The influence of religious identity in teaching: Narratives of six Life Science teachers in the Further Education and Training Phase

By

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ABSTRACT

Life Sciences has potential to open opportunities for learners to create a better future for themselves. Such access to opportunities, however, lies in the hands of teachers, especially those teaching this subject. Thus, teachers must ensure that learners' rights are upheld in this regard. However, teaching is often influenced by a complex matrix of social, cultural, economic and religious factors. This study sought to understand the experiences of selected Life Sciences' teachers of teaching contentious content. Further, the manner in which teachers negotiated tensions in this regard and the implications thereof for their teaching was explored.

This study adopted a qualitative, narrative approach as a template for understanding the experiences of six Life Sciences' teachers teaching content that caused tension between their religious and professional identities. Located within the interpretivist paradigm, the study used in-depth semi-structured interviews and unstructured lesson observations to generate data. Semi-structured interviews sought to delve into the teachers' experiences of teaching contentious content, while unstructured lesson observations sought to illuminate these understandings by studying teachers in action. Day and Gu's (2007) conceptual framework of identity as comprising personal, situated and professional dimensions, was used as a lens for understanding the complex intermeshing of aspects of teachers' identities.

Findings revealed a deeply ingrained nature of identity construction, with socialisation into religion deeply implicated as the strongest influence extending into teachers' later lives. In this study, Life Sciences teachers projected their religious beliefs into their classrooms, resulting in unhealthy tensions with their professional obligations. Findings further revealed that, when faced with challenges from this tension, teachers deployed their religious framings as an exonerating device. This reveals a fragile professional identity, incapable of providing the capital required for teachers to fulfil their professional obligations. Whilst teachers acknowledged the importance of using their professional learning as an absolving device when faced with difficult pedagogical situations, they always elevated their religious framings as the highest priority, relegating educational rights of learners to the lowest rung. Findings of this study suggests that critical professional development is required to trouble earlier framings and empower teachers to teach contentious curriculum content.

DECLARATION OF ORIGINALITY

I, **Semkelile Lydia Khumalo,** declare that:

1. The work contained in this study, except where I indicated, is my own original work.
2. This study has not been submitted in any other institution for any degree or examination.
3. This study does not contain any other person's data, diagrams or graphs; if it does, it is acknowledged as being taken from other sources.
4. The words from other researchers have been used both as direct quotes and re-phrased. However, references and acknowledgement of others' work has been done.

04-10-2021

Semkelile Lydia Khumalo **Date**

04/10/2021

Dr Melanie Martin (Supervisor) **Date**

ETHICAL CLEARANCE

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

03 June 2019

Mrs Semkele Khumalo 214581620
School of Education
Pietermaritzburg Campus

Dear Mrs Khumalo

Protocol reference number: HSS/0063/019M
Project Title: The influence of religious identity in teaching: Narratives of six Life Science teachers in the Further Education and Training Phase.

Full Approval – Expedited Application

In response to your application received 16 January 2019, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL.**

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 1 year from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

[redacted]

.....
Dr Rosemary Sibanda (Chair)

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I would also like to extend my sincere appreciation to the Grade 12 Life Sciences teachers who participated in this study. I would not have done this without your sacrifices of time, resources and presence.

I would also like to convey my gratitude to my loving husband, Sibusiso Khumalo, who was always there for me, encouraging me in different ways to see this project through. Mzilikazi kaMashobane! Mbulazi!

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Finally, my special thanks go to my family members: Mom, Nikiwe Malembe, my sister, Lindi, and my children, Aphiwe, Lukhona, Syethemba, Ntando and Zekhethelo, for their continuous support.

DEDICATION

This thesis is dedicated to my husband, Sibusiso Khumalo, and my children (Aphiwe, Lukhona, Syethemba, Ntando and Zekhethelo) and my mother Nikiwe Malembe for helping me understand the value of family in the arduous journey towards a better life.

LIST OF FIGURES

LIST OF TABLES

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION TO THE STUDY

"*A good teacher is like a candle that consumes itself to light the way of others*" (Mustafa Kemal Ataturk).

1.1 Introduction

I introduce this chapter by pointing out that the success of learners relies, in part, on teachers fulfilling their roles in respect of ensuring quality learning and teaching. One of key roles of the teachers is that of mediating learning, that is, to intervene with an intention of ensuring that all learners have access to and can benefit from what is being learned. In order to mediate learning in their subjects successfully, teachers, as subject specialists, must assist the learner to productively engage with the curriculum (Department of Education, 2000).

This study sought to investigate how Life Sciences teachers mediated learning, especially when factors, such as their religious identity could influence their ability to do this. In this chapter, I provide the background, focus, aims, rationale and research questions of the study. In addition, I provide a glimpse into the theoretical underpinnings of and the methodology and design considerations made in the study. Towards the end of the chapter, I introduce the participants in the study and a synopsis of the contents of the chapters of the dissertation.

1.2 Background to the study

Prior to 1994, when the subject of Life Sciences was still referred to as Biology, the national curriculum was underpinned by the Christian National Education, based on Calvinism (Dempster & Hugo, 2006; Lever, 2002). This meant that curriculum topics that went against Christian beliefs were excluded from the national curriculum. For example, a topic such as evolution was excluded from the curriculum, because it was perceived to be in conflict with the Christian beliefs (Maluleka, 2015; Dempster & Hugo, 2006; Chisholm, 2000; Lever, 2002). When the democratic government took over in 1994, Biology was changed to Life Sciences, because it was believed that Biology limited content knowledge, and disadvantaged learners in that it did not adequately cover knowledge as a science of life (Ramnarian & Padayachee, 2015).

The Life Sciences curriculum was reformed in the new national curriculum known as the Outcome-Based Education (OBE) (Maluleka, 2015).

Content such as evolution was included in the curriculum, with the hope that it would enable learners and teachers to explore the depth of scientific knowledge, broaden their knowledge and enable them to discover new things, and develop them as literate, critical, creative and internationally competitive citizens (Department of Basic Education, 2011). Furthermore, for a developing country, such as South Africa, to grow, the democratic government believed that high order skills and knowledge had to be emphasised at the school level, which led to the inclusion of certain topics in the curriculum for the Life Sciences (Ramnarian & Padayachee, 2015). The assumption was that the inclusion of the topics that were previously excluded would enable the broadening of knowledge and the development of critical thinking skills that would empower learners to develop their own ideas (Ramnarian & Padayachee, 2015).

The inclusion of previously excluded content in the Life Sciences curriculum has, however, raised a great deal of conflict between Life Sciences teachers who hold certain religious beliefs about the teaching of certain topics. This is a significant issue as the Life Sciences curriculum was constructed with the aim of developing and to figure out scientific knowledge, developing science process skills and enhancing the recognition of the position that science has in society (Department of Basic Education, 2011); Department of Education, 1996). However, one of the roles of Life Sciences educators is to teach the content of Life Sciences to learners which is stated South African Council for Educators (Department of Basic Education, 2011). If teaching is a professional matter, then in order to teach effectively, a teacher must have proper knowledge and understanding of the content, including the curriculum that is incompatible with their religious beliefs. However, literature in this area has revealed that there is a tension between science teachers' religious identity (i.e. personal identity) and their teaching practice (i.e. professional identity) (Jenkins, 1996; Harro, 2000; Tatum, 2000).

There is a range of topics that could trigger contentiousness in the Life Sciences curriculum, for example, evolution, human reproduction, genetic engineering and cloning. However, these

topics are important for learners, because they potentially enable them to develop understandings of diversity in science (Department of Education, 2007) and pursue a variety of career. Further, all these topics, just like those that are regarded as not conflicting with religious belief, should be thoroughly and equally taught to learners with the aim of serving the purpose of equipping learners regardless of their social and economic background, race, gender, physical capacity or mental ability, with the knowledge, skills and values necessary for self-fulfilment, and productive involvement in society as free citizens of a free country (Department of Basic Education, 2011). Moreover, this is important for providing learners with options when they pursue opportunities provided in higher education (Department of Basic Education, 2011)

Religious identity is a vital albeit sensitive identity to an individual (Ramnarian & Padayachee, 2015). Its sensitive nature may lead to it becoming fragile, because when confronted with different expectations, norms, values or understandings, our sense of identity may easily come into the ways of teaching. Teachers of Life Sciences, like everyone, have multiple identities (Tatum, 2000). However, when teachers choose to be in the teaching profession, they are expected to implement education policies, including the requirements of the national curriculum in order to ensure that the learners' rights in respect of education are respected, upheld and protected. Moreover, in the teaching profession, it is not about the individual teachers' religious identity and norms, cultures, values and beliefs, but it is about learners who must have uninhibited enjoyment of their right to education so that they can make positive change in their families, society, country and the world in general.

1.3 Focus of the study

The focus of this study was to investigate how Life Sciences teacher's religious identities influenced their teaching. Essentially, the study sought to investigate the experiences of Life Sciences teachers of teaching content that was in conflict with their religious beliefs, as well as how they negotiated the tensions that arose from those instances.

1.4 Aims and rationale for the study

The exploration standpoint adopted in this study seeks to understand the influence of Grade 12 Life Sciences teachers' religious identity on the teaching of the contentious topics that may

contradict such identity. Furthermore, this research sought to explore how Life Sciences teachers negotiated the tension between their religious identities and science content that they had to teach as part of the national curriculum.

As indicated in the background of the study above, the professional role of the teacher in the teaching of Life Sciences is clear. However, what happens when teachers encounter some content Life Sciences that goes against their religious beliefs and values? This is what I have grappled with since first being asked to teach this content as a Grade 12 teacher of Life Sciences. After several years since I started teaching Life Sciences, this tension has not dissipated and has motivated me to conduct this study in order to obtain a better understanding of teachers' identities and the tensions teachers experience when teaching content that conflict with their religious beliefs. The tensions that occupy me have motivated me to seek to understand the experiences of teachers' who may occupying the same space as I am.

There are repercussions whenever teachers do not properly teach the learners, or some topics are not properly taught or taught in the same manner as other topics because of their religious beliefs. When this happen, I harm may be visited on learners who will not meet the standards and requirements as set out in the national curriculum statement for the Life Sciences (Department of Basic Education, 2011). Then, with the inclusion of the contentious topics in Life Sciences, can teachers mesh their religious identity with their professional identity? If yes, how can they possibly do this? Does their religious identity influence their teaching of the content that contradicts their religious beliefs?

My experience as an educator for the Life Sciences has triggered my passion to conduct this research. When teaching topics such as evolution, genetic engineering, human reproduction and cloning, I notice that I often feel a sense of uncertainty and conflict. This, I presume, is because of the feelings of guilt that arise from the belief that I may be betraying the tenets of my religion (Jarvis, 2008). This uncertainty has intensified with the recognition that I may be failing to teach according to the required standards, which means that I may be guilty of not providing my learners with the quality of education that they deserve. When I teach these topics, I notice that I often do not teach them properly, because of the tension exists between their content and my

religious beliefs. For instance, instead, I merely run through the content quickly, because of the discomfort that I experience when teaching them. I presume this may be because I have internalised what I have been socialised into believing about my religion regarding this content of the Life Sciences curriculum (Hardiman & Jackson, 1997)

In reflecting, I know that this violates the learners' right to education and learners are, as a result, disadvantaged and disempowered by not providing them with quality content. This is in opposition to my professional identity as a teacher, which obliges that I teach and deliver the content to the best of my ability (Department of Basic Education, 2011). This is also with the knowledge that these topics are included in the annual teaching plans for the national curriculum statement for the Life Sciences (Department of Basic Education, 2011). These feelings are in line with what Magubane (2012) found in a study conducted in South Africa, which revealed that the tensions that arise in the teaching of a contentious topic such as evolution often led to learners performing poorly compared to other topics.

I believe at a personal level that this is because of the conflict that arises when teachers have to teach this section and are unable to do it properly. I, therefore, feel that learners are being oppressed, which compromises the ability to attain necessary knowledge and skills as required in the national curriculum statement for the Life Sciences, irrespective of their socio-economic background, race, gender, physical ability or mental capability for them to make a meaningful contribution in society as citizens of a free country, and access opportunities in higher education (Department of Basic Education, 2011; Republic of South Africa, 1996). Sometimes, I feel that the learnings I have obtained in my studies on social justice has not helped me to empower me to deliver the content fairly.

This study is thus conducted with the hope that it may deepen my understandings about religious identity in the teaching profession, and may assist me to understand how and why religion plays such a special role in what teachers do or feel they can do. I hope that this investigation will raise an awareness about how to balance the two identities, namely, religious identity and professional identity, for science educators. By conducting this study, I believe that my negative

assumptions about teaching topics that are in conflict with my religious identity may change and, when this happens, it may improve our teaching practice as science teachers.

I believe that, through what I have learned from this study, I can enable my learners to improve their performance in contentious topics such as evolution, human reproduction, cloning and genetic engineering. Lastly, I believe that the findings of this study will make a significant contribution to the body of knowledge on the support for teachers who have the same feelings about the teaching of these topics.

Again, my experience as a Life Sciences educator motivated me to look at and learn from what the research revealed about Life Sciences teachers' religious identity and its influence on their professional identity. There is limited research in the area of religious identity, yet it potentially affects educators in this diverse democratic country (Mathews, Poyner, Kjellgren, 2019). The reviewed empirical research, for example, Kang (2015) and Tsai, (2000) noted that most religious research focuses on how the subject of religion and religious education can be taught and improved in schools. To this end, this does not address the influence of teachers' religious beliefs and influences on their professional identity, which is the subject that this study intends to explore.

Some research that has been conducted in this area, for example, by Mead, Hejmadi and Hurst (2017); Mattson and Mutvei (2015) and Sickel and Friedrichsen (2013), all conducted in United States of America, has focused on how to teach the contentious topic of evolution. Head, Hejmadi and Hurst (2017) explored what the best way of teaching evolution was. Their findings were that one of the factors that contributed to the non-acceptance of this topic was due to the teachers' religious beliefs. Sickel and Friedrichsen's (2013) research held a similar view and in addition, Sickel and Friedrichsen (2013) pointed out that teachers were unsure of how to deal with the contentious nature of this topic in the classroom. This study is conducted with the purpose of bridging the gap left by other researchers that I have read between the two identities and how they may interact with each other.

Furthermore, this study is sheltered by Day and Gu (2007) and how they understand the notion of identity. Since this study focused on two identities and the potential tension between them, it also focused on how the tension between them could be managed. This is based on the understanding that when teachers join the teaching profession, they are committing themselves to specific professional roles, which may call for the management of this tension. In this regard, Day and Gu (2007) have pointed out that, in order for teachers to keep these commitments, they must mesh or blend the professional with the personal. This may, however, depend on how teachers, in the instance of this study, moderate and manage their personal, situated and professional. Further, Day and Gu (2007) points out that the moderation of teachers three dimensions, namely, personal, situated and professional, is mediated by different contextual configurations (see chapter 2), which may have an influence on their agency.

1.5 Research questions

The main research question for this research was:

- How do Life Sciences teachers' religious identity influence their teaching practice?

To answer this main question, I created the following sub-questions:

- What are the experiences of Life Sciences teachers when teaching what is against their religious identity?
- How do they negotiate the tension between their religious identity and contentious science content?

1.6 Objectives of the study

The objectives of the study were to:

- Explore the influence of Life Sciences teachers' religious beliefs towards teaching contentious Life Sciences content;
- Investigate religious Life Sciences teachers' experiences of teaching Life Sciences content that is against their religious identities; and
- Examine Life Sciences teachers' negotiation of the tension between their religious identity and contentious science content.

1.7 Methodological approach

In order to explore Life Sciences teachers' religious identity and the influence this had on their teaching practice, a qualitative narrative approach was used. Narrative inquiry was used as a means for enabling teachers to tell stories of their experiences when teaching Life Sciences content that caused tension, not only in their classrooms, but also within them on a personal level (Connelly & Clandinin, 1990). Teachers could, in interviews and observations, relate their struggles in teaching their learners, including how negotiated tensions between their professional and religious identity. The narrative inquiry approach, therefore, enabled rich in-depth data to be collected in this regard, and provided a platform for teachers' voices to emerge, enabling me, as the researcher, to understand the challenges that teachers encountered when negotiating these tensions, whilst ensuring that their learners had access to quality education.

1.8 The theoretical framework for the study

The conceptual framework that underpinned this study is Day and Gu's (2007) concepts, in which deployed to make sense and understand the identities of Life Sciences teachers' who participated in this study. Day and Gu (2007) describes teachers' identities as consisting of three dimensions or contexts, namely, personal, situated and professional dimensions. Day and Gu (2007) assert that the personal dimension refers to teachers' lives outside school, which includes, for example, their families and friends as well as the roles, values and identities that they have learned from these contexts. The situated dimension relates to the teachers' life in school (Day & Gu, 2007). For instance, teachers enter the teaching profession with a particular identity, such as their religious identity (personal), which has been socially constructed and reconstructed (Hardiman & Jackson, 1997), which may influence their lives within the schooling context. The professional dimension refers to the professional agendas and policies that teachers must follow, such as education laws, curriculum policies or circulars with which teachers must comply in their professional work (Day & Gu, 2007).

These three concepts, explored more comprehensively later, enabled me to understand the complexities of the identities of these teachers. For this study, identity is positioned as a complex, fluid construct, which is in constant negotiation.

1.9 Introducing the participants

In this section, I provide a brief introduction of the participants in this research study. The research study involved six (6) participants, three males and three females, who taught Life Sciences Grade 12 in their respective schools. The names of the participants are Wendy, Zinhle, Paradise, Xolani, Zwane and Sipho. These names are pseudonyms chosen by the teachers for purposes of this study.

a) Wendy

I first met Wendy at our moderation session, with whom we met during orientation workshops for the Life Sciences, which are held at the beginning of each year. Wendy is a 39-years old woman, who grew up in the rural areas of KwaNongoma. Wendy was raised in a religious family and socialised into religion by her family. Wendy is married to a man who belongs to the same religious community as she does. Wendy's motivation for choosing the teaching profession was that she enjoys being around children. Wendy has been teaching Life Sciences Grade 12 since 2018. She reported that she always feels nervous teaching Grade 12, because of, firstly, the nature contentious of the content that she must teach; secondly, the topics of which she is unsure; and, lastly, she is constantly judged and labelled, based on her learners' performances.

b) Zinhle

Zinhle is a 46-year old woman, who grew up in Limehill, near Ladysmith, with her grandmother, who she described as very strict and held highly regarded positions in church. Growing up, she was very aware of always following the rules and regulations, and was monitored and disciplined by all the church members. Thus, her religious identity and sense of belonging was engraved in her from young age. Zinhle is married to the pastor of the church that she attends. She studied Environmental Studies, and later a Postgraduate Certificate in Education (PGCE), specialising in Agriculture and Biology, at the University of South Africa (UNISA). She started teaching in 2011, but has been teaching Grade 12 Life Sciences in her current school since 2016. She enjoys the benefits of being a Grade 12 Life Sciences teacher, as she is able to '*go to the marking centre and earn an extra income'*. On the other hand, Zinhle feels drained teaching Grade 12, because it requires her to be working all the time, without time

to rest. For instance, she is required to teach on Saturdays and holidays, and this means that she cannot attend evening prayers and church regularly. To this end, her husband and church members are unhappy. Zinhle is concerned about the social roles that she must fulfil as a pastors' wife. This concern makes her feel drained, because her weekends and holidays are taken up by her work as a Grade 12 teacher.

c) Paradise

Paradise is a 36-year old woman, who grew up at Madadeni area, Newcastle. She was raised in a family that was not religious. She became religious when she was at the university. She did a Bachelor of Education at the Durban University of Technology (DUT), Indumiso Campus. Paradise is a qualified teacher who specialised in Life Sciences and Chemistry. She started teaching in 2016, but has been teaching in her current school for three years. She has been teaching Life Sciences since she was transferred to the school. She said she was frustrated and unhappy about having to teach Grade 12. For instance, teaching Grade 12 often requires her to teach during weekends and holidays, because Grade 12 learners must complete the curriculum earlier than other grades. For her, this makes it difficult to engage in other social or community roles.

d) Zwane

Zwane is a married, 42-year old man, who grew up at Emadlanzini, near Richards Bay. He was raised in a religious family, with attending church and worshiping as part of his upbringing. Zwane studied towards his teaching qualification at Ongoye University and graduated in 2011. He did a PGCE at UNISA, where he specialised in the Life Sciences, as this was what he wanted to do. He has been teaching Life Sciences in Grades 10, 11 and 12 since 2017. Zwane has positive emotions of teaching the subject. For him, he is grateful that he is working and that he has an income, which enables him to "*survive with my family*".

e) Xolani

Xolani is a 29-year old young man, who is from Etafuleni, which is a rural area. He was raised in a pious family and has continued to believe in the religious script up to this day. He did his tertiary education at DUT, Indumiso Campus, at which he completed a Bachelor of Education,

specialising in Biology and Mathematics. Xolani started teaching in 2018, but only began teaching Grade 12 in 2019. He reports that it was not his intention to teach Life Sciences; it happened because "*it appeared in my qualification certificate"*. He does not like teaching Life Sciences, and would prefer to teach Mathematics. He complained that his concern with teaching Life Sciences was largely because he was expected to teach "*contradictory topics in the curriculum that has a lot of notes which I hate".*

f) Sizwe

Sizwe is a 30-year old man, who grew up and currently lives in KwaMpande Area. Sizwe was raised by his grandmother, who he describes as a person who sacrificed a great deal in order for him to be successful. According to him, his grandmother taught him to '*live a holy life'*. Sizwe has a strong commitment to his religion and is a youth leader in his church. Sizwe obtained a Bachelor of Education at DUT in 2010, specialising in Life Sciences and Physical Sciences. He started his teaching in two schools before he got a permanent post in his current school in 2018. Sizwe is doing his first year in the Bachelor of Education (Honours) at the University of KwaZulu-Natal (UKZN). Sizwe chose to teach Life Sciences because he felt that it was easy to understand and his late mother also taught the subject.

1.10 Structure of the dissertation

Chapter 1 presents the background, focus, aims and rationale for the study. The chapter further presents the key research questions for the study and provides a brief discussion of the theoretical framework and methodology and design used in the study. The chapter concludes by introducing the participants of the study.

Chapter 2 presents a review of international and national literature, with a specific focus on the experiences of teachers of teaching content that contradicts their religious backgrounds. The last part of this chapter outlines the conceptual framework, as presented by Day and Gu (2007), that was used to frame and understand the findings of this study (2007) and how teachers understood their identity.

Chapter 3 presents the methodology and research design that was used in the study. The chapter provides a description of the data production methods and instruments used in the study, ethical issues that were considered and limitations of the study.

Chapter 4 presents the analysis of the data collected and discusses the findings of the study. The chapter discusses the themes and sub-themes that were significant in the narratives of the teachers. Analysis in this chapter links the literature and findings of the study, with a view to locating the study within the scholarly conversation regarding the focus of the study.

Chapter 5 is the concluding chapter of study. This chapter provides a brief summary of the purpose and significance of study, reflection on the conceptual and methodological issues. The chapter also provides key insights gained from the research and concludes by presenting the recommendations for future research.

1.11 Conclusion

This chapter provided a brief overview of the study. In this chapter, I presented the motivation, the research background, research focus, aims, objectives, rationale and the key research questions that this research sought to answer. A brief discussion of the research methodology and design was provided. The participants in the study were introduced and finally the structure of the dissertation was provided.

