since the department expected CAs to submit reports on work productivity at the end of each month, they would continue to work, but they would lack motivation because they always felt constrained by a lack of resources. Therefore, it is imperative to address the resource shortage issue swiftly.

## 4.7 Summary

This study concentrated on Life Sciences Curriculum Advisors' roles in ensuring that schools in Cape Flats, Western Cape, carry out practical work. More importantly, this study examined the difficulties of curriculum advisory, as identified by Life Sciences CAs in their daily work. The methods employed by the CAs to solve these difficulties were then described.

The primary inquiry driving this study's research was: What is the role played by Life Sciences Curriculum advisors in ensuring that schools conduct practical work in the Cape Flats in the Western Cape? Overall, this study added to our understanding of curriculum advisory in the life sciences. It outlined the obstacles CAs faced when providing adequate curriculum support in their daily job and the strategies they employed to overcome them. The study's findings showed that CAs were conscious of the help they provide to teachers and that they encountered several difficulties. These difficulties greatly reduced the time and effort that could be devoted to curriculum support.

Over the course of two months, data was collected. The primary method for acquiring data was chosen to be semi-structured interviews. For this study, CAs from five metros were questioned.

There is research available that is relevant to curricular leadership. It is extensive, has generated a wealth and depth of findings, and describes the impacts of syllabus governance at the systemic and individual school stages (Carr, 2005; Goodman & Zimmerman, 2000; Grogan, 2000). When he said that "learner achievement climbs where curriculum coordinators are excellent curriculum leaders," DuFour (1999) backed up the significance of CAs. The importance of the CA as a curriculum leader was championed by Peterson and Barnett (2003), who wrote that "the curriculum coordinator's position as an instructional leader is vital for the success of school reform." Evidently, the CA's capabilities for supporting the curriculum are essential for enhancing the teaching process. Overall, this study has increased our understanding of curriculum support in the Life Sciences Discipline in the Cape Flats and specifically pointed out the obstacles that stand in its way.

## CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

Curriculum Advisors (Cas) play a variety of functions in the school system, including managerial supervisors, educational mentors, political leaders, change agents, and primary communicators (Kowalski, 2003). The relative importance given to each function changes depending on the social, economic, and political conditions in the communities where they are played. For instance, to meet public and interest group requests in the 1960s and 1970s, the CAs had to increase their level of political leadership in the communities they served (Hoyle *et al.*, 2005). Even if shifting circumstances made certain aspects of their responsibilities more crucial, the nature of the CA's work demanded proficiency in all of them.

Even though they may have additional obligations, including administrative responsibilities, their job as curriculum leaders is crucial to the district's performance. The results of the research showed that the CAs of successful districts demonstrated significant levels of involvement in curriculum support issues at their disposal to affect the behaviours of teachers who are more directly involved in enhancing classroom teaching and learning (Hoyle, 2002). The knowledge and desire that CAs had to be good curriculum leaders was a crucial conclusion drawn from the study's findings. The CAs often indicated their desire to demonstrate and fully perform their tasks related to curricular support. The CAs were incredibly self-aware of their practices and deeds in this regard, stating the kind of assistance they are supposed to provide, the difficulties they encounter, and their ongoing efforts to strike a balance between curriculum support practices and other duties. CAs are responsible for a variety of tasks in these districts. The amount of time available for curricular support duties through school visits was significantly impacted by the district's expectations and needs (Glass, Bjork, & Brunner, 2000).

In my opinion, the worst times for CAs were when their demands and expectations clashed, especially during the lockdown. For instance, the department was supposed to provide schools with the stationery needed for practical work, but the CAs were expected

to visit schools for on-site support for practical work regularly. During the lockdown, CAs were still expected to produce reports based on school visits (which were virtual in this instance), but there was no previous training on attending virtual workshops. In addition, schools had outdated computers and no functional network connections.

The idea of enhancing individual capability gained more traction in the middle of the 1990s as interest in educational reform increased. The period from 1992 to the present was referred to as the "change capacity age" by Fullan (1998). Throughout this study, it became clear that the CAs went to great lengths to encourage instructors to think about how they could increase their classroom performance and so increase their capacity as teachers.

The CAs emphasised the value of improving teachers' knowledge and abilities through curriculum implementation, monitoring, regulating, and training. According to Chappuis, Chappuis, and Stiggins (2009), these areas of concentration were in line with their belief that boosting learner achievement required assisting teachers and forging dynamic learning teams. The results of this study raise the question of whether department employees are aware of the support that CAs need daily to engage with teachers to increase their capacity in education. The results of this study make it clear that CAs had more trouble performing their curriculum-related training, monitoring, and moderation duties as effectively as they did in their other areas. They were unable to conduct the training and support sessions as planned in the working document, as well as their scheduled work visits to schools, and most of their time was spent in moderation.

One of the participants added that veteran teachers did not take their training in implementing the new curriculum seriously. These instructors resisted change. A top priority for CAs is overcoming opposition to change and strengthening teachers' abilities to create communities of learners who can work together to solve problems (Glass, Bjork & Brunner, 2000). Improvement efforts at schools and school districts are frequently hampered by prevailing conventions, values, beliefs, and accepted ways of doing things, teacher isolation, and a general lack of familiarity with the concept of learning communities (Bjork & Richardson, 1997). The method or "how" of teacher development is one of the most important training components.

According to research, individuals are more likely to pick up knowledge and transfer new abilities if they do so while working and with the guidance of a mentor. Additionally, standard "one-shot" courses have been shown to be unproductive (Bjork & Keedy, 2001). The CAs' recognition that their district's teacher development approach needed to alter if it was to fulfil teachers' needs better was an important conclusion drawn from the study's findings. Teachers were given little time or chance to participate in the ideas or procedures discussed in the one-time workshop or support meetings used as information downloads.

The CAs pointed out that WCED and DBE needed to change their culture to provide effective training. It was clear that new forms, especially in the last two years of hybrid learning and teaching, and various training methods were needed for the wide-scale, ongoing adoption of new practices in classrooms. I found it fascinating to see how the CAs had adopted a fresh viewpoint on the value of training and how just minor, yet crucial, adjustments to their training procedures were required to start seeing results. For instance, giving teachers time during training sessions to discuss and put into practice the concepts or tactics being taught hugely benefited teachers' views about training sessions and workshops. Capable CAs are aware of how the entire system functions, play a crucial role in ensuring coherence and use their experience levers to support the purpose when learning is the district's primary focus (Hoyle, 2002). These objectives do not, however, happen by themselves. A competent CA is also acutely aware of the necessity of securing essential resources to ensure they have the most influence on supporting teaching and learning practical work accomplishments. Who receives what, when, and how is decided by the district budget creation and distribution processes; these also reflect the district's objectives. Therefore, in the Cape Flats, there must be a greater emphasis on teaching and learning practical work in the budget and allocation processes (Hoyle, English, & Steffy, 1998).

This study can conclude that all schools in the Cape Flats district have financial and resource limitations. This seems to be seriously affecting CAs. The frequent mention of CAs having insufficient resources to meet their needs led to this important conclusion drawn from this study. There seems to be an imbalance between the diverse needs of the CAs and the availability of adequate resources to address those demands. Why did one



school system get into this predicament? Nevertheless, any district's decision-making process should consider how budgeting systems should be altered to reflect these transitions when major systemic changes are being contemplated or implemented.