CHAPTER 2
LITRATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 Introduction

In this chapter, I review national and international literature that focuses on experiences of Life Sciences teachers of teaching contentious content. In the first part of the review, I discuss the right to education as espoused in both international and national frameworks. Thereafter, I conceptualise the Life Sciences curriculum, as well as discuss the debates about the teaching of contentious content. This is then followed by a discussion of empirical research, which discusses the experiences of teachers of teaching contentious content in the Life Sciences curriculum. Finally, I discuss the conceptual framework for the study, as discussed by Day and Gu (2007), and how teachers make meaning of the identity, which is an important aspect of this study.

2.2 Right to education: International and national perspectives

Through various international legislation, such as the Universal Declaration of Human Rights (United Nations, 1948); World Declaration on Education for All: Meeting Basic Needs (UNESCO, 2007) and The Dakar Framework for Action (UNESCO, 2012) the one aspect that is legislated is the inclusion and provision of quality education for all children. The Universal Declaration of Humans Rights (United Nations, 1948) states that the purpose and vision of inclusion of the child/learners' right to education, firstly, was to assist the learner to improve their chances of survival; secondly, to reduce poverty in the society through ensuring that learners can learn and find jobs that would enable them to fight poverty in their families (Maclean, 2017; Siregar, Rahmadana & Nugrahadi, 2020); and lastly, to empower young children to reach their full potential in life (United Nations, 1948; Jiao & Alawi, 2020).

To give effect to the right to education, governments across the globe undertook to guarantee the availability and accessibility of education in their countries, and that the education provided must be of a high quality and that government should ensure that education is adaptable to the communities they serve (United Nation Special Rapporteur on Education Rights & United

Nations, 1948). However, the extent to which this has been accomplished across various countries is matter of debate. For example, in relation to quality education, some countries continue to fall short in their endeavours to fulfil the rights of learners to quality education, where teachers can provide access to learning opportunities, quality content knowledge and skills (see for example: UNICEF, 2000; Spaull, 2012; Ntshangase & Bosch, 2020; Agajie, 2020).

2.3 The right learners to education: The South African context

South African legislation and policy changes have been influenced by what has occurred within the international context. For example, Articles 26 of the Universal Declaration of Human Rights and Article 13 and 14 of the International Covenant on Economic, Social and Cultural Rights has influenced the incorporation of many rights into the South African Constitution (Dieter, 2005; Right to Education Project, 2014). Thus, the South African Constitution states that everyone has the right to a basic education, (Republic of South Africa, 1996).

Quality education refers to the education that focuses on the development of the whole child, and includes the social, emotional, mental, physical and cognitive development of each learner, irrespective of their race, gender, ethnicity, socioeconomic status or geographic location (Slade, 2017). In order for quality education to be ensured, teachers are critical to this endeavour. The Norms and Standards for Educators states that in order for teachers to provide quality education, educators must be competent in seven roles (Department of Education, 2000). One of these roles requires that teachers must mediate learning to ensure that it is sensitive to the diverse needs of learners and must, therefore, have knowledge of the subject content (Department of Education, 1996). Teachers are also required to be interpreters of learning programmes, where they must be able to understand and interpret the subject content to assist learners acquire knowledge. Also, teachers must be a subject specialist, which means that they must be conversant with different approaches to teaching and learning and how these may be used in ways that are appropriate to the learners (Department of Education, 1996).

Findings of Olbata and Mone' s (2021) study described how these particular roles were evident in the school that they researched. Here, competent English teachers were able to produce good outcomes,

because they could manage and control process of teaching and learning, namely, mediate content and be experts in their subjects. For this study, it was revealed that these learners benefited from this, because they could access quality education. However, if teachers are not competent in their one of the roles mentioned, it would potentially disable them from providing quality education to learners. This was evident in Mbeyu (2020), whose study revealed that one of the reasons learners performed poorly in sexual education was that teachers lacked knowledge of the content, which resulted in them being unable to effectively mediate content. These findings by Olbata and Mone (2021) and Mbeyu (2020) underlines the fact that competence and incompetence teachers could affect the provision of quality education.

Literature often portrays teachers as agents of change (see, for example, Bourn, 2015; McCloskey, 2014; Tikly & Barret, 2013), who could change the lives of learners through ensuring access to quality education (United Nations, 1948). This suggests that teachers could fulfil the purpose and vision for the inclusion of learners' right to education, as explained above. Brown (2015) contends that it is vital for teachers to recognise themselves as agents rather than objects of change. In order for teachers to fulfil their responsibility of providing access to quality education, it follows then that teaching content as stipulated by the curriculum must be of a high standard.

2.4 Conceptualising Life Sciences

This research focusses on teachers teaching the subject Life Sciences and how their religious beliefs influenced their teaching of specific topics. This section, therefore, briefly unpacks the Life Sciences curriculum for Grade 10 to 12. The term 'Life Sciences' can be defined as the science of life or the study about life (Serafini, 2013; Magner, 2003; Gould, 2002; Henry, 2003; The National Academy of Science, 2004). In terms of the Life Sciences curriculum, teachers must teach learners about living things, from molecular level to their interactions with one another and their environments (Department of Basic Education, 2011).

Education in countries such as in the United States of America has inspired the inclusion of Life Sciences in the South African curriculum (Le Grange, 2008). Prior to 1994, topics that were in conflict with the religious beliefs of government were often excluded from the Life Science curriculum (Dempster & Hugo, 2006). After 1994, government undertook a process of transforming

the curriculum in order to align it with the imperatives of a democratic state. In 2000, the first curriculum emerging from this product, known as Curriculum 2005, was replaced by a National Curriculum Statement (NCS) for Further Education and Training (FET) Band, beginning with Grade 10 in 2006 (Jansen, 1999; Johnson, 2009). The NCS included new topics, such as social and environmental issues (Magubane, 2012).

The NCS and the refined Curriculum and Assessment Policy Statement (CAPS) involves a significant shift from a highly prescriptive, content-based to an outcomes-based syllabus (Magubane, 2012; Tizana, 2014; Holtman, 2010). This kind of curriculum potentially envisages learners achieving their specific outcomes by the time they leave school at Grade 12. The Life Sciences curriculum equips learners with the knowledge, skills and values necessary for self-fulfilment and productive involvement in society as citizens of a free country, and provides them with access to higher education (Department of Basic Education, 2011; Henry, 2003; The National Academy of Science, 2004).

To fulfil the necessary requirements to learners, the NCS and CAPS requires that all teachers must be competent in all the Life Sciences topics. Moreover, the expectation is that Life Sciences teachers must be able to engage with contentious issues, such as evolution, cloning, genetic engineering and so forth (Department of Basic Education, 2011). For this, teachers must be able to effectively assist learners to respond any questions, misunderstandings and confusion that they may have regarding these topics (De Beer, 2013). The inclusion of contentious topics in the curriculum poses a question that this study seeks to investigate, namely, whether Life Sciences teachers are fully prepared to deal with the contentious topics that have been included in the national curriculum. This is especially important given the fact that teachers' personal identities influence their world view which in turn influences their professional practice (Mansour, 2008). How do Life Sciences teachers negotiate the teaching contentious content, which may be contrary to their religious beliefs, and are their religious identities, beliefs and values a barrier to effective teaching?

Table 1 below shows topics and concepts in the Life Sciences Grade 12 curriculum (CAPS, 2011) that teachers must teach, grouped according to their importance. The topics in Strand A

are important because learners are taught about life at a molecular, cellular and tissue levels; Strand B is important because learners must learn about the life processes in plants and animals; Strand C learners are taught about diversity change and continuity; and Strand B, learners learn about environmental studies (Department of Basic Education, 2011).

STRANDS	**A**	**B**	**C**	**D**
Importance	**Life at molecular, cellular and tissue levels**	**Life processes in plants and animals**	**Diversity, change and continuity**	**Environmental studies**
Topics	• DNA code of Life • RNA and protein synthesis • Meiosis	• Reproduction in Vertebrates • Human reproduction • Nervous system • Senses • Endocrine system • Homeostasis	• Darwinism and Natural Selection • Human Evolution	• Human Impact on environment: Current crises

Table 1: Topics and concepts in the Life Sciences Grade 12 Curriculum

Teachers must teach to the standards and principles set out in the Life Sciences curriculum. All the prescribed topics, including those relating to contentious content, must be taught thoroughly (see Gibson & Mourad, 2018; Dijkstra, 2015). However, tension arises when these expectations and content listed above go against teachers' religious beliefs. Given the fact that the CAPS for Life Sciences defines and positions teachers as 'agents of change' understanding what occurs in the classroom when religion is included in the mix is important to understand. This is because the ability to provide learners with quality and equal Life Sciences education, and to fulfil the rights of learners to a standard of education as prescribed in the policy may be a challenging endeavour for some teachers (McCloskey, 2014; Tikly & Barret, 2013).

2.5 Understanding Life Sciences: The science versus religion debate

In the above section, I provided a brief overview of the importance of Life Sciences, positioning it as a key way for ensuring that learners have access life chances and can survive in the world. The Life Sciences curriculum contributes to this; thus, the role Life Sciences teachers play in making this happen is critical.

Curriculum goals for Life Sciences are that teachers must engage students in these content areas progressively and build a strong foundation of knowledge as the content gets more extensive and in-depth (Department of Basic Education, 2011). However, research reveals a tension that exists between science and religion (Coyne, 2012). Empirical research (see for example: Francis & Fulljames, 2019; Francis, Casson & McKenna, 2018; Nasir, Mulyono & Nastiti, 2020; Altan & Ercan, 2016) suggests three views that explain why the tension and conflict arises between science and religion.

The first view argues that science and religion are incompatible and mutually exclusive (Countho & Silva, 2013). The resulting situation is that each domain views itself as the custodian of the truth about the world and reality (Silva et al., 2015). This suggests that, from this perspective, science and religion are in competition about whose views are most appropriate for making sense of life and the world that we live in. This is further discussed in detail when discussing evolution as a contentious topic in the Life Sciences curriculum (Mulyono & Nastiti, 2020). However, as Silva et al., (2015) contend that the conflict between the scientific and the religious views have adverse effects, especially in the classroom. These researchers have found that the negative effects of this are that teachers end up not teaching the content properly (Altan & Ercan, 2016). For them, this view neglects the broad purpose of education, which is to equip learners with the knowledge and skills to change their circumstances (Altan & Ercan, 2016). Furthermore, the perspective ignores the fact that a teacher is critical in the management of the conflict between opposing views in respect of teaching contentious content, such as evolution theory, which may conflict with creationist views (Altan & Ercan, 2016).

The second view contends that science and religion are independent of each other, and each is based on its different traditions and cultures (Silva & Mortimer, 2014). For Silva and Mortimer (2014), science is independent from religion, because its traditions are based on experimenting in the natural world (Clark, 2014; De Cruz & De Smedt, 2015). That is, proving and disproving, testing, validating researching and applying knowledge to prove why and how things happen is the main preoccupation of science. This suggests that science does not need religion, and religion does not need science (Clark, 2014), as they their views do not intersect (Silva et al.,

2015). The findings of the research by Khan, Alam and Rashid (2019) revealed that teachers struggled to teach sexual education. This has been supported by Aini, Rachmatullah, Harliadi and Ha's (2019), which revealed that teachers had difficulty reconciling their scientific and religious views into the teaching of evolution. the findings of these studies tend to support the view that science and religion are independent of each other, given the fact that they found that teachers often experienced difficulty reconciling their religion and science in the teaching of evolution.

The third is the dialogue view, which posits that there is an interdependence between science and religion. Fouad (2018) contends that this view provides for the linking of ideas that enables learners to obtain different and more nuanced explanations of science or religion. Hasan and Borgerding (2018), in their study, advocated for a different approach to teaching contentious topics. This approach involved using metaphors to explain content (Hasan & Borgerding, 2018). This means that teachers creatively used religion and science to provide answers to questions that each cannot all by itself answer. However, this may require teachers who are experts in both the scientific and religious views and who can adapt their teaching to give effect to this blending. For me, being this kind of teacher has consistently proved difficult, as seen in Makenzius et al. (2019) study conducted with Kenyan teachers, where teachers struggled to teach learners about contraception because of their religious views. For instance, in this study, teachers could not explain the concepts scientifically and instead reverted to religious explanations, using words such as 'sin' or 'God created' in their teaching (Makenzius et al., 2019).

From the above, it can be deduced that the intersections between science and religion are complex and difficult to negotiate for a variety of reasons. This complexity is at the heart of this study, which seeks to explore how teachers negotiated the intersections between teaching certain topics and their religious identity.

2.6 Contentious topics in the Life Sciences curriculum

Limited research has focused on the teacher identity and the teaching of contentious content. Thus, this research study sought to contribute to knowledge in this limited body of scholarship.

It is, thus, importance to discuss some of the contentious content and topics that teachers must teach (Wadsworth, 2015), that may be in conflict with their religious views. This section provides such discussion.

Research that I could locate in this area tended to focus largely on one particular area of the Life Sciences curriculum, namely, that of evolution and how this influences teachers' experiences of teaching when it contradicts their religious beliefs. There was thus limited research on other contentious topics in the Life Sciences curriculum. For example, sexual and human reproduction, genetic engineering, cloning and stem cells (Rutledge and Mitchel, 2002) were often excluded in research studies that pertained to the focus of this study. It is therefore important that the discussion on contentious topics and content includes the discussion of them.

2.6.1 Evolution

The teaching of evolution, in its broadest sense, seeks to lead to an insight that the natural world has a history and that cumulative transformation has occurred continuously (National Science Teachers Association, 2003; National Academy of Science, 1998). Furthermore, evolution exposes learners to the scientific theory that posits that all living things share a common ancestor, from which they have emerged (Berkman & Plutzer, 2010). The concept of evolution explains a range of mechanisms through which ways in which populations have changed and diverged overtime, including natural selection, migration and genetic drift, could be scientifically explained (Laudan, 1996).

The National Research Council (2012) and Rutledge and Mitchel (2002) have revealed the concept of evolution as a significant, unifying concept across the discipline of Life Sciences, given the fact that it would be difficult to teach disciplines such astronomy, anthropology, geology and Life Sciences without evolution (National Science Teachers Association, 2003; National Academy of Science, 1998). This argument elevates the importance of the concept of evolution and that if it is not thoroughly and properly taught, this may disadvantage learners who may want to pursue further studies in these disciplines. Furthermore, if learners are taught less about the evolution, the learning of the literacies required for the adequate understanding of Life Sciences may be compromised (National Research Council, 2012). This suggests that

teachers of Life Sciences have a responsibility to teach evolution to equip learners with these literacies, although the teaching of such may be regarded as contentious within some religious perspectives.

The study of evolution has been dominated by creationist versus scientific debate. Science argues that conclusions about how the world has evolved, changed and developed over time can be obtained through empirical research. Many scientific papers influenced by Darwin's the origin of the species by natural selection has undergone systematic review and support ideas about the evolution of man through natural selection (Eastwood et al., 2012). Creationists, on the other hand, have explained the origins of man on the basis that a Greater Power, which controls phenomena, and that the phenomenon may occur based on the behaviour of the believer (Khishfe, 2014; Lederman, Antik & Bartos, 2014). Therefore, conflict has emerged between evolution and religion, creationists believe in God as a Creator of everything (Mpeta, 2013). Since evolution is a significant component of the national curriculum, constituting approximately 44% of the Grade 12 Life Sciences Paper 2, it is critical that teachers are competent in its teaching and can adequately respond to difficult questions and debates that may be raised by learners. Contrary to what one may want to believe, research, however, reveals that often teachers' religious views take precedence in the teaching of evolution, which, as can be discerned from the discussion above, may have negative repercussions for learners (Wadsworth, 2015; Mpeta, Villiers & Fraser, 2015).

2.6.2 Human reproduction

Human reproduction covers a range of content areas, namely, puberty, bodily changes, reproductive organs, menstruation and reproduction, pregnancy and sexually transmitted diseases (Department of Basic Education, 2011). The rationale for including these topics in the Life Sciences curriculum is that it may equip learners with ways of responding to social issues, such as HIV and AIDS (Pillay & Samuel, 2016; Samaneka, 2015; Singh-Pillay & Alant, 2015). This implies an assumption that reproduction and sexual health problems, such as HIV and sexually transmitted infections (STIs), unwanted, unplanned and unprepared pregnancies, including unsafe abortion, may be associated with inadequate knowledge about these topics.

Moreover, a further assumption was that knowledge about topics will contribute to the country's efforts to address social issues related associated with them. A further assumption was that learners will be empowered to understand the importance of taking responsibility for their health, wellbeing and dignity, understanding of sexual desires, while ensuring the protection of their rights throughout their lives (Helleve et al., 2011; Francis & De Palma, 2015).

There is, however, limited research on how the religious beliefs of Life Sciences teachers impact the teaching of these topics, and how their religious identity influences their teaching of evolution as an example. The teaching of reproduction and sexual education to learners has potential to contradict some of their religious beliefs. For example, some religions, such as Hinduism, Judaism, Christianity, Islam and Buddhism, discourage premarital sex (Adamczyk & Hayes, 2012). To this end, Adamczyk and Hayes (2012) found that teachers were often afraid to teach about sex and reproduction, fearing that this would suggest that learners could engage in premarital sex. This may emanate from the fact that some religious movements actively promote abstinence prior to marriage. Similar instances have been reported by Hakansson et al. (2020) who found that teachers were often reluctant to teach about contraception. In this study, teachers had negative perceptions of teachers teaching contraption, often presenting negative attitudes towards teaching about sexual intercourse and characterising such as a sin (Hakansson et al., 2020).

Literature has revealed the teaching of abortion or termination of pregnancy as challenging for some teachers, even where it is regarded as a human right and protected in law, as is the case in South Africa. Hinduism, Judaism, Christianity, Islam and Buddhism hold that life begins at conception (Adamczyk & Hayes, 2012). Therefore, these religions discourage the termination of the foetus as it is regarded as a living being (Hakansson et al., 2020). These religions argue that what could happen is that abortion could end up being used as a contraceptive method, and thus consider it only if the mothers' health is at risk or in cases of rape (Heidari, Aminshokravi & Seyed, 2018; Jawed et al, 2016). Not much research has been conducted with regards to how teachers' religious beliefs, values and cultures influence the way they teach about abortion, which this research intends to do. What has been reported by Shellenberg, Hessini and Levandowski (2014) supports the understanding that it is regarded as sinful and against cultural

and religious norms. The result is that some teachers often do not provide learners with the required depth of knowledge in these topics.

2.6.3 Genetic engineering and cloning

In genetic engineering, learners are being taught about a set of technologies that is used to modify the genetic structure of cells and the passing of genes within and across species boundaries to produce more improved organisms (Kozubek, 2016). It is important to teach learners about how engineers apply genetic engineering knowledge of DNA to manipulate genes to produce desired traits (Sinibaldi & Eckman, 2015). As a result of this, engineers have used this practice to address problems facing humanity (Sinibaldi & Eckman, 2015). Hancock et al. (2019) contend that topics such as cloning and genetic engineering develops learners' interest, motivates and enables them think critically as it addresses issues that relate to real challenges. Life Sciences teachers must thus teach learners and provide them with adequate knowledge so they can explore a variety of careers, such as genetic engineering, gene therapy, biochemistry, biophysics and many more (Rennie, 2011).

However, conflict between religious beliefs and scientific views, that is, genetic engineering, arises. For instance, some religions regard genetic engineering as interference with what God created (Bai & Herzfeld, 2017). Studies conducted by Ngwenya (2020) in Johannesburg and Ekanara and Isfiani (2020) in Indonesia have revealed that it was often difficult for teachers to teach the topic of genetic engineering, as they did not know how to handle its controversy and lacked the understanding. Ngwenya (2020) and Hancock et al. (2019) have recommended that the capacity of teachers to handle these topics must be developed, as this could help reduce the tension religious teachers often experience when teaching these topics.

2.7 Teachers experiences of teaching contentious topics

The above section has discussed contentious topics that are included in the Life Sciences curriculum. One the reasons for conducting this study was to explore teachers' experiences of teaching topics that contradict their religious beliefs. Nelson (2010), in his research conducted with teachers in Washington, United States of America, explored teacher's dispositions and religious identity in schools. Findings of Nelson's (2010) study revealed that teachers were

often ill-prepared to face the challenges they encountered when teaching the contentious content. Therefore, it is important that teachers who enter the teaching profession must be prepared for the challenges they will face when teaching contentious content (Nelson, 2010), as learners can learn ways of managing tensions between religion and science. It is at the heart of this investigation to explore these challenges. Coleman, Stears and Dempster (2015), in their research, conducted in South Africa, which involved student teachers, the intention of which was to explore their understanding and degree of acceptance of evolution and beliefs about the nature of science. Findings of Coleman, Stears and Dempster's (2015) study revealed that it is necessary to address the barriers to the teaching of the contentious topics as a matter of urgency (Coleman, Stears & Dempster, 2015). This is of utmost importance as these barriers may impact negatively on the educational needs of learners.

The following section will discuss the various ways in which teachers experience the teaching of contentious content

2.7.1 Teachers' religious beliefs: Influence on knowledge of contentious content

Various studies, both internationally and in South Africa, have revealed that religion plays a key role on how teachers think about evolution as a topic. Teachers often lack in depth knowledge of the topic of evolution (Grogan, 2020; Torkar & Sorgo, 2020; Haussler et al., 2019; Rissler, Duncan & Caruso, 2014). Furthermore, these studies have revealed the effort or the extent to which teachers wanted to develop their knowledge of evolution. The Grogan's (2020) study in Alabama, United States of as America, and that conducted by Tekkaya, Akyol and Sungur (2012) in Turkey, revealed that teachers were reluctant to even think about developing themselves professionally in the content that conflicted with their understandings that God was the creator of the world and everything in it. Whilst some teachers embraced the teaching thereof, informed by positive attitudes as well as standards set by their states, other teachers found it difficult and, instead, taught it using the creationist view point, either limited learners' access to knowledge of evolution or eliminated it from their teaching altogether. Grogan's (2020) study revealed that teachers must be supported to develop their content knowledge as well as how to manage these tensions.

Teaching concepts of cloning and genetics also affected teachers on a personal level. For instance, Maryuning et al. (2020), who conducted a study in Indonesia, found that teachers' religious beliefs often influenced their personal beliefs and professional identities, and impacted on their ability to think critically about contentious concepts, such as cloning and genetics. This was, however, contrary to the cloning and genetic engineering content found in the Life Sciences curriculum. It is for this reason that Hawley, Short, McCune, Osman and Little (2011) argued that the thinking and dispositions may be a determining factor regarding what happens in the classroom.

Sanders and Ngxola, (2009) conducted a study in South Africa, in which they reported that religious teachers often worried and concerned about having to teach about evolution. This affected them on a personal level and heightened their uncertainty towards their professional practice (Sanders & Ngxola, 2009). This often causes teachers undue stress and tension, and their professional identities are brought into question. In Sickel and Friedrichsen's (2013) study, teachers often experienced a feeling of discomfort when having to teach evolution, as it conflicted with the Quran and Bible. To this end, teachers decided not to teach what was a source of their discomfort and, in the process, disadvantaged learners who lost out on what they would have learned.