Bjork and Gurley (2005) contend that teachers and CAs alone cannot raise learner success significantly; they also need to act as change agents by presenting stakeholders with a vision of the future. Mid-continent Research for Education and Learning (McREL) reportedly conducted a meta-analysis of studies on the effects of school district leaders on learner achievement, according to Walters and Marzano (2006). The meta-analysis, which McREL research regarded as the most quantitative analysis of CA research yet, contained 27 papers. They found that "... district leadership matters; effective CAs focus on creating goal-oriented districts; the position of CAs is positively correlated with teaching and learning achievement; and CAs set clear, non-negotiable goals for teaching and learning while giving school leadership teams the responsibility and authority to decide how to meet those goals." Some of the research's conclusions support Walters and Marzano's investigation. The CAs participating in this study believed that district leadership is concentrated on objectives and working to enhance teaching and learning. Over the past ten years, curriculum leadership has radically altered, moving away from more prescriptive management approaches and toward more collaborative engagement traits of communities of learners (DuFour & Marzano, 2009). Interest in numerous factors is increasing as part of a process essential to developing a community of learners to improve teaching and learning environments. It is clear from the study's findings that curriculum support matters and may improve teaching and learning of practical work outcomes when it is concentrated on the appropriate topic and is free from obstacles.

## **5.2 Recommendations**

Six recommendations regarding curriculum support have been made because of this study, focusing on ensuring that practical work is carried out successfully in schools in the Cape Flats region of the Western Cape. The Western Cape Department of Education, the Department of Basic Education, and the government are particularly mentioned in the suggestions. DuFour and Eaker (1998) stated that CAs have the most significant influence

when teachers are motivated to improve their abilities and methods through planned collaboration and when CAs recognise their function as a facilitator of leading and learning instead of one of calculation and imposition. This idea was referred to as the CA being a "learning leader" by DuFour and Eaker. DuFour and Marzano's (2009) recommendation that CAs work with teams of teachers rather than just one teacher to increase their ability to participate in high-performing collaborative teams provided additional support for this idea. Collaborative learning teams, according to Chappuis, Chappuis, and Stiggins (2009), "may improve day-to-day teaching by providing instructors with continual opportunities to learn together, apply learning to the classroom, and evaluate what works and why" (p. 60). It is crucial to recognise the CA's role in being a successful curriculum leader in this area. Learner achievement rises when CAs are skilled curriculum leaders, according to studies on curriculum leadership (Hallinger, 2007; Leithwood, 2007; McEwan, 2003). Leithwood (2005) states that it "was judged too indirect and complex to sort out" the leadership impact of CAs on learner attainment (p. 2). The idea that it has been challenging to define the CA's varied functions and responsibilities as a curriculum leader was also questioned by Morgan and Peterson in 2002. Leithwood (2008) later asserted that CAs in high-performing districts do invest in curriculum leadership at the schools and have switched from organisational managers to curriculum leaders. This has been confirmed by more recent studies, which also showed the importance of good jurisdictional leadership practices in fostering the success of teachers and learners. For instance, the Wallace Foundation (2009) asserts that "great leadership is behind excellent teaching and excellent schools." Further evidence for this claim comes from a recent Organization for Economic Development (OECD) (2008) analysis of 94 educational systems in 22 countries, which found that leadership is crucial for increasing the effectiveness and equity of education. The following list of recommendations is a result of this study:

### **5.2.1 Recommendation one**

In this study, Life Sciences CAs identified a significant challenge that adversely impacted their ability to be effective curriculum leaders: a lack of time to carry out their daily support

of teachers. This lack of time is largely a result of other factors like moderation, a lack of CAs in the district, a lack of resources, human resource issues, and the transition from contact workshops to virtual workshops during the lockdown. They explained that they would utilize this time to support Life Sciences teachers regularly, work to enhance their teaching abilities, and ultimately raise learner achievement in Life Sciences practical work if they had more time to spend developing themselves as greater curriculum leaders. The task for policymakers is to work to create time throughout each school week for teachers and CAs to participate actively in professional dialogues that look at the evidence of teaching and learning.

### **5.2.2 Recommendation Two**

Even though most of the recent research suggests that the CA's role has changed dramatically in recent years, the CA is still in charge of overseeing subject teachers, academics, finances, and community involvement obligations (Berman, 2005). Due to expanded responsibilities in education, the CA's role has evolved. Although CAs are expected to be exceptionally excellent curriculum leaders, their time commitments have a significant negative impact on these tasks (Hoyle *et al.*, 2005). Therefore, when evaluating responsibility requirements and attempting to focus on the roles of CAs as they pertain to Life Sciences education in the Cape Flats, policymakers should consider the time needed for CAs to be effective curriculum leaders.