It is not only the topic of evolution that causes teachers stress, discomfort and tension. For instance, research conducted by Gudyanga, De Lange and Khau (2019) and Mungweni, Hartell and Patudi, (2013) in Zimbabwe explored teachers' teaching of sexual education. Gudyanga, De Lange and Khau (2019) reported that teachers often resorted to teacher-centred methods to prevent learners from asking questions that could cause them discomfort. On the other hand, Mungweni, Hartell and Patudi, (2013) reported that such sexual topics were taboo to teachers owing to their religious beliefs. For instance, having to show pictures containing reproductive organs often made them shy and awkward (Mungweni, Hartell & Patudi, 2013). However, what was significant was that teachers found it difficult to engage learners on topics that were in conflict with their religious and cultural norms and beliefs (Mungweni, Hartell & Patudi, 2013).

In a study by De Haas and Hutter (2019), conducted in Uganda and Kampala, which explored teachers conflicting cultural schemas in teaching sexual education, findings revealed similar to those found in of Gudyanga, De Lange and Khau's (2019) and Mungweni, Hartell and Patudi's (2013) studies. However, De Haas and Hutter (2019) found that whilst teachers tried by all means to avoid discussions on the topic of sex with learners, they still believed that the discussion of sexuality issues with learners was beneficial. What the study revealed is that teachers' emotions prevented them from effectively teaching the content, although they knew it was the correct thing to do. Thus, understanding the extent of emotions experienced by teachers when teaching content that causes them stress, tension and discomfort must be explored in more depth.

Mansour (2008) and Shikkink (2010) asserts that individuals often act upon what they believe in, which may include emotional links. In their studies conducted in various parts of the United Kingdom, they found that teachers' religious beliefs often shaped their practices in the classroom. Thus, teachers' religious beliefs often filter into the classroom and influence the way teachers teach, including their day to day decisions about curriculum (Mansour, 2008; Shikkink, 2010) and their classroom management (White, 2014). White (2014) sought to understand how teachers' private religious orientations impacted their practice in public, specifically regarding the way in which they managed their classrooms. White (2014) found that the concept of shame and guilt emerged where teachers experienced feelings of guilty about teaching concepts that were against their religious identity. Often, teachers felt that their behaviour was wrong because they had betrayed their own religion (White, 2014). Thus, feelings of guilt and shame were key emotions that impacted on them on a personal level, emanating from the conflict between their religious and professional identity (Day & Gu, 2007).

However, not all teachers experience the teaching of contentious content in this way. For instance, Kim and Nehm's (2011) study with Korean teachers found that religious beliefs did not influence teachers' knowledge of the topic of evolution. This was because teachers had negotiated a particular way of managing tensions between their religion and science (Kim & Nehm, 2011). In this study, teachers believed that evolution, despite it being a scientific concept, was controlled by God and that they could teach it. Similar findings emerged from the

study by Yok et al. (2015). Findings in this study revealed that teachers could teach the evolution without negative feelings, as they believed that all the processes of life are controlled by God. However, Yok et al. (2015) argues that this is a complex negotiation process, which did not simply imply teachers' acceptance of evolution. Instead, teachers were committed to working towards ensuring the provision of quality education to their learners. These teachers were aware that not doing this would have serious consequences for their learners and could prevent them from pursuing their interest in careers in science (Mansour, 2015).

The section above has revealed that teachers' religious beliefs and identity can have a significant influence on their own personal self. Among other things, it revealed that personal religious beliefs may affect teachers' abilities of teaching content that is contrary to their religious beliefs. In the following section, I discuss literature reviewed regarding teachers' religious beliefs and their influence on their thinking and teaching.

2.7.2 Teachers experiences with learners when teaching contentious content

The research by Fadeela (2013), Shroeder (2012) and Magubane (2012) have found that teachers do not only have to cope with their own religious beliefs and values, but also ideas about contentious content from learners. This is because learners themselves have different religious influences.

Teachers taught in a particular manner and often avoided religious discussions with learners when teaching the topic of evolution (Magubane, 2012). Magubane (2012) has argued that teachers teach the way they do, because they fear the controversy that may emerge and teachers were unwilling to undermine or disagree with learners own cultural, religious and community beliefs and values. This implies that teachers were put under extreme pressure not to teach topics that may lend them into trouble. The intensity of this pressure could be attributed to the fact that some teachers do not often know their students well, where they come from, or what could be regarded as offensive by their families (Bilinga & Mabula, 2014). Therefore, However, it was important for teachers to consider learners' religious beliefs and teach in a manner that would not interfere with those beliefs (Shroeder, 2012). This constrained the teachers' roles in helping learners understand prescribed curriculum content. For this reason, Tizana (2014) has called for

teachers to try by all means to understand who their learners are and take time to find out about their backgrounds. This may involve knowing their learners' parents' and community beliefs.

One of the key ways in which teachers related to learners when teaching content that created controversy in the classroom was through avoidance (Barett, 2015). Blancke et al. (2011) and Barnes and Brownells (2017) found that teachers immediately stopped discussions and religious conversations and glossed over the controversies by ignoring learners' questions. The consequences of this for learners in Barnes and Brownells (2017) study was that they felt isolated and left out in the class. In addition, learners reported that the failure of their teachers to create a friendly and inclusive learning environment negatively affected their ability to learn (Barnes & Brownell, 2017). Learners felt that they had the ability and the right to be taught about content, especially if they were going to be tested on it. What these studies reveal is that there is a need for teachers to be able to include learners in their lessons and develop ways in which to teach contentious content, especially since learners need the Life Sciences content knowledge and skills.

Berkman and Plutzer (2019) in United States found that part of the avoidance strategies by teachers was to only concentrate on the topics that they felt comfortable teaching (Berkman & Plutzer, 2019). Thus, due to their creationist views, teachers often avoided teaching or discussing content that would lead to learners asking them uncomfortable questions (Blancke et al., 2011). Furthermore, when learners asked them questions about their creationist views, teachers would not answer them in order to avoid being thrown into chaos and stress.

However, avoidance was not viewed as a positive strategy by Caldeira, de Araujo and Carvalho (2012), Ozay (2010 and Karatas (2019), who believed that one of the key roles of the teacher was that of motivation. Teachers must, through their knowledge and competence, encourage learners to be curious and knowledgeable about their world. Even contentious topics should not be avoided; instead, these must be discussed and debated (Caldeira, de Araujo & Carvalho, 2012; Ozay, 2010; Karatas, 2019). In this way, these researchers argue learners' worldviews, their misconceptions and ideas can be addressed.

2.7.3 Influence on teachers when teaching contentious content

It is important that this research also review some external factors and how these may be influencing teachers' abilities to teach contentious topics. One of the factors that that manifest as a source of difficulty for teachers when teaching contentious topics are parents and communities (De Beer, 2013). For instance, findings from a study by De Beers (2013) revealed that schools that were located in areas where one religion dominates and this religion assumed a creationist perspective, teachers often experienced pressure to align their teaching to those dynamics. To this end, teachers in these contexts were often concerned that what they teach learners might go against what prevailed in their families and communities. Teachers believed that it was too risky to enter a space in which they did not know how learners' parents and community would react (De Beer, 2013; Stasinakis, 2015).

These concerns are supported by what Meyer (2013) in their study of teachers in Canada, in which he reported that teachers were often unsure about what do or how to manage the possible repercussions where they were supposed to teach about contentious topics, such as sexual and homophobic education. These concerns were exacerbated by the fact that parents often opposed teaching in these topics and expected teachers to align their teaching with the expectations of learners' families and communities (Meyer, 2013). As a result, in some instances, teachers often twisted information to align with these expectations, which resulted in the perpetuation of homophobia (Meyer, 2013). Thus, to be safe, teachers often shunned content that went against creationist views and instead colluded with the dominant views of their learners' communities. This is contrary to the dominant expectation that learners' parents should contribute positively towards the work of teachers for the benefit of their children (Stasinakis, 2015).

2.8 Teachers religious identity and teaching of contentious content

There exists a great deal of international and national research in the area of teachers' identity. However, research on teachers' religious identity and how it influences the teaching of contentious topics is limited (Mansour, 2010). Research that does exist in the area of teachers' religious identity often focuses on religious education or general understanding of the religious views of students (Barrett, 2015). The literature that I could obtain revealed that teachers' religious identity had both a positive and negative influence on the way they taught.

A mixed methods research by Kang (2015) in Korea, explored the nature of spirituality among early childhood teachers and its potential relationships with their sense of efficacy in teaching. What the study revealed was that teachers who had a keen sense of spirituality often felt that they developed better relationships with learners based on trust and respect (Kang, 2015). Their relationships with learners, as well as their sense of responsibility that their spirituality enabled towards learners' achievement, contributed to the improvement of learner achievement (Kang, 2015). Teachers perceived their religious beliefs as occupying an important place in their professional lives (Kang, 2015). Their religious identity enabled them to implement principles of humanity, loving to all learners, acknowledging learners' individual needs, which often led to teachers adopting effective and inclusive teaching approaches (Baurain, 2012). In this study, spirituality contributed positively to teaching and learning and how teachers performed their professional roles.

Wadsworth (2015) study, conducted in America, whose purpose was to explore the influence of teachers' religious beliefs on their practice and the choices they made in their teaching, revealed similar findings. the. However, this study went a bit further to include the pedagogical choices that teachers made, which were found to be influenced and guided by their religious and spiritual beliefs (Wadsworth, 2015). Both studies, that is, Kang (2015) and Wadsworth (2015) revealed improved relationships between teachers and their learners and that teachers who held strong religious belief were often highly effective in their teaching (Kang, 2015; Wadsworth, 2015). In this instance, teachers' religious beliefs and ideals enabled them to manage stress effectively, which helped to improve the quality of their teaching. Teachers could also to manage relationships with learners, parents and colleagues more effectively (Kang, 2015; Wadsworth, 2015). Wadsworth (2015) added that participants mentioned that being a religious educator had a significant impact on their character development, which contributed positively to their teaching (Kang, 2015; Wadsworth, 2015). Anderson, Mathys and Cook (2015) have concluded that religious beliefs can thus be both conscious or unconscious, and useful and damaging. For this study, teachers often unconsciously were handling professional tasks and handle challenges efficiently.

The deeply embedded nature of religious identity has also been expounded by Rissler, Duncan and Nicholas (2014), in a study conducted in the United States of America, a region where teachers are regarded as highly religious. In this study, for teachers, religious identity mattered more than their jobs and even for education as a whole (Rissler, Duncan & Nicholas, 2014). According to the students who were interviewed in this study, their teachers avoided teaching them about evolution, as they (Rissler, Duncan & Nicholas, 2014). Teachers in this study reported that they believed that not teaching learners about evolution was the right thing to do. From the findings of this study, it could be concluded that a teacher's religious identity may influence their willingness or ability to share knowledge in particular ways. Furthermore, findings of this study support the existence of a deeply embedded nature of religion, which influences not only teachers' identities, but also their practice, thoughts and beliefs (Espinosa, 2011). It could thus be concluded that all this suggests that teachers and learners may experience difficulty in navigating between creationist and scientific views. This may be the reason for why teachers and learners adopt an either/or stance (Ozay, 2012). When teachers hold deeply religious identities, the deciding factor may always be religion over curriculum requirements, as teachers often find it difficult to find stability within the tension between their professional and religious identities (Diamond, 2014).

On the other hand, research conducted in the United States by Fowler and Meisels (2010); Willems (2015) at the school level and Barners and Brownwell (2017) at a tertiary institution reveal the benefit of being taught by teachers and lecturers who provided learners and students with a platform to engage with contentious topics like evolution, cloning and so forth. Teachers who were not religious enjoyed teaching evolution and they took a lot of time in explaining all the concepts to learners. Students were able to express their views, engage in debates and recognise alternative viewpoints (Willems, 2015; Barners & Brownell, 2017). This proved advantageous to students as it prepared them for their work as future Life Sciences teachers and enhanced their abilities to fulfil their professional roles and provide learners access to a wide range of views. Further this can provide understanding that for this to occur, teachers have to be experts in their subject, be confident of their knowledge, develop themselves as professional and see learners as having the capacity to think as individuals.

Identity development is complex where emotions are implicated in the decisions about what science content to teach learners (Day & Gu, 2007). Most Malawian teachers who participated in the research did not advocate for the teaching of evolution, because they felt that they were betraying their religion (Yok et al., 2015). One key difference which emerged in Yok et al' s (2015) research was that some teachers were evolutionist creationist. Teachers who identified themselves in this way believed in their ability to teach evolution, without it disrupting their religious identity. They thus, could teach evolution because they believed that evolution was itself controlled by God (Yok et al., 2015). This study reveals a potential for addressing the tension between teachers' religious and personal identities, as a multi-faceted one rather than an either/or understanding.

Preston (2019) extends the understanding of identity construction as complex and multi-faceted. Preston (2019) examined the ways in which teachers in the United Kingdom mediated and used their sense of agency to resist normative thought. Again, what emerges is that teachers must be knowledgeable about content that involves, for example, sexual education in Life Sciences. How these teachers negotiated barriers to identity construction by being conscious of diversity and multi-religious groups cultures, values and beliefs in the classroom. All fifteen participants did not view any of their identities as a barrier in ensuring learners received quality education.

2.9 Teachers views and experiences of teaching contentious topics in Life Sciences: A South African perspective

In South Africa, the situation is similar to other countries, because a significant proportion of research that I reviewed focused on the topic of evolution as a contradictory issue. Since South Africa is a developing country, and which is striving to compete globally in many areas (Keke, 2014), such as the quality of education. In South Africa, research revealed a range of similarities with the international context. However, teachers in South Africa had different views and experiences of teaching contentious content in Life Sciences. South Africa has different teachers' views and experiences, because of the religious diversity that it is promoted by the Constitution (Republic of South Africa, 1996).

However, when teachers belong to different religious affiliations, their ideas and ways of teaching are likely to differ. For example, De Beer's (2013) research, conducted in the province of Gauteng, studied the experiences of teachers who belonged to three religious groups, namely, Christian, Islamic and Hindu, with the view of exploring their views in teaching the contradictory topic of evolution. Teachers who were affiliated to Christianity rejected evolution as a whole, while Muslim teachers rejected only human evolution (De Beer, 2013). However, teachers affiliated to the Hindu religion accepted evolution, based on the fact that the Hindu faith and evolution theory tended to share common themes (De Beer, 2013). De Beer's (2013) findings reveal that even different religious groups may have different religious beliefs, which may lead to different views in the teaching of contentious topics.

In addition, research by conducted with South African students enrolled at a South African university, who were studying towards a bachelor's degree in education also revealed similar findings (Coleman, Stears & Dempster, 2015). For instance, teachers in this study were willing to teach the topic of evolution and their religious beliefs did not prevent them from accepting alternative perspectives (Coleman, Stears & Dempster, 2015). What made it easier for them to accept evolution was that they had been exposed to the topic by their teachers at the school level (Coleman, Stears & Dempster, 2015). With Coleman, Stears and Dempsters' (2015) findings, it may be argued that teachers could be regarded as role models to their learners. That is, what they do in their teaching may have an influence on learners who may decide to become teachers in future. On the other hand, Tizana (2014) conducted research in KwaZulu-Natal to explore Grade 12 teachers' understandings of the contentious topics. In this study, teachers' beliefs had an impact on their teaching and pedagogical practices (Tizana, 2014). These findings contrasted with those of Coleman, Stears and Dempster (2015), and were similar with

De Beers' (2013), as discussed in the previous section. Furthermore, South Africa is a democratic country where everyone is entitled to such rights as freedom of religion, which are protected by the Constitution (Republic of South Africa, 1996). The importance of respecting, upholding and protecting religious rights has been reviewed by Sutherland and Labbe (2019). In reviewing peer-reviewed journals in the area of evolution education, teachers expressed

views and concerns about teaching it given its nature as a contentious topic. The reasons for these are discussed in more detail in the section below.

Firstly, because of South Africa's subscription to democracy and protection of the rights of everyone, including children, teachers have an obligation to teach according to the national curriculum statement, irrespective of how contentious such topic may be (Department of Basic Education, 2011). As indicated above, religious freedom is protected in the Constitution of the country (Republic of South Africa, 1996). However, despite these protections and obligations, teachers often feared persecution by parents and communities in case some topics may be in conflict with the religious background of some learners (Sutherland & Labbe, 2019). Secondly, teachers were uncertain about how to create a teaching and learning environment that acknowledges and celebrates religious diversity. Instead, they tended to avoid teaching and discussing topics and content that they perceived as contradicting the religious beliefs of the learners' parents and communities (Sutherland & Labbe, 2019). Lastly, teachers often complained about the time allocated to the teaching of contentious content, and felt that it required more time than was made available as it often involved lengthy discussion (Sutherland & Labbe, 2019). These findings support what has been found internationally. Therefore, it could be concluded that the issue of teachers' religious identity and teaching of contentious content is a global issue.

In the South African context, there is a significant gap that must be bridged about teachers' views about the challenges in the teaching of contentious issues. Most of the literature that I reviewed focused only on evolution as a contentious topic in the teaching of the Life Sciences curriculum. The exploration of religious identity and its influence in teaching practice, including the management of the tension between the two identities, the challenges teachers went through when teaching contentious topics, was vital as it addressed the research area that had not been focused on. International and national studies discussed in this chapter suggest that teacher's religious identity and beliefs may have an influence on their teaching practice. The research discussed above revealed how teacher experienced the teaching of Life Sciences in negative ways. Often, teachers used their positional power and authority to escape from teaching contradictory topics. Literature discussed in this chapter reveals teachers often preferred to

abide by their religious beliefs to fulfilling their professional responsibilities. This implies the deeply embedded nature of religious beliefs, values and norms in the teachers' identities. This was the core of this study.

The following section discusses the conceptual framework that was used to understand the findings and discussions of the study.

2.10 Conceptual framework

To understand how religious Life Sciences teachers managed the tension between their religious and professional identities in the teaching of contentious topics in the Life Sciences curriculum, this section will deconstruct and discuss the concepts that will frame the analysis and interpretations of findings for this research. In this study, I deploy a conceptual framework proffered by Day and Gu (2007) in order to understand the relationships between the two teacher identities, as mentioned above. The rationale for adopting Day and Gu's (2007) conceptual framework for the understanding of the teacher identities was based on the assumption that it would present an integrated way of looking at and interrogating the problem being investigated in this research study (Liehr & Smith, 1999).

Day and Gu's (2007) understanding of teacher identity is crucial for this study. In their understanding of identity, Day and Gu assert that in order for teachers to respond positively to a challenging situation, which they may encounter in their profession, they must be able sustain their commitment, even within multiple identities (Day & Gu, 2007). When entering the teaching profession, there may be situations that may present as a challenge to the performance of teachers. These challenges may reside in, for example, the teaching of topics in the Life Sciences curriculum that may be conflicting with the teachers' religious beliefs and backgrounds. The tensions between the intersections of the professional and religious in teachers' practices may induce negative feelings and adoption of avoidance strategies for teachers, especially if support in managing the tension is inadequate.

Day and Gu (2007) assert that, in order not to comprise teaching and learning, teachers are often called to manage tensions among their multiple identities. The productive and effective

management of identities during the act of teaching are often influenced or mediated by three dimensions, namely, personal, situated and professional (Day & Gu, 2007). In order for teachers to make a positive difference in the lives of their learners, there must be a blending between teachers' sense of self or identity and their experiences of teaching (Day & Gu, 2007). The three dimensions were adopted based on the assumption that they provide a useful frame for understanding how teachers managed tensions that they encountered when teaching contentious topics in the Life Sciences curriculum.

Figure 1 below shows the three dimensions as proffered by Day and Gu (2007).

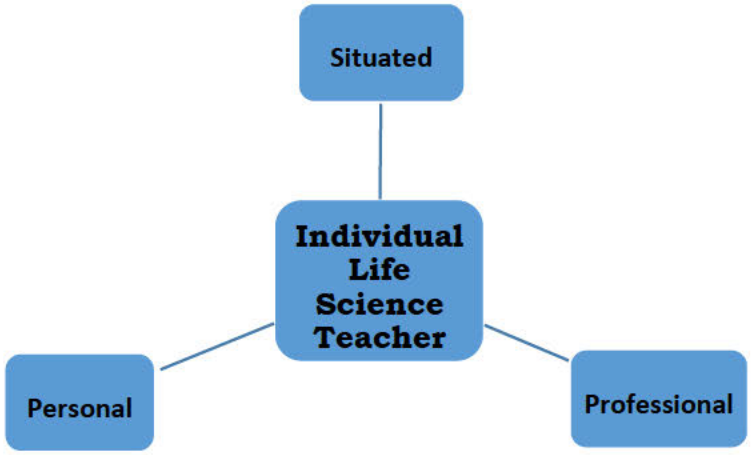

Figure 1: Dimensions that influence teacher identity, as proffered by Day and Gu (2007)

2.10.1 Personal dimension

Day and Gu (2007) contend that the personal dimension refers to teachers lives outside the school. Like everyone else, teachers interact with people, who may include family and friends, outside of their professional or work lives. Hardiman and Jackson (1997) assert that these are people that we love and trust, and that we often internalise and are influenced by what they teach us, which may contribute to the person that we later become. This suggests, as teachers interact with people at their personal space, their identities are constantly constructed and reconstructed by these various social experiences and events (Hardiman & Jackson, 1997).

For instance, religious identity, which is usually taught to us from a young age, through practices such as attending church, engaging with religious scripts, contributes to the development of our religious identities. Like any other social construct, religion has its own norms, cultures, beliefs

and values which, within the context of the teaching profession, teachers can internalise and deploy, both conscious and unconsciously in framing their thoughts and actions within their spaces (Mansour, 2010). This may explain myths and stereotypes that teachers may hold; often originate from the interactions they have within this dimension of identity.

The effect of the personal dimension of the identities of teachers could, for instance, be seen in instances where teachers struggled with or even avoided topics, such as evolution and sexual education, that they thought may conflicts with the religious beliefs of their learners' parents and communities. The consequence of this interference by aspects of the personal dimension was that teachers often avoided teaching or rushed through such topics and content, with learners losing out on important learning. For instance, in this study, historically embedded Christian beliefs that teachers held often made it difficult for them to teach the topics as expected, owing to feelings of shame and guilt for betraying their own religious expectations (see for example, Zinhle and Wendy in Chapter 4). From this, it could be concluded that this dimension filter through and influences ways in which teachers teach some topics and content, that is, how they execute their professional roles (Day & Gu, 2007)).

From the above discussion, it could be argued that the personal dimension of identity often shapes individual actions, as individual tend to act according to the prescripts of what they hold dear. For instance, certain teacher identities determine the ways in which teachers approach and execute their professional responsibilities. The following section discusses the situated dimension of identity.

2.10.2 Situated dimension

The situated dimension of teacher identity relates to teachers' life in a schooling or teaching context (Day & Gu, 2007). Teachers enter the profession with a particular sense of self, which was developed within the context of their families, communities and neighbourhoods. Therefore, the situated dimension is linked to the personal dimension through these interactions. For instance, Muza (2017) found that stereotypes and myths that teachers held about HIV and

AIDS often filtered into their teaching, influencing the manner in which teachers taught learners about sexuality. This implies that teacher's knowledge and practice are always in a state of flux and change in concert with the context in which they are operating (Day & Gu, 2007).

For the teachers in this study, the CAPS curriculum that required teachers to cover particular topics, such as evolution, which was included in the Life Sciences curriculum 2014, introduced a discord in the practice of some teachers (Wadsworth, 2015). For instance, the situation required that teachers had to teach the content which may not be in sync with some aspects of their religious identity. The question with which this study grappled, was how teachers managed the tension between the personal and situated dimensions of their identity to ensure that their learners were learning. Within the context of this study, support for teachers to navigate this complexity was inadequate. That is, teachers did not receive appropriate support to blend the personal, specifically religious, and situated aspects of their work. This is significant because, in order for learners to receive good teaching from their teachers, such support must be available (Day & Gu, 2007). This could come in the form of support from their colleagues and district officials, which is vital for empowering them to shape their practices in a more stable, rather than displaced manner.

2.10.3 Professional dimension

This dimension relates to the teachers' values and beliefs and the interactions between these and external policy agendas (Day & Gu, 2007). The professional dimension is vital for the capacity of teachers to manage relationships and tensions among their various identities (Day & Gu, 2007). Teachers have their own values and beliefs, often derived from their backgrounds. The professional space, in which teachers must work, has its own dynamics that teachers are required to follow, such as the requirements of the national curriculum statement and other policies with which teachers must comply in their work. Day and Gu (2007) assert that teachers are motivated and committed when they believe that their needs have been considered. For example, in this study, teachers reported that the inclusion of the topic of evolution in the Life Sciences curriculum happened without input from teachers, and that teachers who were affiliated to particular religions believed that such a lack of consultation had affected their professional commitment. Teachers were also concerned about what they considered as the

failure of the Department of Education to provide them with appropriate professional support to teach this new topic.

However, with the above three context or dimensions, Day and Gu (2007) clarifies that teachers' management of their identities and the sustaining of their commitment to their professional obligations depends on different scenarios. Day and Gu (2007) have identified three scenarios. Firstly, where the three dimensions of Life Sciences teachers' identities are in balance, which means that Life Sciences teachers personal (religious), situated (school) and professional are in sync then identities are relatively stable and manageable. Within this scenario, no dimension is threatened and no identity is dominant. This means that, within this scenario, teachers are resilient, that is, have the resources and means to and can recover from adverse experiences (Day & Gu, 2007).

Secondly, the scenario whereby one of the dimensions has greater credence as compared to others (Day & Gu, 2007). For example, when a teacher's religious identity becomes the sole means of viewing and understanding the teacher's world and practice. In such a case, the professional identity may become subsumed. However, in this case, Day and Gu (2007) assert that the management of the identities may depend on internal and external factors, such as self-efficacy and support from colleagues, parents or family and society as a whole respectively. Moreover, the unfolding of the scenario may depend on the extent to which a teacher believes in themselves and their capability to achieve their goals or outcomes (Gavora, 2010).

The last scenario proffered by Day and Gu (2007) is where all dimensions of a teachers' identities are not manageable, owing to the strength and intensity of the support they receive from both the internal and external factors (Day & Gu, 2007). When teachers have the ability to control their emotions, increase their confidence, manage stress and anxiety and all other negative states that may lead to self-judgement in their teaching of the contentious content, and adequate professional support, this may contribute positively to their professional practice.

This section outlined about the conceptual framework that formed the lens for reading teachers' experiences in this research study. This section discussed how Day and Gu's (2007) framework

will be used to make meaning of identity, and pointed out that productive and effective management of teachers' identities in their teaching may be influenced or mediated by three dimensions of identity, namely, personal, situated and professional dimensions. In conclusion, this section discussed the three scenarios that Day and Gu (2007) identified and their likely impact on the management of teachers' identities and the sustenance of their professional commitment.

2.11 Conclusion

This chapter reviewed the literature relevant to this research, regarding how Life Sciences teachers' religious identity may influence their teaching of the contentious content. The chapter, firstly, discussed policy environment, especially the rights of learners to receive quality education. Thereafter, I discussed Life Sciences as a subject in the national curriculum statement. This chapter also reviewed international and national research, with a view to providing insights into teachers' experiences of teaching contentious content and the manner in which they negotiated the teaching thereof. Literature on the influence of religious identity for teachers teaching contentious content was also discussed, including South African perspectives on teachers' views and experiences in the teaching contentious topics in the Life Sciences curriculum. Finally, the chapter discussed the conceptual framework that was used to make meaning and interpret what emerged from the study.

The following chapter discusses considerations that I made in respect of research methodology and design.

CHAPTER 3
RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

In this chapter, I present the research methodology and design that guided the conduct of this study. Leedey and Ormond (2005) define methodology as the general approach a researcher takes in carrying out a research project. Research methodology essentially guides the considerations a researcher makes in respect of how the research study must be conducted (Babbie & Mouton, 2001). A research design articulates the data collection process that will be followed in a research study, that is, what methods will be used to collect and analyse the data, and how all of this is going to respond to the research questions for the research (Leedy & Ormond, 2019). To do this, I begin by discussing the research paradigm and the qualitative approach within which my study is located. Thereafter, I discuss narrative inquiry, followed by a discussion of the outline of the research context, sampling procedures as well as data collection methods, namely, semi structured interviews and observations. In each instance, I provide the rationale and justification for the choices I made. I conclude the chapter with a discussion on the validity, trustworthiness and ethical concerns and limitations of the study, which is followed by a conclusion for the chapter.

3.2 Research paradigm

A paradigm is a set of beliefs, which guides a researcher, working within a particular discipline, on how research should be conducted and how its findings must be analysed and interpreted (Bryman, 2006; Creswell & Poth, 2018). Tashakkori and Teddie (1998) assert that disciplines are guided by particular belief systems, which tend to guide the decisions that researchers make, and motivates for how a study must be conducted and the relationships that must prevail between the researcher and participants.

There are several paradigms that are available for researchers, for example, positivist, the critical and interpretivist paradigms, each with its own assumptions about reality (Bogdan & Biklein, 2014). Knowing and bearing in mind that finding the answers to my research questions

are my priority and bearing in mind that by choosing a particular paradigm, I as a researcher had committed to particular ways s of collecting data, conducting observations and interpreting the data generated (Terre Blanche, Durrheim & Painter, 2006). To respond to the key research questions of the study, my positioning and philosophical stance was rooted within the interpretive paradigm. Below, I describe the interpretive paradigm and the rationale for adopting it for this study.

Interpretivist regard reality as socially constructed and hold that there are realities that must be revealed (Cohen, Manion & Morrison, 2011; Guba & Lincoln, 1989). For this study, the interpretive paradigm, therefore, enabled me to understand how the participants thought about and made sense of religion and how this influenced their identity construction and reconstruction, as well as influenced their teaching practices, especially in relation to teaching contentious topics and content, which was the focus of this study. By adopting an interpretive paradigm, I could get a glimpse into the viewpoints of the participants, and how they made sense of their worlds. Guba and Lincoln (1989) asserts that the interpretive paradigm elevates the importance of understanding the subjective viewpoints of the participants higher than those of the researcher.

Thus, in adopting the interpretive paradigm, I understood that in recognising that reality is subjective, there are multiple truths that I had to contend with, as participants held different ways of understanding and behaving (Cohen, Manion & Morrison, 2011). In this study, the intention was to illuminate, through the reflection of the participants' narratives, that teachers can re-think the ways in which they teach and understand the intersections between constructions rooted in science and religion, with a view to enabling their learners to access their deserved quality of education. The teachers who participated in this study deployed various ways to ensure a better future for their learners, providing them with opportunities to engage with content that was critical to their learning and intellectual growth. Thus, the deployment of this paradigm provided me with the means to understand the teachers' struggles and victories in navigating the tensions between their religious beliefs and the teaching of contentious topics in the Life Sciences curriculum. From their narratives, they were unequivocally clear about the fact that the inadequate management of this tension was resulting in their learners deprived of

the education that they deserved, which constituted an infringement of their constitutional rights. This realisation enabled teachers to reflect on their religious identities, which were often fluid and dynamic (Hall, 2000).

3.3 Qualitative research approach

A qualitative research approach underpins this study. The qualitative research approach "…is [a] naturalistic approach that seeks to understand phenomena in context-specific within their natural setting" (Golafshani, 2003, p. 600). Therefore, for this study, the qualitative approach was deployed as a device to guide me in the understanding of the participants' experiences within their particular schooling contexts (Mansour, 2008). Through the interviews, I could obtain a deeper understanding of the participants' lives and how their various contexts influenced their religious understandings.

Understanding contexts is exceptionally important, as Gall, Gall and Borg (2005) indicate, that experiences of teachers of their realities are often influenced by a range of factors within the contexts in which they work and live. For example, growing up in contexts that were deeply religious influence the extent of the teachers' affiliation to their religions. Furthermore, in their present context, community beliefs and religious ideas about evolution, cloning and human reproduction often infiltrated their classrooms in very specific ways. This, in turn, influenced what participants could do and the extent to which ideas about evolution, cloning and reproduction were viewed as acceptable by their learners.

The data gathered was, thus, in-depth and underpinned by the multiple realities of the experiences of the Life Sciences teachers', a depth of exploration that could not be achieved through quantitative ways of researching (Strauss & Corbin, 1990). This implies that the adoption of the qualitative approach to this research enabled me to gather the rich narrative accounts of the participants' experiences of teaching contentious Life Sciences content, which often that made them uncomfortable and created tension between their personal and professional identities. In addition, the qualitative research approach enabled me to deploy multiple methods or techniques of data collection (Cohen et.al, 2007; 2011). For instance, the

methods or techniques used in this study to understand the experiences of teachers in their everyday settings.

3.4 Narrative inquiry

This research sought to understand the experiences of Life Sciences teachers of the tensions between their religious identity and the teaching of contentious content in the Life Sciences curriculum. Thus, the narrative inquiry provided an appropriate device for exploring the teachers' religious identity and how this influenced their teaching practice. The word 'narrative' originates from 'narrate', which means to tell a story in detail (Connelly & Clandinin, 1990). Stories provide an appropriate linguistic device for expressing and articulating human experience (Polkinghorne, 1995). For this study, participants could tell their stories and express for themselves their experiences of the phenomenon under investigation. Researchers using narrative inquiry can capture the dimensions of human and personal experience, and take account of the relationship between the individual experiences, cultural and social context (Clandinin & Connelly, 2000). In this study, I could gather that the various influences of religion began early in participants' lives, which became embedded in their belief systems and understandings of the world. Thus, narrative inquiry became a device that enabled me to understand this influence on their present professional practice from early socialisation.

Furthermore, for this study, narrative inquiry provided participants with the opportunity to relate events of a particular nature, in a particular order, and within a particular context (Connelly & Clandinin, 1990; Kramp, 2004). Lieblich, Tuval-Mashiach and Zilber (1998) contend that studies adopting a qualitative approach often provides an advantage of a free flowing telling of stories about events and experiences. Therefore, for this study, as a qualitative, interpretivist researcher, I could focus on the content of the stories and interact with the participants as they were narrating their experiences.

Participants often come from different backgrounds, with different experiences, beliefs, values, norms and cultures. However, for this research, narrative inquiry was used to gathered participants' lived experiences about their multiple identities and how these influenced one another. Narrative inquiry enabled participants to tell their stories, bearing in mind that stories

are reconstructed (Miller, Considine & Garner, 2007). This enabled me to understand and conceptualise participants' experiences of teaching topics that were against their religious beliefs, and how they negotiated the complexities of this tension through telling of their stories.

3.5 Research design

3.5.1 Context of the study

A context of a research study refers to the setting in which an investigation took place or the geographical location of a research (Kwanya, 2020). This research study considered the context in which individuals or participants functioned, with the purpose of providing an in-depth understanding of their world (Polit & Beck, 2017; Korstjens & Moser, 2014). From this view, it was important for me to know and have a clear sense and knowledge of the context of the study, as this was important for the understanding and interpretation of the participants' narratives (Korstjens & Moser, 2014). This was achieved by visiting the three (3) schools at which the participants taught a few times before the commencement of the study. I also attended community meetings and church ceremonies in the proximity of each the three schools. This assisted me to familiarise myself with the participants' context and begin to form crucial understandings of the various ways in which their community may have been operating, although at a very basic level. I could also ascertain the degree of how and if the community and church context intersected with teachers' lives and the culture of their schools.

As implied above, the study focused on three (3) schools, which were located within uMgungundlovu District. All the schools are located within semi-rural areas, with inadequate access to the basic needs such as electricity, sanitation and water. The community surrounding the schools was materially deprived and a significant proportion of citizens were exposed to the harsh effects of poverty and unemployment. The schools are fifteen to twenty kilometres apart, under the authority of different tribal councils. Each school of the schools was approximately a kilometre away from the main tar road, and the off ramps into the communities were gravel roads, which often made it difficult for teachers and learners to negotiate on rainy days.

The schools are located in the area with different churches and religious, including Faith Mission Church, Assemblies of God, Shembe, The Roman Catholic Church and the Zion

Christian Church. Many or most of the community members, including learners and teachers who stayed in the community, were affiliated to a particular church and religious group. Thus, community influences were potentially a crucial factor in the lives of teachers and learners. Overcrowding and lack of resources were also prominent challenges for these schools. I understood the overcrowding in schools as a signal that learners, parents and community, schools attached significant value to the importance of education as a source of hope that one day they will overcome and escape poverty.

3.5.2 Sampling design

Sampling involves making decision about which people to include in the study (Cohen, Manion & Morrison, 2011). This is important as selected members must adequately represent the target population so that the data generated responds to the key research questions (Cohen et al., 2011). For sampling to be effective, participants must be selected based on the knowledge and experience they possess about the subject or phenomenon under investigation (Etikan, Musa & Alkassim, 2015). Vos et al. (2005) have pointed out that sample size depends on what the researcher wants to know, the questions to which the researcher must respond, what is useful and credible and the nature of the population that is being studied. However, researchers must take cognisance of the possibility that, although there is no precise sample size, defining the number of participants may limit a research project (Patton, 2002).

The sampling design that was employed by this study was purposive, with the researcher using specific criteria for making a decision on who was eligible to participate and be part of the sample (McMillan & Schumacher, 1993). Given the fact that I employed a qualitative narrative inquiry, using a purposive sampling design enabled me to select a small number of participants that I could engage, and could do so in a way in which I could obtain rich in-depth data (Patton, 2000). Therefore, for the study, six teachers were selected, who identified themselves as religious and were affiliated to a religion that was likely to conflict with some topics in the Life Sciences curriculum. I selected teachers who were religious, because the focus of the research study was to explore their experiences regarding the teaching of the contentious topics. The assumption was that being religious was a relevant selection criterion for selecting participants who could respond to the key research questions of the study. Purposive sampling is based on

choosing the participants who could provide the most relevant information, based on specific selection criteria (Creswell & Plano, 2011). For this study, participants had to be Life Sciences teachers with knowledge and experience of teaching contentious content, who also had to be religious. The other criteria were that the schools that I selected had to be schools that I could easily reach.

In 2019, when Life Sciences teachers attended a moderation workshop, I had an informal conversation with teachers teaching Life Sciences, in which I shared my research interests. Teachers were excited about the topic of the research, and eleven Life Sciences teachers expressed their willingness to participate in my study. Of the teachers who had shown interest to participate, I selected six, who were within easy to reach distance from where I taught. The selection process gave me three males and three females. I assume that the mixture of male and female participants enabled me to see the intersections of their religious and gendered identity. In addition to this, the teachers also taught different topics in the Life Sciences curriculum. Limited time prevented me from choosing participants who taught grade 10 and 11, which means that the participants were Grade 12 Life Sciences teachers only. However, this did not pose any challenge to the study as most contentious topics are taught in Grade 12 Life Sciences curriculum. The six participants in the study preferred to be referred as Wendy, Zinhle, Paradise, Xolani, Zwane and Sipho, which are pseudonyms chosen by participants themselves.
The relationship between myself and the participants was built over a period of time.

3.6 Methods of data collection

To obtain an understanding of how Life Sciences teachers' religious identity influenced their teaching of contentious topics, I used multiple data collection methods. Investigating Life Sciences teachers' experiences of teaching topics that were against their religious identity, and their negotiation of the tension between their religious identity and such content, was my objective as an interpretivist. I investigated the challenges participants came across in their teaching of the contradictory topics. Furthermore, I explored whether participants' religious identity could be the barrier to providing learners with quality education and how participants used their agency to negotiate such tensions.

To try and obtain a comprehensive understanding of the phenomenon under investigation, I employed multiple data collection methods and techniques, namely, unstructured observation and semi-structured interviews. The two methods, including the justification for why they were chosen, are discussed in the section below.

3.6.1 Unstructured observation

Robson and McCartan (2002) argues that something that individuals do, may be different to what they say. Therefore, to explore teachers' experiences in teaching the content that is against their religion, I decided to use unstructured observation, as an additional means for collecting data. Unstructured observation involves a researcher going directly to the research site to collect data for obtaining first-hand data (Bertram & Christiansen, 2014). Unlike structured observation, in an unstructured observation, the researcher does not follow a checklist (Creswell & Plano, 2011). Unstructured observation was appropriate for this research study for its to generate detailed, rich qualitative data (Creswell & Plano, 2011). For the study, I requested to observe participants teaching one of the topics, which they regarded as contentious.
The topics chosen by participants were human reproduction, evolution and cloning.

Prescribed content topics are taught at various times during the school year. For example, in the Grade 12 curriculum, human reproduction is taught early during the first term, and evolution is taught during June holidays. I initially planned to observe two lessons for each topic so I could collect as much data as possible. I was able to successfully complete the observation of participants teaching human reproduction. However, I could not observe teachers teaching the topic of evolution during the June holidays, because South Africa and the world were under lockdown due to the outbreak of COVID-19. However, I could conduct observations once schools had reopened and participants had to cover the syllabus to prepare learners for their final examination. Observations were conducted over the weekends as well as when the participants were teaching during school hours. Five lessons were observed and videotaped with the permission of the participants. The sixth observation sessions were audiotaped, because the participant reported that they were uncomfortable with being videotaped.

As indicated before, I did not follow any schedule as this was an unstructured observation (Leedy & Ormrod, 2005; Cohen, Manion & Morrison, 2011). However, I freely wrote down and described what was happening in the classroom as I saw it. I took notes on how teachers presented the content and interacted with their learners). I paid more attention on the creativity of the participant in the classroom, how they delivered the lesson and how flexible and comfortable they were in the teaching of the topic that was against their religious beliefs. I observed if teachers allowed discussion from learners about other belief systems and alternative ideas. After I had observed all the participants' lessons, videoed observations where all transcribed. After I had six observation transcripts, I went through the observations several times and made notes, where necessary. I did this to familiarise myself with each observation transcript and to determine what I needed to add for each participant during the interviews, which had been planned after the observations. It was important for this research to start, as its first step, with observation and then follow thereafter with the semi-structured interviews.

3.6.2 Semi-structured interviews

Kvale (1996) describes an interview as a device to understand the world from participants' point of view, with the intention of uncovering and unfolding meanings of peoples' lived experience. Cohen, Manion and Morrison (2011) point out that there are many types of interviews, namely, structured interviews, group interviews and many others. However, this research used the semi-structured interview. In a semi-structured interview, the researcher asks the participant questions using a prepared series of questions (Bernard, 1988). However, a semi-structured interview differs from other interviews in that it provides a researcher with an opportunity to include open-ended questions and probe for further clarifications, where necessary (Cohen, Manion & Morrison, 2007).

The semi-structured interviews assisted me to derive narratives from the participants' perspectives, which assisted me to respond to the key research questions of the study. This research study focused on Life Sciences teachers' professional and religious identity, and how these identities interacted when teaching content that was viewed by the participants as contentious. I regarded this data collection method as one that was appropriate for complementing the data generated through unstructured observations. The use of semi

structured interviews enabled me to build on the ideas and views that emerged from unstructured observations (McMillan & Schumacher, 1993; Cohen, Manion & Morrison, 2011). For instance, semi-structured interviews provided participants with a space to explain or expand the rationale for their actions and inaction during the observations. This assisted the researchers to expand their understanding of what informed the actions and inactions of teaching when they were teaching the topics they regarded as contentious.

Semi-structured interviews also enabled the researcher to collect as much descriptive information as possible as well as in-depth data from a small number of people (Cohen, Manion & Morrison, 2011). I was aware that the participants in the study were few, but was encouraged by the depth provided by semi-structured interviews, due to the fact that it seemed to provide a sense of safety for participants to share their stories. Fadeela (2013) has pointed out that, during an interview, a social relationship exists between the participant and the researcher. However, my ability to develop a deeper social relationship with the participants in the context of research was influenced by the protocols COVID-19. Within this context, a semi-structured interview enabled me to ask probing questions in a manner that encouraged participants, without coercing them, to provide me with as much information as possible.

It must, however, be noted that I had a good relationship with the participants before the research and before the outbreak of COVID-19. We had built a long-standing relationship, because of our subject-related relationships and attendance of departmental workshops. I was, however, aware that there was a risk that my prior relationships with the participants could impact on the validity of their responses, which I endeavoured to moderate through directly pointing out that the intention of the research was not to catch them out. For instance, I visited and engaged with the participants a few times before the interviews and lockdown. Every time I met them, I kept on reminding them about the topic of the research and the question the research questions, pointing out that these had nothing to do without professional relationship. However, having said that, I subscribed to the notion that the intention was not to search for or prove any absolute truths. Rather, I was interested in the participants' (re)constructions, sense making and interpretations of their social realities, which, in my opinion, yielded multiple truths.

During the lockdown period, I could not visit the participants, because of the protocols issued by government for the containment of the spread of COVID-19. The only way that my research could proceed at the time was to communicate with the participants through a cell phone. I regularly communicated with the participants during the lockdown, checking on them in respect of whether they were fine and to encourage them to stay safe with their families. I also did this to ease the fear and anxiety caused by the effects of COVID-19. When the protocols were relaxed to allow services to continue, I requested participants to allow me conduct the interviews telephonically. Upon their acceptance of this, I then confirmed the date and time for each participant. This challenged me as a researcher to put in place all the requirements before each interview. For instance, I had to ensure that I had sufficient airtime, fully charged battery, lockable room to keep children away so that I could protect recordings from external interferences.

During the interviews, I informed the participants that there were no right or wrong answers. To demonstrate this, I told them that they had to share their own views and opinions as they pleased and that they were not going be judged on their responses. I also requested each participant for permission to use a voice-recorder so that I could focus all my attention on the interview (McMillan & Schumacher, 1993). Permission to record the interview was provided in each instance. However, the disadvantage with telephonic interviews was that I could not capture all the aspects of the body language of the participants, which may have had an impact on my interpretation of what happened during the interviews.

During the interviews, I always kept in mind the key research questions of the study, and for this, semi-structured interviews provided the best option. Narrative semi-structured interviews enabled the participants to tell their stories (Cohen, Manion & Morrison, 2011) about their experiences of teaching the topic that contradicted their religious identities, and how their religious beliefs influenced their teaching practice. Furthermore, through the semi-structured interview, I could generate rich, detailed qualitative data, relatively unaffected by my own interventions (Domnisoru, 2016). To some extent, telephonic interviews helped to create a space for a reflective account without much input and interference from me. I could read this

from the participant's' facial expressions, which convinced me that they felt free to tell their stories about their experiences.

I formulated a semi-structured interview schedule to follow as a guide when the participants told their stories. Having this schedule enabled me to obtain participants' stories and keep the stories on topic with the minimum interruption as possible. During the interview, I could ask clarification questions, where necessary. However, being cognisant of data usage and the financial costs involved, kept questions to a minimum, especially when there were long silences, which denoted to me that participants might not be feeling comfortable with the questions. I would then move onto the next question, after seeing that the participant had regained their comfort. However, in instances where there seemed to be gaps, I called participants for further clarification. Each interview lasted between 30-45 minutes, with follow up sessions lasting approximately 20 minutes.