### **5.2.3 Recommendation Three**

According to this study, the district has a severe lack of CAs. Due to this, CAs became overburdened. The WCED must immediately address this issue by making funding available to fill the open positions. The degree to which curriculum support for teachers and schools for efficient Life Sciences practical work in Cape Flats schools would undoubtedly advance if the number of CAs were to rise. When there are enough CAs, they will increase their quality and relevant support, and teachers' Life Sciences expertise

will also rise, which will be advantageous to learners since their performance is likely to rise.

#### **5.2.4 Recommendation Four**

The logistics involved must be considered appropriately. The logistics of the curriculum advisory services, such as timetables, the number of teachers per CA, resources, and funding, are crucial to their performance. CAs' requirements and expectations must be routinely surveyed and considered. To enable them to carry out their responsibilities efficiently, the WCED must provide them with enough resources, including money, office supplies, photocopiers, printers, computers, stationery, and transportation.

#### **5.2.5 Recommendation Five**

Teachers are encouraged to prepare for the day the CA might visit their school by making plans for support meetings and regularly scheduled school visits, and the CA should inform the teacher in advance. A one-on-one setting is most helpful to support teachers, support sessions are essential, and school visits are required. Therefore, the Western Cape Department of Education should establish and agree upon times CAs may do their support activities. Also, training for both contact and virtual visitations should be done.

#### **5.2.6 Recommendation 6**

The district's inability to meet its intended academic objectives may be the cause of the shortage and lack of qualified teachers in the WCED Life Sciences program. Therefore, it is crucial that the DBE hire teachers with strict criteria. Teaching professionals should fill all open positions. The DBE should consider reviving well-equipped former teaching institutions nationwide to alleviate teacher shortages. These would allow CAs to provide subject-matter experts with curriculum support. As a result, they would be successful and efficient in their role of guiding, supporting, and inspiring instructors.

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## APPENDICES

### Appendix A: Consent form



#### CONSENT FORM

I, \_\_\_\_\_ (participant name), confirm that the person asking my consent to take part in this research has told me about the nature , procedure , potential benefits and anticipated inconvenience of my participation. I have read (or had explained to me) and understood the study as explained in the information sheet. I have had sufficient opportunity to ask questions and I am prepared to participate in the study.

I understand that my participation is voluntary and that I am free to withdraw at any time without penalty. I am aware that the findings of this study will be processed into a research report, journal publications and/or conference proceedings, but that my participation will be kept confidential unless otherwise specified.

I agree with the recording of the questionnaire I am going to respond to. I have received a signed copy of the informed consent agreement.

Participant's name and surname (please print) \_\_\_\_\_

Participant's signature \_\_\_\_\_ Date \_\_\_\_\_

Researcher's name and surname : Asanda Hlamandana

Researcher's signature \_\_\_\_\_ Date: \_\_\_\_\_

# RESEARCH CONSENT LETTER TO PARTICIPANTS

## INFORMATION TO THE PARTICIPANTS

### 1. Purpose of these data collection instruments

These instruments seek to solicit information from curriculum advisors on What is the role played by Life Sciences Curriculum Advisors to ensure that Life Sciences teachers efficiently and effectively incorporate practical work in secondary Cape Flats schools:

- ❖ How do the Curriculum Advisors assist Life Sciences teachers in their incorporation of practical work?
- ❖ What do Curriculum Advisors do to investigate and solve challenges that teachers experience during their incorporation of practical work?

### 2. Confidentiality and anonymity

Participants in this research are assured that their personal details and names of the institutions will not be mentioned or discussed in the thesis.

Responses obtained from the recorded interviews will be transcribed and handled with confidentiality.