3.7 Data analysis

The previous chapter, which provided a review of relevant literature, highlighted the complexities involved in teachers teaching a contentious topic. Therefore, for this study, gathering data from the participants could be limited to a simplistic analysis (Fadeela, 2013). However, it must be pointed out that "there is no single or correct way of data analysis and the strategy should be chosen according to fitness for purpose" (Cohen, et al., 2007, p. 501). In addition, when it comes to data analysis, it is important to allow data speaks for itself (Cohen, Manion & Morrison, 2011). To ensure a qualitative data analysis, I worked with the collected data by listening to the voice recordings over and over. Hereafter, I transcribed the audio recorded interviews and observations into written data, organised and broke the data into small manageable units (Bogdan & Biklen, 2003; Cohen, Manion & Morrison, 2011).

All the interviews conducted were a mixture of IsiZulu and English, as this depended on participants' ability to express themselves at any given time. I translated the interviews and observations to English, as it is the academic requirement of the university. Where I was unsure of the accuracy of the translation, I asked impartial friends to assist me with the translation that would provide the closest meaning. I did this to prevent using my own interpretations and for

accuracy, since qualitative studies demand accurate translations (Al-Amer et al., 2016). I also double-checked my translations participants to confirm if what had been transcribed was indeed their interpretation of what they had said.

After I had transcribed the data, I read the transcriptions repeatedly to obtain a full understanding of the responses and draw ideas emerging from the data (McMillan & Schumacher, 1993). I made notes on the side of the pages, where I linked ideas with the key research questions of the study. Thereafter, I coded and synthesised the data from both the interviews and observations, searching for patterns. I did this so that I could understand the complex links between the various aspects of teachers' situations, mental processes, beliefs and actions (McMillan & Schumacher, 1993). The patterns were then grouped into themes, which is a technique used in qualitative research to analyse and examine narratives to produce a rich and detailed, yet complex, account of the data (Banks, Leach & Moon, 2005). Furthermore, literature and critical concepts from the conceptual framework were used deductively to guide the analysis of the data. The process of coding and categorising enabled me to finally arrive at four themes, which will be discussed in chapter four of this study.

3.8 Trustworthiness

The notion of trustworthiness refers to the way in which an inquirer can persuade the audience that the findings in the study are worth paying attention to and that the research is of high quality (Lincoln & Guba, 1994; Johnson & Turner, 2003). Trustworthiness can also be used to assess the extent to which the research can be trusted (Shenton, 2003). Since this research adopted a qualitative approach, I had to focus on four issues of trustworthiness, namely, credibility, dependability, transferability and confirmability (Guba & Lincoln 1994).

Credibility refers to the establishment of confidence in the truthfulness findings of an investigation and the overall conduct of the study (Guba, 1981), which is the degree to which the research can be trusted. To ensure credibility, I combined narrative inquiry with predominantly qualitative data collection methods, namely, semi-structured interviews and unstructured observations, which enabled research participants to tell their stories with relative ease. In order to ensure that key issues were covered during the interviews, I developed a

schedule, which was checked and approved by my supervisor. The open-ended nature of the interviews enabled the participants to respond as much as they could, which allowed them to tell their stories relatively fluently. To ensure that I selected participants, who had knowledge and experienced in the phenomenon under investigation, and who could provide useful data to respond to the key research questions of the study, the study adopted a purposive sampling design (Creswell, 2013) The participants where six religious Life Sciences teachers. The intention for choosing this number of participants was to allow space for delving deeper into their narratives, as generalisability of the findings was an insignificant concern (Guba &Lincoln, 1994).

Dependability refers to the stability of data overtime and under different conditions., whether the community can trust the findings of the research study (Elo et al., 2014). In order to strengthen dependability for this study, I triangulated findings through the use of a combination of data collection methods, namely, semi-structured interviews and unstructured observations. Transferability refers to the degree to which the findings of a research study can be transferred to other contexts or settings with different participants or researcher (Korstjens & Moser, 2014). It was not the intention of this study to transfer findings. Therefore, the expectation was that there would be insignificant transferability, if any. Confirmability refers to whether the findings of a research study can be confirmed by other researchers (Guba,1981; Korstjens & Moser, 2014). For this study, this was ensured by conducting a thorough review of literature and cross referencing findings for the study with what has been found previously. In all, the three aspects of trustworthiness which are dependability transferability and confirmability are closely linked and they rely on the quality, truthful, honesty and accuracy of the research (Creswell, 2013).

From a methodological perspective, interviews were recorded, transcribed and verified for accuracy with participants and by my supervisor in order to enhance the three aspects of trustworthiness. In addition, questions were asked in several ways. Participants were given an opportunity to listen to recordings and provide input on their accuracy and completeness. The intention was to provide participants with an opportunity to suggest changes or make additions or deletions, where necessary. Data was analysed immediately after data collection. Since the data collection methods (i.e. semi-structured interviews) I had chosen, followed specific steps

or phases, I could establish the patterns, which enabled me to adapt things, where necessary in order to enhance trustworthiness.

3.9 Ethical considerations

Cohen et al. (2007, p. 58) defines ethics as "a matter of principled sensitivity to the rights of others, and that, while truth is good, respect for human dignity is better". Due to the sensitive nature of the topic, I had to proceed with caution to ensure that the dignity of my participants was respected, upheld and protected. To ensure that no harm was caused to participants, I first obtained permission to conduct the study from the Department of Education (DoE) (See Appendix A) in the selected schools. I also obtained permission from the University of KwaZulu-Natal Ethics Committee. Once I had been granted permission from both the University and Department of Education, permission was then sought from the respective school principals (See Appendix B).

Appointments were made with the respective school principals, where the research was explained and permission was sought. I then requested consent from the teachers at the schools for them to participate in the study, which were signed immediately after acceptance (See Appendix C). The consent form for the participants explained the details of the study, informing them of the ways in which data was to be collected, their rights in respect of their participation in the research (Babbie, 2007). Participants were informed before and during the data collection period of their rights to withdraw or to refuse to answer questions or provide information should they feel uncomfortable. Participants were informed that withdrawal or refusal would not invite any penalty or judgment. Thus, their participation in the investigation was always voluntary. Participants were also informed that I would always ensure, as much as it is practically possible, anonymity and confidentiality of their responses (McMillan & Schumacher, 1993). To this end, pseudonyms were used for purposes of the study, which were Wendy, Zinhle, Paradise, Xolani, Zwane and Sipho. These pseudonyms were chosen by the participants themselves in keeping with the manner in which participants were positioned in the study.

The sensitive nature of this study required that I follow ethical protocols strictly (Bogdan & Biklen, 2003) to ensure that participants were not harmed in any way, whether emotionally or

socially (Bogdan & Biklen, 2003). To ensure this, I considered questions that I asked carefully and did not judge the participants for their responses thereto. Participants were also informed that psychological counselling would be arranged, in case the effects of the study triggered a need for such. However, none of the participants made a request for the service.

In order not to pressurise participants and disrespect their plans, participants were contacted well in advance for interviews. I believe that this provided them with sufficient time to think about whether or not to be part of the study. In addition, any changes on the plans were discussed with the participants in order to obtain their permission. Participants were also informed that if they experienced any personal pressures that required them to change plans, they were welcome to discuss these with me. Fortunately, none of the participants had need to change the plans upon which we had agreed. Participants were also informed that all information they provided would be treated with strict confidentiality. To ensure this, the voice recorder and all the transcripts were handed to my supervisor after completion of the study, for safe keeping for the period of five years and thereafter destroyed. However, while the transcripts were with me, these were kept under lock and key, with passwords for all the electronic materials.

In addition to the above protections, I was very aware of my own biases and understandings of the topic, and this awareness enabled me to remain non-judgemental to the participants throughout the research process. This was also ensured through the process of member checking, in which participants were requested to go through the transcriptions and comment on the accuracy of what had been captured as what they had said and did. In this regard, I sent the transcriptions to the participants so that they could verify if what they had said had been correctly captured. Participants were allowed to suggest changes on the transcription, which were integrated thereafter.

3.10 Limitations of the study

During the study, several limitations and challenges were experienced. Firstly, the small number of participants proved to be a limitation. Thus, the findings may not be generalised to all the Life Sciences teachers in South Africa. However, my decision to conduct the study was based on a situated contextual understanding of Life Sciences teachers' experiences in teaching the

content that is against their religious identity. Secondly, time was also a difficult obstacle to overcome in conducting this study. I could not observe teachers teaching all the contentious topics in the Grade 12 curriculum. This was further exacerbated by the outbreak of COVID-19, whose peak was the lockdown.

Due to the fact that I had an existing relationship with some of the participants, they might have responded in the way they thought I wanted them to respond. I overcame this by asking questions in different ways to corroborate responses. My being a religious, as a teacher for Life Sciences, could also have influenced the way in which I interpreted the stories of the participants. Due to the pressures exerted on Grade 12 teachers by the Department of Education to complete the syllabus, each participant was observed over two-hour lessons, which were held sometimes on Saturdays by the various schools in the area. Initially, I was going to observe more lessons, but this could not occur due to restrictions. This, to some extent, imposed limitations as references to other contentious aspects were captured through the interviews only.

3.11 Conclusion

This chapter presented considerations made in respect of the design and methodology of the research. Firstly, this chapter discussed the paradigm in which this research is located, as well as qualitative and narrative inquiry. This was followed by a description of the research design adopted for the study, in which I explained the context of the study, population and sampling procedures. I also described and analysed the data collection methods, namely the interviews and the observations, which were used for the study and I provided justifications for the choices that I made. Lastly, I discussed the validity, trustworthiness ethical considerations and limitations of the study.

The next chapter will present data collected and the analysis of the findings, based on the key research questions of the study.

CHAPTER 4

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

The previous chapter discussed research methodology and design that was adopted to undertake this research. It was important to consider issues relating to the research design and methodology, as it provided a critical framework what will be presented in this chapter. This chapter presents the findings of the data gathered from unstructured observations and semi structured interviews. The data presents teachers' experiences of teaching Life Sciences content that is regarded as contentious for them, from a religious perspective. The data was analysed using the literature as well as the concepts from Day and Gu (2007). Day and Gu's (2007) concepts reveal that the complexity of teachers' identity construction is influenced by contextual realities.

This research was guided by the following key research question, with its two sub-questions following immediately thereafter:

- How do Life Sciences teachers' religious identity influence their teaching practice?

Sub-questions

- What are the challenges science teachers experience in teaching what is against their religious identity?
- How do they negotiate the tension between their religious identity and contentious science content?

This chapter begins with a presentation of, firstly, the construction of teachers' identities and influences of their Christian upbringing, how they became Life Sciences teachers, and teachers' struggles in teaching content that is against their religion. Secondly, the chapter discusses teachers' challenges in teaching contentious content, which resulted in challenges from learners, waste of teaching and learning time, challenges from parents, lack of knowledge and confidence, and poor support. Lastly, the chapter discusses the teachers' negotiating of tension

between their professional and personal identities, which includes religious responses to learners, what teachers chose what to teach, continuous assessments and sources of teachers' motivation.

4.2 Construction of teachers' religious identities

Teachers have multiple identities, which are constructed and reconstructed from various sources in their lives, and influenced by different social experiences and events (Day & Gu, 2007). Identity is socially constructed and the various ways in which we live out our identities is often influenced by groups to which we belong (Brah, 1987; Weedon, 1997; Mansour, 2010). These groups, such as family or peers, socialise us into particular roles, which identify us as members of particular groups (Brah, 1987). In this study, teachers' sense of self was shaped by interactions with people whom teachers love and were close to, such as their families and friends (Harro, 2000).

The theme: *Construction of teachers' religious identities* provides an understanding of how teachers, as individuals, identify themselves and obtain a sense of belonging (Day & Gu 2007; Hall, 1996; Gleason, 1983). Identity construction is a manifold, diverse and contradictory process. The sub-themes: *Influence of a Christian upbringing*; *Being a Life Sciences teachers*; and *Teachers struggles to teach content that is against their religious identity* present ways in which teachers' multiple identities were constructed in this study. Day et al. (2006) argue that the multiple selves of teachers are continually reconstructed, through historical influences that shape the meanings of who they are. In addition to the above issues, this theme addresses the question of how teachers lived out the fact that they were experiencing conflicting or contradictory identity.

4.2.1 Influences of a Christian upbringing: "*I live a holy life*"

The teachers who participated in this study, except for Paradise, identified themselves as devout Christians, who grew up with religious parents or grandparents. Beit-Hallami (as cited in Fisherman (2011), asserts that people do not really assign themselves into religious groups; they

are born into religious group. Teachers' understanding of their religious upbringing could be discerned from the extracts below:

> Wendy*: "I am religious because all my family is religious, even my parents took me to church every Saturday...fortunately, I married a husband from the same church. In fact, I can say being religious is something that I was born with".*
>
> Zinhle: "*…my grandmother, who was very strict and also she held certain position in church so I ended up being religious. So, I had to be very straight because whatever I do wrong even in the society all eyes were on me. I was disciplined by the church members…I got married to a pastor".*
>
> Paradise: "*At home where I grew up, we are not religious but I became religious at the University. I had a friend who was religious and she used to invite me to the church… I have been religious since then".*
>
> Zwane*: "I grew up in a religious family… I have been religious since I grew up because that is what I was taught at home".*
>
> Xolani: "*I grew up in a religious family where we were taught to believe in God and I still believe in Him until now*".
>
> Sizwe: "*I grew up with my grandmother who suffered for me to be what I am today. She taught us to live a holy life, that's why even today I live a holy life and I am the leader of the youth in my church".*

The narratives above reveal that participants were raised in a religious context. This is especially evident from Wendy indicating that *"being religious is something that I was born with".* Moreover, Zwane and Sizwe, like Wendy, point out that they grew up within a religious context: "*I grew up in a religious family*" (Zwane) and *"She taught us to live a holy life"* (Sizwe). Attending church and growing up within a religious context suggests that they were

systematically socialised into becoming religious by their parents, families and grandmothers. Christian values were inculcated into them at a young age and they were systematically taught "*to believe in God*". Through the process of "psychological colonisation" (Dascal, 2003 p. 299), their socialisation has become embedded and become a routine, embodied practice (Hardiman & Jackson, 2000; Martin, 2015), as stated by Xolani in that "*I have been religious since then I still believe in him until now".*

Christianity has become an integral part of Sizwe's life, as he is not just a member of the church, but is a "*... leader of the youth in my church"*. Sizwe has learned that suffering and living a holy life work hand in hand. For him, his Christian identity has provided him with a means for visioning his future (Duffy, as cited in Martin, 2015), as he has been encouraged to be actively involved in the activities of the church. For Zinhle, who had to be *"very straight",* Christianity is understood and regarded as an identity-regulating device, through which deviant behaviour could be called out through being *"disciplined by church members"*. Here, Zinhle has learned to behave often for fear of being disciplined by members of her church. For Harro (2000) and Oppong (2013), one of the key ways in which dominant beliefs, behaviour and practices are inscribed is through the process of enforcement. Here, teachers' Christian beliefs, practices and behaviours are being enforced through ideological devices. However, for Zinhle, enforcement is through the use of discipline and the fear of being disciplined by the members of the church and society, who had placed her behaviour under constant surveillance, with "*...all eyes were on me...*". The consequence of this is, from Zinhle's perspective, that the correct behaviour according to ideals was produced: "*…so I had to be very straight…".*

For Paradise, the construction of her identity as a religious person has generated an identity that is fluid, dynamic and influenced by interactions with particular people and participation in particular life experiences. This is in sync with the findings from various studies, which revealed that some identities do not remain the same, but may change over time (see, for instance, Gioia, Schultz & Corley, 2000; Aronson & McGlone, 2009; Day et al., 2006; Castaneda, 2011; Baxter, 2016). For instance, Paradise was not socialised into becoming religious, because "*at home where I grew up, we are not religious".* However, the influence of her "*friend who was religious at the University",* led her to changing her perceptions about religion and adopting a religious

life: *"I have been religious since then".* However, the extent to which religion was freely adopted is questioned by Paradise who felt extreme pressure from her friend to conform to some sort of religion, because he feels that *"not being religious"* was presented as *"... something wrong..."*. This is not surprising as when dominant norms and values are being enforced, those who do not conform are often sanctioned (Harro, 2000; Hardiman & Jackson, 2000). It could then be concluded that Paradise conformed to the pressure, because he could not bear the thought of falling foul with her circle of friends. The fact that Paradise is still religious implies that although her religious identity was not willingly accepted, it continues to influence who she is: *"I have been religious since then"*.

4.2.2 Becoming a teacher for Life Sciences: "*It was not my intention"*

In the same way that religion was introduced in the participants' lives, thoughts and behaviour, significant others played a crucial role in their decisions to become Life Sciences teachers. It is important to, from the outset, point out that all the participants of this study were suitably qualified and had done Life Sciences as one of their specialisations. Out of the six participants, only Zinhle had taken an independent decision to become a Life Sciences teacher. Instead, various factors influenced their decisions to become Life Sciences teachers:

> Wendy: *"I specialised in Life Sciences because most of my friends who entered tertiary before me also specialised in Life Sciences…I love to be a teacher because I enjoy being around kids".*

> Paradise: *"I love seeing children around me…that's why I chose a teacher career…Life Sciences subject had better marks in my matric certificate, so my parents advised me to specialise in Life Sciences".*

> Xolani: "*It was not my intention to teach Life Sciences, but for the fact that it appeared in my qualification certificate, so I was placed in this school to teach it... I want to teach maths rather than this subject".*

Zwane: *"My teachers at school said I would become a good teacher because they saw the way I tutored the lower grade…and all other subject streams were full at the tertiary, but Life Sciences stream was the only one with spaces, so that's how I specialised in Life Sciences".*

Sizwe*: "It was told that if you are a qualified any science teacher, you are easily employed. So, I wanted a career where I would easily become employed because I wanted to support my grandmother who was suffering to raise my siblings at home. I became a Life Sciences teacher because I felt that Life Sciences was easy for me to understand than other subject that appeared on my matric…my late mother was a biology teacher".*

Zinhle: *"I love to be around children so I decided that becoming a teacher would be a perfect career for me…I loved Life Sciences, that's why I specialised in it"*.

From the above narratives, it could be deduced that the teaching Life Sciences is positioned in an ambiguous way for all the participants, except for Zihle. Davies and Harre (1999) and Chartesis (2006) assert that the manner in which an individual locates or positions themselves within society could suggest how they develop a particular sense of self. Becoming a teacher for the Life Sciences was not the first choice for Xolani and Wendy; they chose it because their "*friends…also specialised in Life Sciences*". Adams and Marshall (1996) and Carlone and Johnson (2007) posit that as people develop relationships with others and within friendship groups, they are simultaneously engaging in the process of identity formation and positioning. It may be for this and other reasons that the participants in this study are now teaching Life Sciences: they "…*love seeing children…*" and "…*being around kids…*". Caza and Postner (2019) have, however, raised concern that it is unacceptable that people assign themselves and learn who they are as professionals by seeing themselves in others.

Xolani reference to Life Sciences as "*this subject*", with a preference to '*teach Maths*" suggests that a somewhat distancing from the professional identity. Beijaard (1995) and Erikson (1959) contend that identity involves how we make sense of ourselves on a personal level, whilst

professional identity, according to Lasky (2005, p. 901), is about "how teachers define themselves to themselves and to others". For Xolani and Wendy, who do not firmly identify themselves as Life Sciences teachers, their professional identities as Life Sciences could be regarded as fragile and uncertain, because teaching this subject was not their first choice.

Paradise, Siwe and Zwane also did not took an independent decision to become Life Sciences teachers; they were influenced by their families. Paradise's *"parents advised me and told me to specialise in Life Sciences".* The reference to being "*advised*" and "*told*" suggests that the decision was made for him, rather than him making the decision. For Zwane, it was "*my teachers at school'* who believed he would be a good teacher. These participants' narratives are reminiscent of Day and Gu's (2007) understanding of the personal and situated dimensions of identity construction, in which teachers' families, friends and teachers have influenced their decisions to become teachers. From the perspective of Day and Gu (2007), there is an intersection of the personal and the professional. The situated dimension, influenced by context, triggered Sizwe to become a teacher, as he had to get a job to *"support my grandmother who was suffering to raise my siblings at home".* Thus, the realities of poverty and the possibility that he could get a job easily thereafter influenced his decision to become a Life Sciences teacher. It was a more of a pragmatic decision than a desire to become a Life Sciences teacher. In the narratives above, it could be concluded that decisions to take on a particular professional identity have been influenced by particular personal and situated dimensions (Day & Gu, 2007). This resulted in many of the participants to eventually take on the identity of a Life Sciences teacher.

Zinhle was the only participant who had independently chosen to become a Life Sciences teacher: "*I decided that becoming a teacher would be a perfect career for me… I loved Life Sciences".* Day and Gu (2010) contend that a teacher's identity influences the manner in which they teach. When there is a balance among the three dimensions, namely, the personal, situated and professional, teachers generally have a positive attitude and can fulfil what they are required to in the classroom (Day & Gu, 2010). In the case of Zinhle, this resulted in her loving the teaching of Life Sciences. Zinhle's personal, situated and professional dimensions are in

balance, because findings suggest that her decision to become a Life Sciences teacher was through her will and choice.

Above, it could be concluded that decisions on becoming a teacher for Life Sciences were often made independently, but emerged from various influences, ranging from parents, grandparents to contextual realities. For this study, only one teacher firmly identified as a Life Sciences teacher.

4.2.3 Teaching contentious content: *"My religion does not allow me speak about sex to children"*

Teachers in the study shared their experiences of teaching Life Sciences content that conflicted with their beliefs as Christians. Day and Gu (2007) contend that there is a link between teachers' lives out of school (personal) and teachers' lives in school (professional), and that each has their own norms, beliefs, values, cultures, demands and roles. In this study, teachers' religious identities, beliefs, norms, values, which that were embedded in Christianity, influence their professional identities and wellbeing. All the participants in this study identified various Life Sciences content that went against their religious beliefs and cultures. These were *"reproduction, cloning, evolution and also genetic engineering"*. Participants reported often finding themselves in situations where their religious beliefs conflicted with their professional identities, as Life Sciences teacher, who had to teach learners all the prescribed content. This finding concurs with Rachmatullah, Ha and Parks' (2019) view that religiosity can trigger conflict amongst social groups in education institutions. This could be discerned in the excerpts below:

> Wendy: "*It is against my religious culture to teach girls about the penis, and boys about the vagina, what for really…*In relation to evolution and cloning she said, *"I believe that God is the creator of everything and no one should change what God has made and created…".*

> Paradise: *"It's against my religious beliefs to teach about the males' things since I am a female and my religion does not allow me speak about sex with children".*

Zinhle: *"It's against my religion to speak about male parts because I am a female, and my religious belief does allow that. Actually, the girls are being taught by elder mothers, and boys are being taught by elder fathers…I feel I'm misleading the learners".*

Zwane: *"It is difficult to teach the topics that are against my religious belief because I feel that I am betraying my religion... I always have the feeling that I am misleading the learners…Teaching learners about contraceptive against my religious value and teaching them I will be promoting them to go and practice sex before marriage which is wrong".*

Xolani: *"I find myself in a position where I have to teach the topics that are against my religion and I end up not enjoying my profession. When I teach the topics that are against my religion it's like I am turning away from my religion. Teaching learners what I don't believe I just feel like I am lying to the learners. From my religious culture even when I was a teenager, we taught by community males. Now if I find myself in a situation where I have to teach a combined class of girls and boys displaying naked pictures, I really feel offended. Anyway, a job is a job".*

Sizwe: *"If I have to teach these controversial topics and as result I have started to hate my profession. It's difficult to teach the topics that are against my religious belief…. discussing female private part and that is against my religious culture. to me it is a sin to abort and I feel I am sending them to go and practice sex and use contraceptives".*

From the narratives above, it has can be discerned that, for the participants, some content in the Life Sciences is contentious to their religious beliefs. In addition, it could be concluded from the above excerpts that teachers' religious beliefs were often elevated above their professional obligations. Barret, 2015 contends that beliefs are what individuals hold to be true and provides them with a sense of right or wrong. Beliefs are often used by individuals to make judgements

about the truth (Buehl & Beck, 2015). For the participants, religious values and beliefs were the truth and way in which they led their lives. Religious beliefs also provided them with a sense of what was right for "*God is the creator of everything and no one should change what God has made and created"*. Here, God is projected as the 'truth' that must not be challenged or questioned. They also provided the participants with what was true and real.
Failing to live up to their religious ideals caused Xolani to "*end up not enjoying my profession",* and this suggests an imbalance in identity construction when there is a discord between his professional and personal religious identity.