### 3. Participants are urged to sign the consent form hereto, for agreeing to participate in the study.

Your willingness to participate and provide required information is highly appreciated.

Best Regards

Asanda Hlamandana (M.Ed, student)

Dr K .Booi (Supervisor)

## APPENDIX B: DATA COLLECTION INSTRUMENTS

### RESERACH INSTRUMENT NO.1: INTERVIEW QUESTIONS

#### Section A: Biographical Questions

**It would be appreciated if you could take some time to complete this questionnaire. All information given will be treated as strictly confidential.**

Please answer the following questions by ticking the appropriate box

1. Gender F  M
2. Age <35  > 35
3. Highest Qualification:
- Diplom
- Degree
- Honours
- Master's
- PhD
- Other: Please specify \_\_\_\_\_
4. Teaching experiences in years: 5 - 10
- 10 – 20
- 20 – 30
5. Curriculum advisor experience in years: 5 – 10
- 10 – 20
- 20 – 30

**LICKERT SCALE:**

	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
1. I have good working relations with Life Sciences teachers in my district					
2. The relationships I have with Life Sciences teachers in the district have helped improve the quality of practical work in Life Sciences					
3. I check teacher and learner files regularly during school visits.					
4. I do class visits to observe teaching practices related to practical work.					
5. There is enough time allocated for practical work to be done at schools.					
6. All the practical SBA's follow CAPS requirements.					
7.					
8.					
9.					
10.					

**LICKERT SCALE:**

	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
1. As a life sciences curriculum advisor I have sufficient life sciences content and pedagogical content knowledge to assist teachers to improve the quality of conducting practical work.					
2. I possess sufficient curriculum delivery management and skills to enhance the quality of conducting practical work in life sciences.					
3. I ensure that schools analyse internal and external examination results and develop strategies to improve performance.					
4. All the schools have enough resources to ensure that practical work is conducted effectively.					
5. There are sufficient intervention strategies employed to assist teachers with content and pedagogical content knowledge?					
6. I conduct enough workshops on the delivery of practical work					
7. The teachers in this district follow CAPS outcomes.					
8. All schools have enough resources to ensure that practical work takes place.					

<b>9.</b> All the teachers are furnished with enough relevant material to enforce practical work					
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## **INSTRUMENT 2: INTERVIEW QUESTIONS**

1. In your view, is there a need for practical work in Life Sciences? if so, why?

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2. What do teachers in schools located in the Cape Flats need to do to conduct practical work?

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3. Are there any challenges that teachers in these schools have raised with you? if yes, what are those challenges and how are you helping the teachers to overcome them?

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4. Do you think it is possible to do all the practical work prescribed in the CAPS documents in schools in the Cape Flats? Why?

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5. Are all the schools in your district fully equipped to carry out the practical work prescribed in CAPS, If not, what actions have you taken to ensure they are fully equipped?

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6. Do you think Life Sciences teachers in your district are fully trained to carry out practical work as prescribed by CAPS, if not, what actions have you taken to ensure that teachers are trained and able to carry out practical work?

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7. How many workshops on practical work are there in a year for Life Sciences teachers to attend and how effective are they?

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8. Would you perhaps have any recommendations for possible research about how Life Sciences teachers can be trained and supported to conduct practical work effectively?

**Research INSTRUMENT NO. 2: Schedule for Document analysis**

A. Alignment of discipline content with CAPS outcomes for practical work


B. Material – documents used to deal with lack of resources/ skills.


C. Content organisation to integrate theory and practical work in the Life Sciences field?


D. Workshop documents that are in line with CAPS outcomes/ requirements for practical work.


E. Documents used to monitor teachers' files to enforce and ensure that practical work is done in schools.


## Appendix C: Ethical Clearance Certificate



Private Bag X8, Wellington, 7654  
Jan van Riebeeck Street, Wellington, 7654  
Tel: +27 21 864 5200

P.O. Box 652, Cape Town, 8000  
Highbury Road, Mowbray  
Tel: +27 21 680 1500

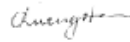
### FACULTY OF EDUCATION

On the 27<sup>th</sup> of July 2021 the Chairperson of the Faculty of Education Ethics Committee of the Cape Peninsula University of Technology granted ethics approval (EFEC 1-7/2021) to A Hlamandana for research activities related to a M. Ed degree.