Wendy, Paradise, Zinhle, who were female teachers, pointed out that their "*religious culture*" prohibited them from teaching "*…girls about the penis, and boys about the vagina…"* Furthermore, these participants reported that when it comes to sexually oriented topics, "*the girls are being taught by elder mothers, and boys are being taught by elder fathers"*. This is an embedded religious belief for Zwane, Xolani and Sizwe also as "*I was not taught to speak about private parts in front of girls…".* All this emerged from their personal identity construction. Moreover, this suggests that religion socialised them into not speaking about "*private parts*" to the opposite sex. This often led them to believing that gender was founded on separateness. From the narratives, a point is made that female teachers must teach girls and male teachers boys. In addition, the responsibility for this, however, does not lie with teachers; it is the responsibility of "*elder mothers"* and "*elder fathers*" or "*community males*" to teach girls and boys about their body parts. Thus, for the participants, forcing teachers to teach this content made them feel as if they were '*betraying my religion'* and went against their religious values, beliefs and culture. For instance, Xolani is "*offended*" so much so that he "*end up not enjoying my profession".* Again, in this instance, there is a discord between teachers' professional and religious identities, which are set up in competition with each other.

From a point of view of access to this kind of content for learners, it is concerning that teaching learners about reproduction has such consequences for the participants. The beliefs of the participants about the consequences of teaching learners such content is of grave concern. For instance, Sizwe and Zwane stated that they "*…will be promoting them to go and practice sex before marriage which is wrong"* and *"misleading the learners"* if they taught them this

content. These participants have been enculturated and socialised into such religious norms and ideas about sex and marriage that makes it difficult to fulfil their professional obligations. Having to teach the topics, such as reproduction caused undue stress and conflict for the participants as it went against their religious ideals and identities. This finding is concerning in that teachers have a professional obligation to teach content as stipulated in the Curriculum and Assessment Policy Statement (Department of Basic Education, 2011), despite the fact that the content goes against their religious beliefs.

However, this finding concurs with Countho and Silva's (2013) view that science, specifically, Life Sciences in the case of this study, and religion are incompatible and mutually exclusive. For this study, the fact that the participants' religious identity is in discord with their professional identity results in a problematic tension. For instance, in this study, participants could not resolve this tension; instead, they experienced a sense of frustration at having to teach topics and content that made them uncomfortable owing to these "*against my religion".* For instance, for Xolani, teaching content about abortion, reproduction or cloning was "*…a sin…"*. Wellman (2014) has found that teachers experience a sense of uncertainty when they have to teach such content.

What has been found in this study that if they have to teach such content it is equivalent to sinning and "*misleading and lying to the learners*". In addition, Clement (2015) contends that when teachers' beliefs are deeply rooted in their socio-cultural religious backgrounds and historical context, these will be difficult to change. The situational dimension of the participants in this study, namely, growing up within and among religious families and friends led to them internalising specific religious beliefs and values. Furthermore, the participants' socio-cultural religious backgrounds, which were deeply rooted in these influences impacted their professional identity as Life Sciences teachers. For instance, they held that it was "*against my religious belief"* and that they were transgressing Gods' law (Wellman, 2014). This positioning often resulted in them struggling to teach the prescribed content as expected in the Curriculum and Assessment Policy Statement.

This section above presented findings on various influences on teachers' identity construction, with their religious identity taking precedence over their professional identity. This suggests the participants' religious beliefs were deeply embedded and influenced how they experienced their lives as Life Sciences teachers.

4.3 Challenges when teaching contentious content

This section focuses on the various factors that presented as challenges to the participants when teaching content that was against their religious identity and responds to the first key sub-question of the research study.

4.3.1 Challenges from learners: *"The class becomes very chaotic"*

During lesson observations, where teachers were teaching contentious content, such as human reproduction, learners constantly laughed, giggled and whispered to one another. It could be concluded that the teaching of the content caused chaos and in the classroom. When teachers mentioned words like "*penis, vagina, clitoris, foreskin*" (Observed, 18/02/2020), learners continually raised their hands to ask questions, often talking out of turn. Boys, in particular, were the most disruptive during the lessons. During the interviews, participants shared their experiences of having to deal with the behaviour of learners when teaching contentious content, which have been provided in the excerpts below.

> Wendy: "*…when I teach these topics I experience a lot of questions from learners and the class become very chaotic because some don't believe in evolution, human reproduction and cloning and evolution. I try to discipline the learners again and again. Sometimes, I avoid any questions from learners or I just carry on while they are talking …. This topic is very sensitive and it triggers their sexual feelings and those that went out I think that they become uncomfortable in staying in the class. So, when they go out I don't stop them because I don't know how to handle such a situation.*

> Paradise: "*I experience challenges from learners because some also come from religious backgrounds. So, they ask a lot of questions like how to terminate an*

unborn child, how circumcision is done and many more others. When it comes to cloning, evolution… and I don't know to handle such questions because speaking such language in front of children is against my religion and this causes chaos in the class. Learners just misbehave so it becomes hard for me to discipline the class. ……when boys see nude pictures, their sexual feelings are activated which makes them feel uncomfortable to be in class and I don't know how to deal with that, so I just allow them to leave if they want to do so. Boys have the cultural stereotype of that they are the one who are responsible for sex and they keep on asking even the information that is not relevant to the curriculum.... This comes from their community teachings and even in religious teaching through churches… I end up avoiding the learners' questions and carry on with the teaching".

Zinhle: "*Learners ask me a lot of questions like what is the difference between a vagina that has labia and the one that does not have labia, I ignore such questions because it's against my religious upbringing to speak about such things. … I try to discipline them and if they refuse to listen I carry on teaching. And this strategy is working for me because those who want to listen end up disciplining one another. So, it's become very challenging to manage an overcrowded class. I have been teaching this subject for more than three years, and every time I am teaching this topic, learners misbehave and the class becomes excited and noisy. I think this is because they are seeing private part of the opposite genders. It becomes very challenging …. because I was not taught to speak about sex and private parts in front of boys".*

Zwane: "*…learners who also religious and they ask a lot of opposing questions to the curriculum…. like 'why we are learning evolution because it is against our religion, or isn't that God created us and everything'. As much as I agree with the learners because I also believe in God as a creator, but I don't know how and which will be the good response to the learners…I try to discipline them many times… I don't allow any questions in the class, and I just carry on with the teaching. Sometimes I pray that God to fill me the strength to cope with learners even with*

their behaviour. Boys feel comfortable to me as a male teacher when I teach about this topic, unlike girls they are shy to ask a male teacher about something".

Xolani: "*The challenge comes from the learners since learners come from different backgrounds and different religious upbringings, …. I don't know how to find the best answer that will accommodate religious and non-religious learners in the class. I decided to just avoid any religious discussion because learners have got different views so I just don't allow them to say anything so that I can carry on with the teaching. I was taught at home that every time I face the challenges I must put my hope in God and by doing that I am strong and I cope with learners, even in disciplinary…. When I was a teenager, we were taught by community males, now if I find myself in a situation as a male teacher where I have to teach a combined class of girls and boys displaying naked pictures of private parts of girls and boys it becomes very challenging for me and it's against my religious culture".*

Sizwe: *"Learners are very challenging because when I teach the controversial topics……but it's hard for me since I am also feeling the conflict within myself during the teaching. It's very easy to control the learners that are not overcrowded since they are all in front of my eyes I just told myself that I will not allow any questions and I just ignore those who want to ask questions especially the human reproduction topics, by doing this it allows me to deal with the controversy I experience within myself"*.

The above narratives reveal that one of the challenges that participants encountered was from their learners. From the perspective of this study, the participants referred to the influence of their situational and personal dimensions. Teaching contentious content often caused classes to "*become very noisy and chaotic"* (Wendy) and learners to misbehave. All the participants attributed disruptions to the contentious nature of the content of evolution, cloning or reproduction. For example, for Sizwe, the noise and chaos from learners was instigated by diverse views regarding content, which emanated from sources external to the school and their contexts of upbringing. Zinhle and Paradise pointed to cultural understandings and ideas

associated with growing up and believed that '*nude pictures triggers their sexual feelings".* The responses of learners, especially boys were to *"leave the class because they are uncomfortable staying in class"* or *"misbehave".*

The above finding supports what Silva et al. (2015) report that when science and religion are in conflict and this affects learners negatively, some may choose to leave their class. This suggests that learners struggle to manage their sexual urges, and with teachers being unable to assist them to manage their feelings, they are often left with no support. The effect of this is that learners may grow up thinking that sexual urges are something to be embarrassed about. Day and Gu (2007) have argued that in the situational dimension of teachers' lives, a range of factors may influence how this is experienced. In this study, it is evident that teachers and learners lacked knowledge and skills required to teach and learn such content. Growing up and being influenced by their religious backgrounds, culture and norms influenced how participants went about their teaching. This suggests that the content and learners' behaviour negatively affected the teachers' abilities to execute their professional commitments (Day & Gu, 2007). For instance, in some instances, teachers had to teach with some of their learners out of their class.

The case of teachers such as Paradise and Zinhle, for example, demonstrates how the situational dimensions of culture and community teachings influenced learners' responses towards the teaching of content on human reproduction. For instance, they point out that because "*boys are the ones who are responsible for sex",* they tend to the ones asking the most questions, which are mostly irrelevant to the topic. For Zinhle, knowing more about reproduction is more important than taking responsibility for sex for boys; instead, for her, this is about "*power over females*".

The above suggests her deep understanding of the prevailing cultural dynamics in the communities from which her learners come. For her, this points to the existing gender hierarchies that dictate and shape relationships between boys and girls, in ways that influences teachers' thoughts and practices about the teaching of these topics. This points to the awareness that teachers must have for them to be able to teach contentious topics and content. This supports the finding by Muza' s (2017) which revealed how community and cultural beliefs influenced

thinking and practices about the management of HIV/AIDS. In addition to this finding, participants also expressed irritation from the constant questions that learners raised when teaching the topic of sexual reproduction. For instance, participants complained about learners "*asking too many questions"* (Xolani and Wendy), which were often irrelevant to the topic, dubbed as questions that were "*unnecessary to the curriculum"* (Zwane).

Learners own religious beliefs and ideas also caused disruption for Wendy, Paradise and Zwane, as they had to defend themselves against learners who were unwilling to learn about evolution, abortion or circumcision who believed that *"God created us"*. The unstable and changing classroom dynamics often resulted in teachers experiencing a sense of powerlessness with poor discipline and chaos. Participants reported that, despite attempts to control the behaviour of their learners, they still '*refuse to listen*'. However, as much as participants pointed to learners causing disruptions, they were also conflicted in that they were struggling with the fact that, instead of evolution, they did not believe in it as a theory to explain the origins of life. For instance, as Zwane puts it, they believed in "*God as a creator*" (Zwane). However, it could be concluded that, because participants found it difficult to point to their own inefficiencies, they subsumed these in their responses about learners for fear that it would cause them even more identity discord.

Firstly, this suggests that teachers were at a loss of how to respond effectively and found it difficult to handle questions from learners. This finding supports Silva and Mortimer's (2014) assertion that science and religion are independent of each other, and that each has its own norms and culture (Day & Gu, 2007). Paradise and Xolani's responses point to the struggles that participants encountered in their attempts to negotiate the personal, situational and professional dimensions (Day & Gu, 2010). When this happened, participants struggled to fulfil the expectations of their professional obligations, as their dedication to their religious beliefs took precedence. To support this assertion, Day and Gu (2007) have pointed to the instability of teachers' identity in case of a conflict or discord between the dimensions. This religious and professional divide ruptures and affects teachers' practices and, for instance, resulted in Zwane unsure about how best to respond to learners: "*I don't know how and which will be the good response to the learners"*.

The major finding here was that participants had the same religious beliefs as some of the learners in the class, and this proved to be a challenge as teachers could not maintain their professional identity. Zwane, for example, pointed out that "*I don't know how and which will be the good response to the learners".* These findings support Blanke, Boundry, Braeckman and De

Smelt's (2011) research findings. Blanke et al. (2011) reported that teachers could not respond to questions and issues raised by creationist learners during their teaching. However, for this study, this issue goes beyond that, as it suggests confusion and uncertainty among participants, who had similar beliefs and struggled to provide adequate responses in the execution of their professional obligation.

Their fragile religious and professional identity is evident because being unable to show their firm Christian roots resulted in feelings of guilt, where some of the participants turned to religious beliefs: "*I pray that God fills me with the strength"* (Zwane); "*I was taught at home that every time I face the challenges I must put my hope in God*" (Xolani). The challenges were not only about teaching content that was in conflict with their belief systems, but also with managing the learner discipline. The narratives suggest a fragility of identities, which are in discord with each other. In this study, participants could not rely on their professional abilities; instead, they turned to their religious beliefs for support and resilience.

One of the ways in which teachers attempted to restore harmony in their personal and professional identities was to avoid or ignore questions raised by learners. For instance, participants spoke about "*ignore[ing] such questions* "or "*I just carry on"*. This was because participants lacked appropriate vocabulary and tact to discuss something that was in conflict with their religious views and wanted to avoid the discomfort and disquiet that would accompany such. The consequences of avoiding or ignoring learners, however, had a negative effect on the quality of teaching and learning the topics as they were not dealt with in any critical depth, leaving learners with deficiencies in this area. Although this made sense as an escape route for the participants, it undermined the core of their professional obligations. For instance, it flew in the face of enjoyment of the right to education, engraved in the Universal Declaration

of Human Right (United Nations, 1948) and re-stated in section 29 of the Constitution of the Republic of South Africa (Republic of South Africa, 1996) are absent. This suggests that the participants were struggling to fulfil their professional commitments in respect of ensuring the promise of access to education is realised for their learners.

Participants attributed the ill-discipline and chaos that characterised their lessons when teaching contentious content to the large classes that prevented them from being effective teachers. Firstly, participants reported that the issue of overcrowding led to problems of learner discipline. Wendy, for example, reported that there were "*many learners in one class, which becomes very difficult in discipline a large number of learners"*. In response, she had resigned herself to not taking any action to stop boys from leaving her class during her lessons. From Day and Gu's (2007) perspective, it could be argued that Wendy's response could be regarded as a way of safeguarding and sustaining her professional commitments, although its effectiveness is a subject of controversy. West and Meier (2020) and Sanders and Ngxola (2009) have reported that large classes can be a major antecedent for the challenges experienced in teaching and learning in many classrooms. Furthermore, during classroom observations, it was observed that all classrooms had large numbers (Observed, 18/02/2020), far exceeding the national teacher-learner ratio. The classrooms were packed with many double desks, which made it difficult for teachers to move in-between them, opening the door for disruptions. For instance, it was normal for three learners to share a desk, which resulted to learners having insufficient space for writing and putting their bags and books, with many learners often writing from their laps.

However, for Sizwe, the conflict affected him at a personal level, in the form of internal conflict, especially when learners were asking uncomfortable questions: "*but it's hard for me since I am also feeling the conflict within myself during the teaching"*. He regarded this as one of his self-efficacies, as he could not fulfil his professional obligations properly as a teacher. The discord he experienced between his personal and professional identities (Day & Gu, 2007) resulted in internal conflict for him: "*it is hard for me…"*. Sizwe did not take any action to stop learners from misbehaving "*I just told myself that I will not allow any questions and I just ignore"*. This strategy of ignoring learners' questions and turning a blind eye on ill-discipline assisted him to

ameliorate the conflict that held within himself: "*it allows me to deal with the controversy I experience within myself…"*. This suggests that this became Sizwe's way of protecting what was left of his professional integrity.

The above discussion suggests that some of the challenges that the participants encountered when teaching contentious content came from their learners due their deficiencies in navigating these situations and ensuring effective classroom management. Day and Gu (2007) contend that teachers' experiences of challenges from learners are not static, but constantly fluctuate with the types of topics that teachers are teaching. From the perspective of this study, the ability of teachers to ensure effective classrooms management, as part of their professional dimension, depends on their self-efficacy (Day & Gu, 2007), which teachers in this study found in hard to ensure, especially when teaching contentious content.

4.3.2 Teaching and learning time goes to waste: *"I end up not finishing the curriculum"*

Participants reported that the unending questions and disruptions by learners often resulted in a significant amount of teaching and learning time going to waste. For instance, Paradise reported that "…*a lot of time is wasted during the teaching of the controversial topics and I end up not finishing the curriculum on time*". For Zinhle, a significant amount of time was spent on disciplining learners instead of teaching: *"I try to discipline the class again and again".* The words "*again and again"* suggests some sort of a continuous cycle of discomfort, and frustration and helplessness, happening throughout her lessons. This situation implies severe losses of teaching and learning time, unfinished syllabus, dismantling of professional integrity and multiple losses on the part of learners.

Lessons observed (Observed, 18/02/202) when teachers were teaching human reproduction confirmed then struggles that teachers in this study faced with the protection of learning and teaching time. For instance, Wendy, Paradise and Xolani reported continuously trying to discipline their class in vain. Some of the strategies that they reported using was to be silent for a few minutes or shouting above the noise of the learners. This took several minutes, namely, seven for Wendy and six for Zinhle. In terms of the national curriculum, time allocated for the teaching of topics is regulated (Department of Basic Education, 2011). However, due to the

challenges that teachers experienced when teaching contentious topics, due to disruptions by learners, teachers who participated in this study often could not meet implement the curriculum within the allocated times: "*I end up not finishing the topics on time"* (Zinhle). As such, during the interviews, Zinhle raised concerns about the quality and depth of the knowledge that her learners had gained, and feared that they may fail their examinations owing to this: "*learners are being assessed and if we were unable to complete the teaching on time learners will end up not knowing what to write and they will fail"*.

Zinhle's concern suggests that she was aware of the accountability that she had towards her learners: "*it is our responsibility to complete teaching on given time stated on the programme of assessment"*. For Zinhle, Sizwe and Xolani, failing to complete the work in line with the annual teaching plans meant that they would be "*given a warning of unable to complete the work and we have to provide explanations".* It could thus be concluded that even though teachers were experiencing challenges as reported by the participants, they were still aware of their professional obligations towards their learners. For, the inefficiencies in fulfilling these obligations was equivalent to poor professional conduct (Yoon, Ellison & Essl, 2020) and failure to fulfil their professional obligations in respect of their employment conditions, as expressed in the Employment of Educators Act 76 of 1998 (Department of Education, 1998). Gulting (2010) and Maphosa and Mammen (2011) have indicated that accountability measures fulfil a regulatory function of ensuring that teachers adhere to the rules and regulations of the profession. However, for the teachers who participated in this study, the contextual realities they experienced seemed to overwhelm their efforts to ensure that their learners benefitted from their teaching. What exacerbated this was that the support they received in this regard was inadequate. For instance, Wendy reported that her "*HOD is not willing hear the challenges and difficulties that we face when we teach the controversial content*". This is, indeed, a sad story of the unfolding of undesirable events, flying into the fact of a promise of education for all.

Moreover, teachers complained about the time allocation for some topics. For example, there was "*too little time to teach the controversial topics, yet there is too much coverage on human reproduction"* and *"evolution"* (Wendy) and Sizwe. Participants were concerned about the waste of time spent on disciplining learners, learners' constant disruptions and the amount of

time allocated to specific content making it difficult for them to complete the syllabus. The combination of these factors produced a toxic mix of deficits. This finding supports what has been reported by Mungweni, Hartell and Patudi (2013) where teachers were frustrated by insufficient time allocated to teach sexual education in secondary schools. Other studies, such as that by Shikkink (2010) and Barrett (2015), have reported similar findings, which may point to the need for the allocation of time in the Life Sciences curriculum to be reviewed.

4.3.3 Confidence to teach topics: *"I don't understand these things"*

During classroom observations, the body language of the participants did not display confidence, especially when they were teaching the topic of human reproduction. This was particularly observed for three of the participants, namely, Sizwe, Xolani and Paradise. Yang (2017) argues that the confidence of teachers can be determined through their body language or non-verbal communication. For this study, teachers taught behind their desk for the entire lesson, in addition to the seemingly unconscious distractions that they generated.

For instance, Paradise kept on touching her phone and smiling awkwardly. Sizwe never took his eyes off the Life Sciences textbook and kept his head down when he was reading and providing information. Zinhle had a pen in her hand, which she kept on clicking for the entire lesson. Zwane kept on folding and unfolding a piece of paper in his hand, which distracted his learners. These gestures could be regarded as signs of discomfort, lack of confidence and helplessness – a sort of drowning in one's own failings. Mohamed and Pandhiani (2017) and Akyol et al. (2012) argue that teachers' confidence potentially has a significant effect on the quality of teaching and learning.

During the interviews, teachers, such as Zinhle and Sizwe, openly shared the fact that they "*feel unconfident in teaching some of the human reproduction content"* and "*human evolution",* "*because of my religion" (*Sizwe*).* This suggests that personal factors, such as their religious identity, which provided them with a particular worldview, often meant that the participants struggled to teach human reproduction, evolution and cloning. In addition, participants' content knowledge of the topics in question was inadequate, which translated into learning losses for

their learners. For instance, Paradise and Wendy mentioned that their phones "*distracted me from the unconfidency and the tension from my religion that I feel when teaching*".

The above finding supports Hawley et al' s (2011) finding where they found religiosity to be having both a positive or negative impact on teachers' abilities to do their work. To restore some of their confidence, teachers in this study often resorted to "*sometimes I don't teach learners what I don't belief in"* (Wendy) or teaching it inadequately because *"[they didn't] understand these things"* (Zinhle). Using the word "*things*" signals some sort of distancing from the Life Sciences curriculum or the teaching profession in general. The danger with this distancing lies in that the more an individual removes themselves from their own profession or professional identity, the higher the unlikelihood for them to act to remedy their situation (Day & Gu, 2007). For Wendy and Zinhle, the phrases *"I don't understand"* or "*I am not sure"* respectively, suggest a degree of uncertainty and resignation on a matter in which they must demonstrate authority. Obviously, this helplessness is likely to filter down into the lives of their learners.

The inability demonstrated by the participants above to take back authority for the teaching of their subjects can be seen in their interactions with learners in the following instances of their teaching (Observed: 17/02/2020):

> Learners: *What is circumcision?*
> Wendy: *Eehhmm, okay, I will give this for your homework to research about it for yourself…*
>
> Learner: *How is the child made or female child made?*
> Zinhle: *I can say God decides whether is going to be a male or a female child.*
>
> Learner: *How is a child made?*
> Paradise: *God is the creator of everything.*
>
> Learner: *What is labia?*
> Sizwe: *Eehmm, Eehm, ok let's carry on to the next section…*

Learner: *What is the use of a clitoris*
Xolani: *Go and ask your parents……*

Learner: *What is the use of a clitoris*
Zwane: *I will not answer your question.*

The above teacher-learner interactions suggest that the participants often struggled to respond to learners' questions scientifically. Instead, teachers told learners to do it as homework, to ask their parents or they simply did not respond to the questions. This suggests that, in addition to the discord between their personal and professional identities, their content and pedagogical knowledge in the topics may have been inadequate. This lack of knowledge required to teach these topics impacted their professional identity and integrity (Day & Gu, 2007). For Zinhle and Paradise to respond using a religious instead scientific response: "*I can say God decides whether is going to be a male or a female child" (*Paradise*)* and "*God is the creator of everything"* (Zinhle), deals a huge dent on teaching of the Life Sciences curriculum, especially the topics in question.

Their personal identity seems to dominate their professional identity (Day & Gu, 2007), resulting in them providing inappropriate responses to learners, blowing a dent on scientific integrity of the subject. When this happens, participants are unable to fulfil their professional obligations in respect of the national curriculum, which includes the fact that they must fulfil roles as subject specialist and mediators of the content (Department of Education, 2000). These findings, however, support those by Grogan (2020) and Torkar and Sorgo (2020), in which they reported that teachers knew less about the topic of evolution, because it contradicted their religious beliefs. The offshoot of this is that learners will not acquire the necessary scientific knowledge, which will disadvantage them in respect of pursuing further studies in this area.

The theme in this section presented the complexities that teachers who participated in this study experienced when teaching contentious content in the Life Sciences curriculum. The findings

suggest that the source of these deficiencies was the discord between their religious and professional identities.

The next section discusses the various ways in which the teachers who participated in this study negotiated the challenges that they were experiencing.

4.4 Teacher strategies of teaching contentious topics

This section responds to the second sub-question and provides an analysis of the strategies that participants adopted when they had to teach contentious content in the Life Sciences. Teachers are generally regarded as the agents of change because they have effect positive change in the lives of their learners through the provision of quality education.

4.4.1 Religion as a template for responding: *"I answer based on my faith"*

Findings of this study revealed that participants had developed strategic ways to negotiate the tension between their religious and professional identities. During classroom observations for this study, teachers struggled to manage the discord between their religious beliefs and what they were supposed to teach in the Life Sciences curriculum in respect of their professional obligations. Observations of lessons revealed that when learners asked questions, teachers' responses were not often based on scientific content knowledge. Instead, teachers often used their religion as a basis for their response. Their religious framing was so deeply embedded in their workings such that it had become their only template for responding to learners' questions.

For Wendy, Christianity dominated her responses and seemed to shape ways of thinking and teaching practice. For her, "*answering in a religious way [was] best for the learners and it will build them spiritually and even their future*". Form this, it can be deduced that, for Wendy, her identity as a Life Sciences teacher had become subsumed by her religious identity (Day & Gu, 2007), even where this was inappropriate. For instance, Wendy had taken a decision that her role was no longer that of a teacher, but that of a shepherd guiding learners toward spirituality, which she believed was the best for them. The consequence of this was that learners were disadvantaged, because the necessary content knowledge of science was not covered by their teachers as required by policy. The sad reality is that this is likely to impact their academic

performance negatively. In effect, Wendy is disadvantaging her learners and blocking their epistemic access. According to Thiesens (2013), this is a normalised practice for some of the teachers who are religious, with such teachers often manipulating learners to conform to their beliefs.

Whilst Wendy's practices may be viewed as manipulative, Zinhle's *"I unconsciously answer based on my faith"* points to a more embedded religious stance. This supports the findings from the study by Silva et al. (2015) among Argentinean high school biology teachers, in which teachers reported that their religious beliefs had an effect on how they taught. For the case of Wendy and Zinhle, traces of systematic training, as pointed out by (Harro, 2000), are evident. In the case of Wendy and Zinhle, their religious identity has influenced them both consciously and unconsciously. Blumenfeld (2006) has argued that privileged groups, such as Christians, to which the participants belonged, often unconsciously walk through life without an awareness of the effects of their behaviours on the marginalised groups, such as learners in the case of this study.

This suggests that learners, in this study, did not have access to the deserved education. Miller (1997) and Young (2000) assert that identity inequalities are encoded in the individuals' consciousness and woven into the fabric of social institutions, resulting in the privileging of their own dominance and subordinating of those that suffer the disempower effects of this. For instance, Paradise stated that "*my responses sometimes are also religious because I can't leave myself at home when I am coming to work"*. This has been reported by Nias (1989) who assert that teachers are human beings and that sometimes the separation between the personal and professional dimensions of a teacher is difficult. In addition, Xolani stated that "*I cannot separate myself from my religion".* On the other hand, Xolani and Paradise view their present selves as a combination of their religious and professional identities. This corresponds with the findings by Shikking (2010) and White (2010) who found that teachers could not separate their personal from professional identities and they often took their faith to work.

Gay and Du (2007) assert that the tension between these identities may have an impact on teachers' professional responses and influence how teachers manage their identities. For this

study, however, teachers endeavoured to respond to this disconnect or discord. For instance, when they were confronted with an uncomfortable situation, one identity always took precedence over all others. For instance, the teachers used the identity that they found most powerful under the circumstances and that they believed would help them to negotiate their situation, although this was not always the most appropriate.

The excerpts below present how Paradise responded to learners:

> Learner: *"Mam, you said in order for reproduction to take place it needs to opposite sex. But those of the same sex who get married. How do they get children? Or how they do the reproduction process".*
>
> Paradise: *"In order for reproduction to take place it requires two opposite gender, the male and the female. This is something created by God. So that is why I'm against the marriage of same gender because God did not plan it like that. God created Adam and Eve meaning that male and female and he said to them they must be fruitful and multiply. Meaning that it is against Gods will to the marriage of the same sex because multiplication or reproduction will not take place… God never created a lesbian and a gay. He created man and female. So, I can say those who lesbians and gays are being attacked by the demons and they need a very strong prayer".*

There are a few ways in which Paradise's comments to the learner could be understood. Firstly, Paradise was comfortable with taking such an aversive view on gay and lesbian people. According to Hardiman and Jackson (1997), people who belong to dominant groups, such as Christians, often define reality for those who are subordinate based on their dominant understandings of reality. In this instance, Paradise response is an embodiment of attitude towards those that are unlike her (Martin, 2015; Brenner, Serpre & Stryker, 2014; McKinley, Mastro & Warbner, 2014). In this case, Paradise uses her power and privilege to define not only who should be gay and lesbian people should, but also what they must do. From her perspective, gay and lesbian people have not been created by God, because God did not plan them. In doing

so, Paradise imposes Christian beliefs on learners using her position as a teacher as her substrate or springboard, silencing any alternative beliefs that learners may have.

Secondly, Paradise (mis)uses God in her explanation for her anti-gay and lesbian position to the learners. By referring to God, she naturalises and normalises dominant understandings of human as male and female. In other words, a binary distinction between males and females is correct and anything that does not meet this criterion is wrong. From Paradise's perspective, anyone who falls outside this norm must be 'othered'. The reference to God further provides a device to prevent anyone from challenging this view, as any dissenting view will be regarded as a challenging God themselves. This is reflected in the silence that occurred after her response to the learner. Similar to Francis and Reygan (2016, p. 186), Paradise response may be regarded as an attempt to regulate and control "the emergence of non-normative sexual and gender identities". In this instance, Paradise could be understood as using her position as teacher to set up a them and us scenario, in which gay and lesbian people are abnormal, reproducing and normalising othering (Francis & Reygan, 2016). Paradise also chose not to explain alternative curriculum related content of reproduction (for instance, in vitro fertilization, surrogacy, donated eggs/embryo or sperms and many more others), and by this further reinforced the dominance of her religious views above those that her learners may have had. In doing so, her Christian belief system is projected as the norm for all to follow (Theissen, 2013; Gay & Du, 2007).

Finally, Paradise indicates that the origins of gay and lesbian people is that they are people that need to be freed from *'demons [through] a very strong prayer".* In this explanation, she shuns a scientific explanation of the origins of gay and lesbian people, portraying them as evil. In doing so, she dehumanises and delegitimises them using her religion and position as teacher as a base. Her response is discriminatory as it denies gay and lesbian people identity and existence. That is, instead of using her position to advantage her learners, she is using prevent deny them scientific understanding, as espoused in the Life Sciences Curriculum and Assessment Policy Statement. The troubling dimension of the statement: "*I'm against the marriage of same gender"* is that it represents gross abuse of teacher power more than a lack of content knowledge.

Theissen (2013) argues that teachers have a great deal of power and that this power should not be used to violate the rights of learners and pursue their own personal agendas. Paradise's inability or unwillingness to subsume her personal identity prevents her from fulfilling her professional commitment as a Life Sciences teacher (Day & Gu, 2007). If this continues, it will be tantamount to Life Sciences lessons becoming a battleground where prejudice is sown and the soul of science is suffocated under guise of lack of support from officials with respect to the teaching of contentious topics.

4.4.2 Teachers choosing what to teach: "*I don't teach what goes against my beliefs"*

When participants had to teach topics, what was against their religious beliefs, the data showed that they picked and chose what was in sync with their religious believes, rather than what is prescribed in the national curriculum. This way of managing the tension or discord between what the teachers believed and what is prescribed in the national curriculum resulted in learners becoming collateral damage, as reflected in the following excerpts:

> Wendy: *"I don't teach learners what I don't belief in. … I sometime I skip the topics that I really feel I am uncomfortable to teach like contraceptive, sometimes I accommodate my religion by teaching only abstinence only. But when I teach like cloning and evolution I become reluctant in teaching those topics I don't teach them in depth like other topics that are not contradictory".*

> Zinhle: *"I just go through these topics quickly, and rush to finish them because anyway they are in the syllabus and learners have to know it and they are assessed on these topics. But the topics that I know that they will not be assessed on like contraceptives, I just do not teach them at all … Sometimes I don't teach the content like contraceptives".*

> Paradise: *"Sometimes I don't teach some of the topics like abortion and other contraceptives because I strongly feel that I am promoting them to not engage themselves in sex before marriage which is against my religious belief and*

culture… by teaching them abstinence only it's the way of motivating them to not engage in sex before marriage".

Zwane: *"I just close my eyes and quickly teach so that I can quickly get over the content especially when it comes to human reproduction because it makes me feel embarrassed that it contradicts with my religious belief and when it comes to evolution and cloning I also do the same… I never teach the learners about the contraceptives".*

Xolani: *"… in topics like cloning and genetic engineering I don't teach it thoroughly and also evolution… even thou don't thoroughly teach the controversial content...sometimes I always emphasize abstinence only because this is what I believe".*

Sizwe: "*If I teach evolution, cloning, genetic engineering and I don't teach it in a proper manner because of my religious beliefs, and when it comes to other topics that are against my religion I just rush through so that I quickly so that I can quickly get over the topic… accommodating my religion, and skip some of the topics…".*

The narratives above highlight the fact that teachers such as Wendy confirmed that they were not teaching according to the prescribed curriculum: "*I don't teach learners what I don't belief in".* This suggests that, for teachers, their professional identity was secondary to their religious identity and their responsibilities that go with that identity were put aside. If anything, their professional identity and responsibility could be viewed as having been torturous, as teachers reported feeling "*embarrassed*" "*uncomfortable*", "*frustrated*" and "*guilty*", because teaching contentious content was "*against my religion 'it is against Gods command*". For Sizwe, he felt as if he was "*loosing who I am*". These understandings provide a glimpse into the lives of the teachers, which painted a picture of disarray and in which identities were often in discord. In the above excerpts, teachers seemed to believe that by not teaching the prescribed topics, such as contraception and abortion, they were saving learners from problems such "*engaging in sex before marriage".* These findings concur with research by Zulu et al. (2019) who found that

teachers used their own religious judgements to decide on what would be appropriate for learners and they often held back information that went against their religion.

From the above, it is evident that teachers' personal (religious) dimensions became the template for what to teach and what to leave out and in this manner, teachers failed to fulfil their professional commitments (Day & Gu, 2007). This converges with the findings from a research study by Rissler, Duncan and Nicholas (2010) and Tizana (2014) where teachers' cultural personal beliefs shaped how teachers made their choices about what to teach and how to teach it. Day and Gu (2007) assert that if one dimension is not static, it may affect teachers' abilities to manage other dimensions. In this study, teachers' personal and professional identities were fixed and determined, compromising their professional responsibilities and duties. The negative repercussions are that learners could not access the required knowledge, skills, values and attitudes, as teachers often did not teach them. This begs the question of whether education for all could be realised in a context where teachers leave out certain topics based on the fact that they find them contentious to their religion.

4.4.3 Continuous assessment: *"I give them a lot of homework*

The narrative of suggests that teachers tended to find ways to circumvent what they had not taught. For instance, one of the ways was to give learners continuous tasks and assessments. Participants indicated in varying ways that *"that I always give them allot of homework to encourage them to learn on their own"* (Xolani). For Xolani, this independence that homework is meant to inculcate was meant to help learners understand content that he had "*not teach properly".* Findings reveal that more tasks were given on the contentious content that learners had to learn on their own. Zinhle, for example, tended to give learners a great deal of homework to compensate for what had not been taught in class: "*I give them homework specially on the work that I know, I did not teach because of my religion"*. Xolani added to this that "*I just tell them to read from which page to which page on their own, and I tell them that I will give them a test to check whether they did read even if I know I will do it"* This confirms what I observed during classroom observations (Observed,17/02/2020 and 18/02/2020). At the end of each lesson, teachers gave learners homework, either reading from the textbook or completing tasks to do at home. This shows that in order for teachers to fulfil their professional commitment,

they used extra tasks and homework as a strategy to negotiate the tension between the contentious content and their personal identity. Teachers did this without recognising the possible injustice, because the Life Sciences CAPS document states that learners should be given continuous assessments (Department of Education, 2011).

Whilst the tasks were meant to teach independence "*to do on their own"* and "*encourage them to learn on their own",* according to the participants, it was also *"promoting quality content"* (Paradise). For Xolani, homework and reading on their own was supported by giving "*them tests every Friday and that motivates them to learn and I am able to see whether they understand the topic or not*". Thus, for these two teachers, failing to teach learners important Life Sciences content was circumvented, because giving them homework, tasks and tests. Findings, thus, revealed that the participants could not understand that this was presenting as a barrier to learners accessing education. Even though Paradise follows up by "*mark them always…",* she acknowledges that learners were often anxious and had to be motivated to do their work.

4.4.4 Teachers' sources of strength: *"We do support and motivate each other"*

Teachers also used collegiality in which they discussed and assisted each other as colleagues. Participants believed we must "*discuss this issue with my other religious colleagues and we do support and motivate each other".* For the teachers, that "*we discuss this issue with my other religious colleagues*" revealed that they acknowledged the tension they experienced in the fulfilment of their professional obligations and now they were seeking ways to assist each other: "*we do support and motivate each other".* To them, collegiality was beneficial to them, because it enabled them to cope with the tension they experienced in their daily lives in their professional obligations. Sizwe mentioned that *"after my colleagues has motivated me, I am encouraged to go to the classroom and face whatever challenge I will come across".* Sizwe's reference to *"whatever challenge*" shows that he is aware that the various challenges he would come across during her teaching of the contentious content.

Collegiality as a method that could enable teachers to provide quality and good education to learners was key for teachers in this study. Day and Gu (2007) contend that the management of

identities depends on the strength of the external forces. For this study, one of the external forces was the support they received from their colleagues. For instance, when teachers' context or situations changed, they could face tensions arising from that through the support they received from their colleagues and could thus stay "*motivated and encouraged to go to the classroom"*.

This theme presented the strategies that teachers deployed to cope with their work of teaching contentious Life Sciences content. This theme responded to the second research question, a namely, how they negotiated the tension between the contentious content and their religious beliefs. It was evident in this theme that teachers' identities and practices were influenced by the situational, personal and professional dimensions of their identities, and that this was often complex and contradictory (Day & Gu, 2007). This affected the ways in which they dealt with the teaching of the contentious content in the Life Sciences curriculum. The participants' responses suggested that religion served as a stabilising device for teachers, as it provided them with an anchor when responding to learners' questions.

4.5 Conclusion

This chapter presented the findings from data gathered through observations and semi structured interviews. This chapter presented and discussed findings using three themes, namely, construction of teachers' identities; challenges when teaching the contentious content; and strategies teachers used to deal with the contentious content.

The following chapter, which is the last chapter, provides concluding comments, drawing from the discussions from previous chapters.

CHAPTER 5
REFLECTIONS, IMPLICATIONS AND CONCLUSION

5.1 Introduction

In the previous chapter, I provided insights into the narratives and observations of teachers teaching Life Sciences and their experiences of teaching content that was contentious to this religious identity. Findings reveal the complexities of the nexus between religious and professional identities and how teachers, in the context of this study, negotiated these challenges. In this chapter, I present concluding remarks and reflections on the key findings of the study. In respect of reflection, I focus on the conceptual and methodological choice I made and how these were experienced during the course of the study. In relation to the key findings, I reflect on how the conceptual framework, borrowed from Day and Gu (2007), and the literature reviewed contributed to the insights built through them. This is followed by a brief discussion of the implications of the study, the limitations experienced and recommendations for future research.

5.2 Purpose and significance of the study

The Life Sciences curriculum topics that participants regarded as contentious were evolution, human reproduction, cloning and genetic engineering. The contention arose when the teaching of this content conflicted with teachers' religious beliefs. From this, it should be remembered that the purpose of this study was to understand the influence of Grade 12 Life Sciences teachers' religious identity on the teaching of the contentious topics that may contradict such identity.

Findings of the study revealed a tension between the teachers' personal and professional identities, resulting in teachers being unable to execute their professional obligations in respect of providing quality education. The study centralised the voices of teachers and created an awareness of the realities that teachers who are religious encounter in teaching some topics in the Life Sciences curriculum. This study was guided by the following research questions:

Main research question: How do Life Sciences teachers' religious identity influence their teaching practice?

Sub- questions:

- What are the experiences of religious Life Sciences teachers when teaching what is against their religious identity?
- How do they negotiate the tension between their religious identity and contentious science content?

The significance of the study lay in its attempt to deepen the understanding the impact of religious identity in the teaching of contentious topics, which enabled me to understand how and why religion plays such a critical role in what teachers do or feel. Reading literature, policies on learners' rights, the importance of learning Life Sciences and the rationale for the inclusion of contentious topics and content in Life Sciences enabled me obtain rich knowledge about religious identity in the teaching profession. Furthermore, the significance of the study was to raise awareness among religious Life Sciences teachers on the need to interrogate their assumptions regarding the tension between the teaching of topics that are in discord with their religious beliefs.

This study contributed to the understanding of the nature of the discord that exists between teachers religious and professional identities. The review of literature found that there had been limited research on the intersections of teachers religious and professional identities, especially in respect of teaching content that is against their religious beliefs. Existing research focused largely on how to teach the contentious content and its associated challenges, with a significant proportion focusing on the teaching of the topic of evolution. I could only find a few studies that focused on other contentious topics, such as human reproduction (sexual education) and cloning. Essentially, the contribution of this study to this body of knowledge was in respect of the tension between the teachers' religious identity and its influences on the teaching of contentious topics (i.e. topics that conflicted with their religious beliefs).

5.3 Reflection on the conceptual and methodological issues

In this section, I reflect on the theoretical framework and research methodology used in the study. This study focused on Life Sciences teachers' personal and professional identities, and sought to understand how their personal (i.e. religious) identity influenced their professional identity and practice. It was, therefore, important for this study to situate the concept of identity in this study. The notion of identity by Day and Gu (2007) provided important ways in which to understand teachers' identity construction and its influence on their teaching.

Day and Gu (2007) have identified three important dimensions that influence how teachers experience their sense of identity. These are the personal, situational and professional dimensions. Regarding the personal dimension of a teachers' life, Day and Gu (2007) have described it as the teachers' life outside of the school. This dimension enabled me to analyse how teachers were socialised into becoming the religious people that they were. Their historical influences of going to church with their parents and grandparents, for example, had become embedded into their unconsciousness and their worldview, though they understood their realities.

Secondly, Day and Gu (2007) have described the situational dimension as a teachers' life in school and that this dimension is different from a teacher's life out of school, and how situations affects teachers' experiences and challenges. The situational dimension enabled me to understand that teachers' personal identity construction influenced how teachers taught the topics that were against their religious beliefs. The last one is the professional dimension, which described as the ways in which teachers engage with professional agendas and policies (Day & Gu, 2007). Through this framework, I could read and understand the complexity of identity and how various influences resulted in teachers struggling to teach contentious topics. However, in this study, the influence of religion was the most significant in the lives and work of teachers who participated in this study.

This study was underpinned by the interpretivist paradigm. The intention for adopting an interpretivist paradigm was to understand the viewpoints of participants and how they interpreted the world around them (Guba & Lincoln, 1989). The interpretivist paradigm enabled

me to understand, firstly, how the participants thought about and made sense of their religions and how this influenced their identity construction and reconstruction as well as influenced their teaching practices, especially in respect of teaching contentious content (Guba & Lincoln, 1989). Secondly, the interpretivist paradigm enabled me to understand the participants' challenges when teaching the contentious content. Here, understanding the challenges that they encounter when teaching the contentious content revealed how the participants managed their identities in respect of teaching.

The use of the qualitative research approach was useful in that it enabled me to gather rich data from religious Life Sciences educators within their particular schooling contexts (Mansour, 2008). This approach enabled me to collect rich data, that was not limited to numbers, but delving into multiple realities of the Life Sciences teachers' experiences (Strauss & Corbin, 1990). The semi-structured interview, for example, allowed for the complexity of teachers struggles to negotiate the classroom context, the learners' questions, their professional predicaments to be revealed.

Narrative inquiry enabled me to understand in-depth the stories that teachers told about their experiences (Connelly & Clandinin, 1990). Narrative inquiry allowed for participants to freely relate events and experiences of teaching topics that were against their religious beliefs (Connelly & Clandinin, 1990; Kramp, 2004). Teachers telling their stories enabled me to understand that the various influences of religion in the participants' life began early on, when they were raised within religious contexts, which became embedded in their belief systems and understandings about the world.

The methods of data collection used were unstructured observations and semi-structured interviews. I started with the observation of teachers teaching the contentious content. During the observations, I could observe how teachers personal influenced their professional dimension. I followed up unstructured observations with semi-structured interviews. This enabled me to ask questions to which teachers provided responses through I could understand why they did things the way they did.

5.4 Summary of key findings

This section provides a summary of the main findings of the study.