Title:	Life Sciences Curriculum Advisors' role in ensuring teachers' incorporation of practical work in Life Sciences at the Cape Flats secondary schools in the Western Cape Province.
--------	--

#### Comments:

The EFEC unconditionally grants ethical clearance for this study. This clearance is valid until 31st December 2024. Permission is granted to conduct research within the Faculty of Education only. Research activities are restricted to those details in the research project as outlined by the Ethics application. Any changes wrought to the described study must be reported to the Ethics committee immediately.



Date: 4<sup>th</sup> of August 2021

Dr Candice Livingston

Research coordinator (Wellington) and Chair of the Education Faculty Ethics committee

Faculty of Education

# Appendix D: Western Cape Education Department permission letter

The screenshot shows a Microsoft Word document titled "Research approval letter-Asanda" displayed in a web browser. The document is a permission letter from the Western Cape Education Department to Ms Asanda Hamandana regarding a research proposal. The letter includes contact information for the Director of Research Services, Meshack Kanzi, and a list of 11 conditions for the research.

**Western Cape Government**  
Education

**Directorate: Research**  
[meshack.kanzi@westerncape.gov.za](mailto:meshack.kanzi@westerncape.gov.za)  
Tel: +27 (0) 467 2320  
Fax: 086 950 2292  
Private Bag #9114, Cape Town, 8000  
www.westerncape.gov.za

**REFERENCE:** 20220216-9862  
**ENQUIRIES:** Mr M Kanzi

Ms Asanda Hamandana  
4 Sigres Avenue  
Bridgetown  
7764

**Ms Asanda Hamandana,**

**RESEARCH PROPOSAL:** THE ROLE PLAYED BY LIFE SCIENCES CURRICULUM ADVISORS IN ENSURING THAT SCHOOLS CONDUCT PRACTICAL WORK IN THE WESTERN CAPE, CAPE FLATS SCHOOLS.

Your application to conduct the above-mentioned research in schools in the Western Cape has been approved subject to the following conditions:

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Educators' programmes are not to be interrupted.
5. The Study is to be conducted from **16 February 2022 till 30 September 2022**.
6. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
7. Should you wish to extend the period of your survey, please contact Mr M Kanzi at the contact numbers above quoting the reference number.
8. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
9. Your research will be limited to the list of schools as forwarded to the Western Cape Education Department.
10. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
11. The Department receives a copy of the completed report/dissertation/thesis addressed to:

**The Director: Research Services**  
**Western Cape Education Department**  
Private Bag X9114  
CAPE TOWN  
8000

We wish you success in your research.

Kind regards,  
Meshack Kanzi  
Directorate: Research  
DATE: 16 February 2022

1 North Wharf Square, 2 Lower Loop Street,  
Fareham, Cape Town, 8001  
Tel: +27 21 467 2531

Private Bag #1114, Cape Town, 8000  
Safe Schools: 0800 42 46 47  
www.dorline.westerncape.gov.za

Appendix E: Language Editing Certificate



*Certificate of Editing*

This is to certify that the dissertation

The role played by Life Sciences Curriculum Advisors  
ensuring that schools conduct practical work in the  
Western Cape, Cape Flats

by

Asanda Hlamandana

has been proofread and edited for English language  
usage.

Date: 7 January 2023

*LHugo*

Lianne Hugo

Language Practitioner  
B.A. (HMS)  
PGCE

## Appendix F: Turnitin report

The role played by Life Sciences Curriculum Advisors in ensuring that schools conduct practical work in the Western Cape, Cape Flats.

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**ORIGINALITY REPORT**

<b>10%</b>	<b>9%</b>	<b>2%</b>	<b>3%</b>
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

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