In the first theme, namely, construction of teachers' identities, data revealed that socialisation into the Christian religion began early on in the life of the participants, and that this was implicated in the performance of their professional identities and practices. Religious ideas, practices, norms and beliefs were entrenched early and embedded within teachers' identities, which deeply influenced their present selves. Data also revealed that participants did not independently choose to teach Life Sciences; instead, their interactions with significant others led them to the subject. Only Zinhle independently chose to become a Life Sciences teacher. For all the other participants, the decision to become Life Sciences teachers was influenced by factors, such as family, friends and economic situation. These choices were influenced by the personal, situational and professional dimensions, as indicated by (Day & Gu, 2007).

It is this unstable attachment to their professional identities that became significant in the realities that they faced. For instance, data revealed that when they were confronted with curriculum policy requirements to teach content they believed was contentious and went against their religious beliefs, teachers floundered, uncertain in their professional identities. As a result, their religious identity took precedence and was compounded by other socio-cultural values and beliefs that reinforced their decisions about whether or not to teach the contentious topics. Their practice was informed more by their allegiance to their religious beliefs (Wellman, 2014) than professional obligations. Countho and Silva (2013) have argued that science and religion are incompatible, which was supported by the findings of this study. Instead of deploying their professional expertise, participants relied on their religious beliefs, values and norms.

The second theme captured the key challenges that teachers experienced when teaching contentious content and responded to the main as well as the first sub-question. Teachers experienced their teaching as one fraught with challenges, leading in them experiencing their identities as fragmented and constantly evolving. The various factors within the classroom, ranging from learners being disruptive through to amount of time used in dealing with ill-discipline and responding to learners' questions, influenced how teachers experienced their

teaching selves and revealed the complexities which were part of this package. In the face of continuous disruption, participants were rendered powerless, which resulted in them not providing learners with adequate access to the prescribed subject content.

Again, in resolving the tension above, participants turned to their religious beliefs for answers, which undermined their authority as professionals, with learners losing out on critical learning in the subject. The participants' religious identity took precedence and their religious beliefs was both a source of support and challenges. Teachers reported a constant need of a stable sense of self, but having to juggle between their two identities almost always resulted in conflict. The disruption emanating from learners teaching contentious content often meant that teachers struggled to finish the content on time. Their inability to cover content on the prescribed time was attributed to the teaching of contentious content rather than themselves as professionals.

Further, teachers could recognise their professional responsibility towards their learners or their subject and lacked knowledge on contentious content. This resulted in them losing confidence in their own abilities, but at the same time, did not assist them to ensure that learners could learn. Instead, participants ignored learners' questions and queries. Thus, participants abdicated their roles of being subject specialists and mediators of content. Owing to the fact that participants did not receive adequate support from the department of education, teachers were rendered. However, the decisions that they took in respect of their teaching were often based on their religious beliefs.

The third theme focused on the second sub-question, where various ways in which teachers negotiated the tension between their religious beliefs and contentious content was explored. Findings of the study revealed that teachers made pedagogical decisions that revealed the embedded nature of teachers' religious beliefs. For teachers in this study, religion seemed to provide a lifeline that they turned to in order to cope with their daily teaching tasks. The teachers' responses to learners' questions often relied more on religious beliefs than their professional authority. For instance, teachers often used religious teachings of sexuality to guide their own behaviour and attitudes to enforce a particular non-scientific world view, which had potential to reproduce dominant oppressive norms around sexuality.

Similar to findings from other studies, teachers made pedagogical choices that were to the detriment of learners, often leaving out content that conflicted with their religious beliefs (see, for instance, Barett, 2015; Blancke et al., 2011; De Smedt, 2011; Browner & Brownells, 2017). In fact, for these teachers, their religious identities, values and beliefs seemed to be regarded as more important than their professional obligations in respect of teaching the Life Sciences curriculum. The negative effects of this were that learners could not learn what they were supposed to, which is likely to have repercussions for their careers. One of the important ways in which the participants used to cope with having to teach contentious content was support from their colleagues.

5.5 Implications of the study

This study raised a range of issues in respect of religious beliefs and the teaching of topic regarded as contentious in the Life Sciences curriculum. Findings revealed that the teachers who participated in this study experienced challenges when required to teach content that conflicted with their religious beliefs. To this end, the study raises the following implications for the resolution and management of the discord between content that is prescribed in the Life Sciences curriculum and teachers' religious beliefs:

- Teachers who participated in the study struggled to manage the tension between their religious beliefs and the teaching of contentious content. The issue of religious beliefs and science is not unique phenomenon. When the right to termination of pregnancy was formalised in South Africa, the issue of choice was raised in respect of doctors and nurses who would cite their religious beliefs as a reason for not getting involved (see, for instance, Walker, 2007). From a social justice perspective, this matter is broader that teachers; it is about changing the attitudes of society at large, of which teachers are part. It reflects negative societal attitudes towards alternative explanations of reality. Therefore, as much as there is a need to focus on the training of teachers, there is a need for a broad society-wide response to make society more accepting to alternative discourses and explanations.

- Teachers who participated in this study reported as a challenge in the teaching of human reproduction the fact that what they are required to teach is graphic and explicit. For instance, they referred to "*nude pictures*" and discussions relating to intercourse. Unfortunately, and sadly, this is not the requirement or prescribed content in the *Life Sciences Curriculum and Assessment Policy Statement: Further Education and Training Phase Grades 10-12* (Department of Basic Education, 2011). It is unfathomable how teachers got themselves and their learners into this space. Either the teachers did not teach to what is prescribed in the curriculum or their content knowledge was weak in this area or they allowed their imaginations and attitudes towards the topic of *Human Reproduction* to take over or they were just pushing the religious envelope. This matter requires further investigation in order to get to the core of the problem.

- Teachers who participated in this study reported that they often have to leave out or not teach some content in the topics that they regarded as contentious. This speaks to the importance of ensuring that there are adequate systems and processes for the monitoring and support of curriculum implementation. If teachers are struggling with certain parts of the curriculum, they must request assistance. If they do not receive such, the matter must be taken up with education authorities at higher levels. This must be done on the basis that learners have a right to a basic education, which must be respected, upheld and protected. In addition, teacher education must be strengthened to ensure that teachers are open to teaching learners to explore alternatives views, discourses and explanations.

5.6 Limitations of the study

The study was limited to Life Sciences teachers teaching Grade 12 and who were regarded as religious. Thus, the findings can only reflect the experiences of these teachers. It must be noted that contentious is taught from Grades 10 through to Grade 12. For this study, only Grade 12 teachers participated in the study. Therefore, it is possible that the teachers teaching Grade 10 and 11 would have experienced their teaching differently. Comparing data across these grades could provide a different dimension of the phenomenon that this study set out to investigate.

The research study was limited to teachers teaching Life Sciences, and did not include teachers teaching other subjects, which may have topics with contentious content. Therefore, a focus on other subjects, such as Life Orientation, could have yielded alternative understandings of the issue under investigation. Regarding the generalisability of the findings of the study, the study focused on teachers who were African and members of the Christian religion, which excluded teachers from other races and religious denominations. This study could not cover teachers from religions such as Hinduism, Islam or Buddhism, who could have different views and experiences of teaching.

This investigation was affected by the effects of lockdown, which was caused by the outbreak of COVID-19. My initial intention was to conduct a research study that would involve teachers from Grade 10 to 12. However, the closing of schools required that I adapt the design of the study to only include Grade 12 teachers as participants. Furthermore, lockdown restrictions imposed by government to contain the spread of COVID-19 required that I switch to telephonic interviews. This switch had implications for the kinds of data that I could access, given the social distance imposed by a telephonic interview. In addition, this switch exposed the study to additional financial costs in form of data costs, both for myself and the participants, which could not be anticipated until the outbreak of COVID-19.

5.7 Recommendations for future research directions

Based on the findings of the study, the following recommendations are made for future research in respect of the teaching of contentious topics in the Life Sciences:

- The *Life Sciences Curriculum and Assessment Policy Statement* prescribes topics and content that must be taught in the *Further Education and Training Band*. This presupposes the existence of teachers who will and can teach the prescribed content. There is a need to explore how other teachers have managed the tensions between their religious beliefs and topics that the teachers in this study struggled to teach.

- Teachers who participated in this study reported receiving inadequate support from officials from the department of education. This suggests that effectiveness of support

provided to teachers may need to be investigated and, where it is found to be deficient, ways of strengthening it must be explored.

- The study only covered Grade 12 teachers, who were teaching Life Sciences and affiliated to Christianity. There is need to widen the scope of the investigation to include categories of teachers who were excluded in this study.

5.8 Concluding thoughts

This study sought to sought to investigate the experiences of Life Sciences teachers of teaching content that was in conflict with their religious. Findings of the study revealed that teachers struggled to manage the discord between their religious and professional identities, which resulted in learners becoming losers in the whole process. For instance, the study found that teachers often left out content that went against their religious beliefs, despite the fact that it prescribed in the Life Sciences Curriculum and Assessment Policy Statement. In other words, teachers often elevated their religious beliefs above their professional obligations in respect of the teaching of Life Sciences content. This is problematic at two levels. Firstly, learners are deprived of the learning that they may need to follow specific career paths. Secondly, learners are exposed only to singular explanations of reality, and alternative explanations and discourses are hidden from them, resulting in epistemic deprivation.

The study, therefore, points to the significance of resolving and managing the tensions between the religious and professional identities of teachers, with a view to ensuring that the basic education sector can keep its promise of education for all.

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APPENDICES

Appendix A: Permission from the KwaZulu-Natal Department of Education

education

Department:
Education
PROVINCE OF KWAZULU-NATAL

Enquiries: Phindile Duma | Tel: 033 392 1063 | Ref.:2/4/8/1721

Mrs SL Khumalo
PO Box 1633
Pietermaritzburg
3201

Dear Mrs Khumalo

PERMISSION TO CONDUCT RESEARCH IN THE KZN DoE INSTITUTIONS

Your application to conduct research entitled: **"THE INFLUENCE OF RELIGIOUS IDENTITY IN TEACHING: NARRATIVES OF SIX LIFE SCIENCE TEACHERS IN THE FURTHER EDUCATION AND TRAINING PHASE"**, in the KwaZulu-Natal Department of Education Institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the Intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from 21 January 2019 to 01 July 2021.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Miss Phindile Duma at the contact numbers below,
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report/dissertation/thesis must be submitted to the research office of the Department. Please address it to The Office of the HOD, Private Bag X9137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to schools and institutions in KwaZulu-Natal Department of Education.

(PLEASE SEE LIST OF SCHOOLS/ INSTITUTIONS ATTACHED)

[redacted]

Dr. EV Nzama
Head of Department: Education
Date: 29 January 2019

...Championing Quality Education - Creating and Securing a Brighter Future

KWAZULU-NATAL DEPARTMENT OF EDUCATION
Postal Address: Private Bag X9137 • Pietermaritzburg • 3200 • Republic of South Africa
Physical Address: 247 Burger Street • Anton Lembede Building • Pietermaritzburg • 3201
Tel.: +27 33 392 1063 • **Fax.:** +27 033 392 1203• **Email:**Phindile.Duma@kzndoe.gov.za •**Web:**www.kzneducation.gov.za
Facebook: KZNDOE....Twitter: @DBE_KZN....Instagram: kzn_education....Youtube:kzndoe

Appendix B: Permission from school principals

PO Box 1633

Pietermaritzburg

3201

Date……

Dear Sir/Madam

My name is Semkelile Khumalo. I am a student at the University of KwaZulu Natal in Pietermaritzburg Campus doing research for the Master's in Education for Social Justice in 2019. I am conducting a study on Life Science teachers who are religious, and who teach Life Science at a Further Education and Training phase. I will be investigating how does Life Science's religious identity influence their teaching. To archive this, I need six willing participants to form part of the study, I request permission to conduct the study in the school.

Participant will take part on the semi-structured interview. The interview will be audiotaped so that I can fully concentrate on the interview. This will take place in a place and time that is convenient to the participants. I promise that teaching and learning will not be disturbed. Thereafter, the researcher will request to observe the participant in their classroom teaching one of the controversial topic that they will mention. Please note:

- The school's confidentiality is guaranteed and the participants inputs will not be attributed to them in person, but reported only as a population member opinion.
- The interview may last for about 1 hour and may be split depending on the participant's preference.
- Any information given by participants cannot be used against them or the school, and the collected data will be used for purposes of this research only.
- Data will be stored in secure storage and destroyed after 5 years.
- You have a choice to give me permission, or not to or stop me anytime of the research. You will not be penalized for taking such an action.
- The school's involvement is purely for academic purposes only, and there are no financial benefits involved.

- Participants will be given a chance to check if the information they have volunteered truly reflects what they said without distortion.
- The investigation will not disturb any teaching and learning of the school.

I ……. have read and understood the content of this document. I agree that the school can be part of the study mentioned above.

Date…….

Signature…….

My contact details are as follows:

Email: semkelile@webmail.co.za

Cell: 066 269 8631

My Supervisor's contact details: Dr.

Melanie Martin

Cell Number: 083 651 4564

Office Number: 033 260 6189

Email: martinM@ukzn.ac.za

The University's contact details are:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION
Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001 Durban 4000
KwaZulu-Natal, South Africa
Tel: 27 31 260 4557 Fax: 27 31 260 4609

Appendix C: Informed consent

P. O Box 1633
Pietermaritzburg
3201
Date……

Dear Sir/Madam

My name is Semkelile Khumalo. I am a student at the University of KwaZulu Natal in Pietermaritzburg Campus doing research for the Master's in Education for Social Justice in 2019. I am conducting a study on Life Science teachers who are religious, and who teach Life Science at a Further Education and Training phase. I will be investigating how your religious identity influences your teaching practice. To achieve this, I need six willing participants to form part of the study, I request you to be one of the participants who will take part in this research.

As a participant, you will take part on the semi-structured interview. The interview will be audiotaped so that I can fully concentrate on the interview. This will take place in a place and time that is convenient to you. I would request you to respond to all the questions that I have, but you are free to choose not to respond to any that you feel you are not comfortable with. Thereafter the researcher will request to observe you as participant in your classroom teaching one of the controversial topic that you will mention. Please note:

- Your confidentiality is guaranteed as your inputs will not be attributed to you in person, but reported only as a population member opinion.
- The interview may last for about 1 hour and may be split depending on your preference.
- Any information given by you cannot be used against you, and the collected data will be used for purposes of this research only.
- Data will be stored in secure storage and destroyed after 5 years.
- You have a choice to participate, not participate or stop participating in the research. You will not be penalized for taking such an action.

- Your involvement is purely for academic purposes only, and there are no financial benefits involved
- Participants will be given a chance to check if the information they have volunteered truly reflects what they said without distortion.

If you are willing to be part of the research, please sign below

I ……. have read and understood the content of this document. I agree that I will take part in the study mentioned above.

I …… agree/do not agree to be audio taped during the interview

Date…….

Signature…….

My contact details are as follows:

Email: semkelile@webmail.co.za

Cell: 076 278 3264

My Supervisor's contact details:

Dr. Melanie Martin

Cell Number: 083 651 4564

Office Number: 033 260 6189

Email: martinM@ukzn.ac.za

University contact details:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X54001 Durban 4000

KwaZulu-Natal, South Africa

Tel: (27)31 260 4557 - Fax: 27 31 2604609

Mail to: HSSREC@ukzn.ac.za

Appendix D: Interview schedule for teachers

Introductory questions

1. Tell me a little bit about yourself like:
   - Age
   - how you were raised and religion
   - Training and your qualification
   - becoming a Life Science teacher and why did you become a life science the number of years you have being teaching
   - How long you have been teaching grade 12 and how you feel in teaching grade 12

Interview questions

Teachers experience of teaching the content that is against their religious beliefs?

a. Are there any Life Science topics that you have to teach which are against your religious belief? If yes can you mention them.
b. How do you feel when teaching topics that are against your religion? (Why do you feel that way)
c. What are the challenges do you experience when teaching topics that are against your religious beliefs? (challenges like from parents, school as a whole, learners and even yourself)
d. What do you do when you experience these challenges?
e. What do you think would be needed to be done to overcome those challenges?
f. Are there any difficulties that you experience when you teach topics that are against your religion? If yes, why. If no, why.
g. What is the attitude of learners towards those topics and how do you respond to them?
h. How do you deal with the conflict between science and religion within yourself and that amongst learners?
i. Do you find it easy or difficult to teach the topics that are against your religious belief? Why?
j. Are you comfortable in teaching topics that you do not believe in? Explain

k. Does your right to religious freedom influences the way you teach the topics that are against your religion?
l. Do you think your religious beliefs influences the way you deliver the topics that are against your religious belief?

Questions based on the observation

a. When you were teaching, learners kept on talking, some laughing. What was the cause of the learners' behaviour?
b. I noticed that learners refused to listen when you asking them to keep quite several times. Why is it a challenge to discipline learners
c. How do you cope with learners' behavior?
d. Do they behave like this all the time when you teach other topics like evolution and cloning?
e. When you were teaching, three boys went out of the class and never come back. Why do you think this happens?
f. I noticed most of the time it was boys who were disruptive. Why?
g. When you were explaining about the male reproductive organ, you looked uncomfortable, why?
h. I noticed that you did not answer the learners' questions and you avoided some learners who wanted to ask something. Why?
i. Don't you think that avoiding the learners questions they may be left behind?
j. Why did you teach the learners about abstinence only and left out other contraceptive methods?
k. Why did n't you want to discuss about circumcision with learners?
l. Why are some of your answers to learners where based on religion?
m. Could you not come up with a biological way of discussing or answering the learners?
n. I noticed during the lesson that you advised the learners about something and you motivated them about not to involve themselves in sex before marriage. Can you explain why did you do that?

How do teachers negotiate the tension between their religious identity and contentious life science content?

a. How would you feel when you have to compromise your religious belief to promote quality Life Science content?
b. What do you do when you have to compromise – how do you teach for example evolution or sexual reproduction. How does this make you feel as a teacher – do you think and feel that you are doing a good job?
c. Do you feel being a religious educator can be a barrier in providing quality Life Science content? Explain
d. How do you manage Life Science content and your religious belief?
e. Do you feel your profession enables you to freely practice your right to religious belief/values? Explain
f. What are your suggestions about the content that is against your religion?
g. How do you feel the tension between the contentious Life Science content and religious identity can be solved?
h. Do you sometimes discuss the Life Science content and its controversy with religion?
i. Do you get any support to manage your religious identity and controversial topics? Explain
j. Do you discuss with the learners about the topics that are against your or their religious beliefs?

Appendix E: Certificate from Language Editor

Ntwintwi

Proofreading and Editing Solutions

Date: 04 June 2021

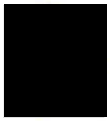
CERTIFICATE OF LANGUAGE EDITING

TO WHOM IT MAY CONCERN

This is to certify that the thesis bearing the provisional title ***The influence of religious identity in teaching: Narratives of six Life Science teachers in the Further Education and Training Phase***, to be submitted by **Semkelile Lydia Khumalo** has been edited for language correctness and spelling, consistency style, formatting, accuracy, logical flow, coherence, transitioning, readability and completeness of the list of references and cited authors, by Ntwintwi Proofreading and Editing Solutions. Neither the research content and substance nor the author's intentions were altered in any way during the editing process.

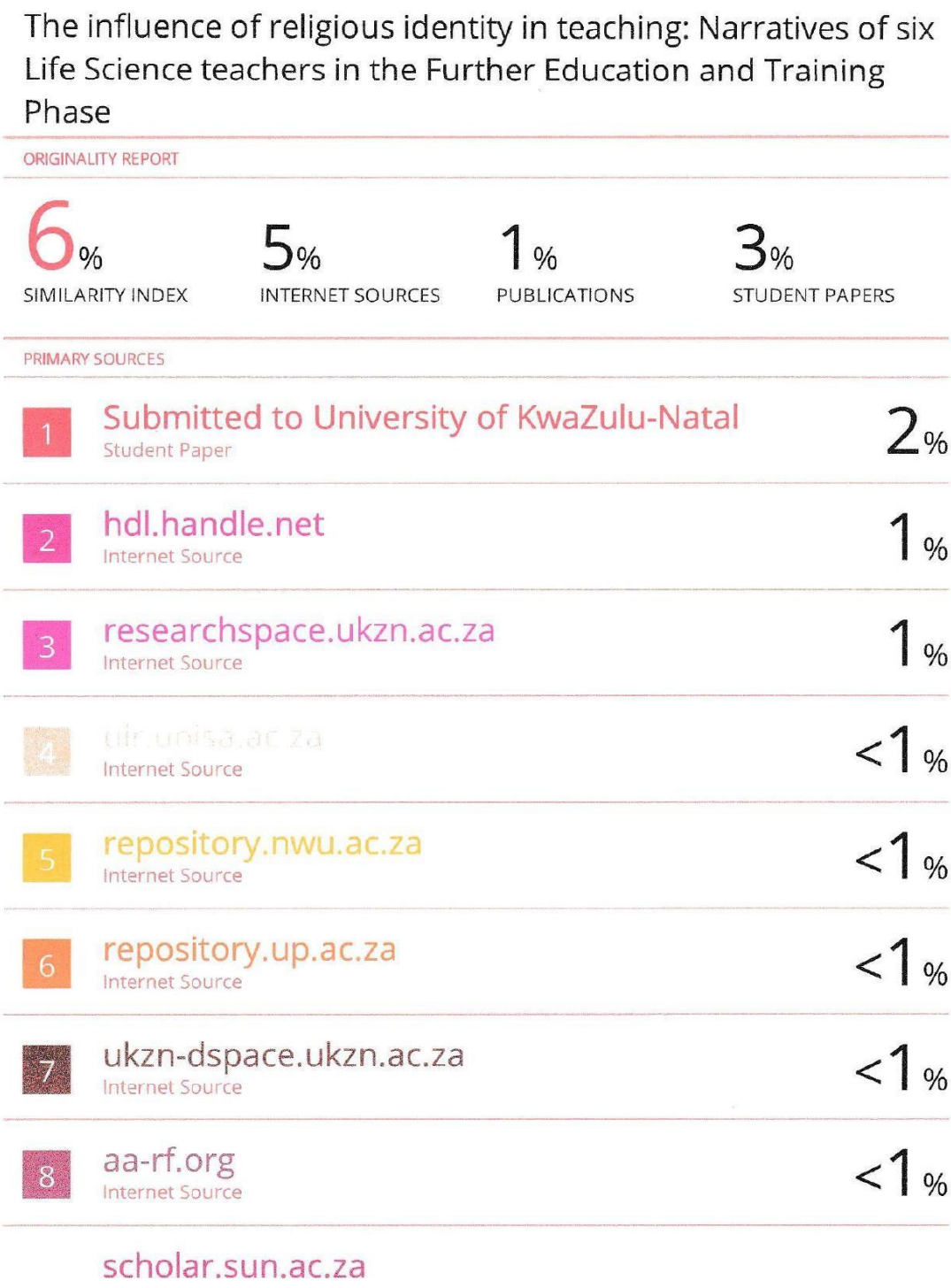
Ntwintwi guarantees the quality of English language in this dissertation, provided our editor's changes are accepted and further changes made to the thesis are checked by our editor.

Yours sincerely,



JABULANI NGCOBO
NTWINTWI PROOFREADING AND EDITING SOLUTIONS
DATE: 04 June 2021

Appendix F: Originality report



The influence of religious identity in teaching: Narratives of six Life Science teachers in the Further Education and Training Phase

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