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**INYUVESI
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**VOICES OF ESWATINI GENERAL CERTIFICATE OF EDUCATION
GEOGRAPHY TEACHERS ON TEACHING CLIMATE CHANGE**

by

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**This thesis is submitted in fulfilment of the requirements for a Doctor of Philosophy
degree in Education and Curriculum Studies**

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Date of Submission: April 2022

Declaration

I, Boy Bongani Dlamini, affirm that this dissertation is my own work. All sources that were used have been accordingly referenced. This research has not been previously accepted for any degree and is not being currently considered for any other degree at any other university.

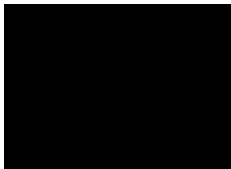
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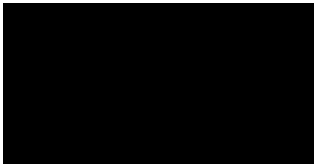
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Acknowledgement

Such a research study of this magnitude would not have been possible were it not for the contribution of several people. Owing to the high number of the people who played various roles in the journey, I would like to say to each one of them that without their varied inputs this project would not have been completed. For that reason I sincerely extend my utmost thanks and acknowledgement of their contributions.

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To my family, thank you for the support you gave me from day one of this study up to the end.

Dedication

This dissertation is dedicated to my late father, who sacrificed much to make sure that we attended school and value education. I know “Ngisi lami” you would have loved to see me go through this level of academic work. You were my source of motivation – rest in eternal peace – Hlubi wakucala wena wekunene!! Thank you, Mum, for making sure that you supported our father’s vision and made us go to school Mphephetse. I thank my family who rendered huge support and love that helped me to complete this study. To my church, and all my critical friends and colleagues who wished me well and encouraged me to soldier on in the long journey – thank you very much for your voices.

Abstract

This dissertation presents a mixed methods research study (quantitative and qualitative) but mainly qualitative, of sixteen geography teachers who participated when this study sought their voices on the teaching of climate change in Eswatini. The study adopted a pragmatic paradigm and employed the educational design research (EDR) as its research design. The study was conducted with the main purpose of exploring teachers' voices on the teaching of climate change in the Eswatini General Certificate of Secondary Education curriculum. To generate data, the reflective activity/questionnaire, artefacts inquiry, semi-structured interviews and a focus-group discussion were utilised for data generation. Purposive and convenience sampling methods were used in selecting four schools in each of the four districts of Eswatini and from each of the four schools, four teachers were requested to participate in this study. For data analysis, the study employed guided analysis to analyse generated data; and the thematic approach was used. Eight broad themes were used each with categories that were presented, analysed, and discussed in detail.

Concerns of dependability, confirmability, credibility, and transferability were allayed in this study in order to ensure trustworthiness. Further to this, ethical issues were also considered in obtaining ethical clearance, gate-keeper's permission, consent letters, and anonymity.

The study was guided by three research questions namely: 1) What are geography teachers' voices on the teaching of climate change in Eswatini? (descriptive) 2). How do the teachers' voices influence the teaching of climate change in Eswatini? (operational) 3). Why are teachers' voices the way they are on the teaching of climate change in Eswatini? (philosophical). The study's objectives were: 1) to explore geography teachers' voices on the teaching of climate change in Eswatini; 2) to understand how geography teachers' voices influence the teaching of climate in Eswatini; and 3) to explore why the geography teachers' voices are the way they are on the teaching of climate change in Eswatini.

Subsequently, the research objectives and questions guided the study to review the relevant literature on teachers' voices which were divided into: professional, societal, and personal voices. In an attempt to understand the voices that drive teachers' voices the study utilised the currere model. The moments of the currere model were discussed in relation to selected curriculum themes and categories. The main findings indicated that teachers were predominantly summoned by either professional or societal voices when enacting climate

change. It was affirmed that most teachers were torn in two by the tension that exists between these two giant voices (professional and societal voices) that dominate the curriculum enactment spaces.

The literature and the findings in this study suggested that a neutral voice is needed to address the tension of the two major voices. The unbiased voice, it was discovered is the personal voice which results from the reflections which allow teachers to be able to combine the strength of the professional and societal. This would ensure the development of a unique personal voice to meet the needs of teachers. Thus, the model of teachers' voices was born in this study as a theory that can be useful in teacher's identities being considered in curriculum enactment spaces. In conclusion, it is in the best interests of this study that further research be carried out in all subjects and at all school levels in order to enrich the literature and bring consciousness in curriculum spaces. Teachers require a personal voice to drive the curriculum instead of being summoned by other voices that cause tension in the teaching and learning spaces.

Keywords: Teachers' voices, professional voices, societal voices, personal voices, teacher's identities.

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List of abbreviatons

CC - Climate Change

EDR – Education Design Research

EGCSE- Eswatini General Certificate of Secondary Education

HOD- Head of Department

MoET – Ministry of Education and Training

IPCC- Intergovernmental Panel on Climate Change

P.G.C.E- Post Graduate Certificate in Education

UNESCO- United Nations Educational, Scientific and Cultural Organisation

4IR – Fourth Industrial Revolution

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CHAPTER ZERO

THE RESEARCHER'S POSITIONALITY FOR THE STUDY

0.1 INTRODUCTION

This chapter presents contextual factors that led to this study of voices of teachers on the teaching of climate change. Climate change is one topical issue which is related to the atmospheric changes that result to severe effects on living things on planet earth. As a current issue, the geography curriculum of Eswatini incorporated it to be taught by geography teachers in schools. In this chapter I demonstrate how I became interested in conducting a study on climate change teaching which is based on teachers' voices.

0.2 THE CANDIDATE'S ACCOUNT

I embarked on this study because of the influence of personal, societal, and professional voices. These voices have aided me in developing an interest and desire for research. The three voices have had an influence on my life in various ways. These voices, I have discovered, have been responsible for shaping and influencing my actions. It is critical to note that from birth human beings are wired with a distinct personal voice (DNA) which assists the young meet their needs. It is the personal voice that makes a child laugh, cry, and perform all other activities rather than being compelled by any outside voice. Driven by my unique personal voice, from my childhood, I have been persevering, self-driven, eager to win, and passionate about all that I do.

The next voice to influence me as I grew up was the societal voice with my immediate family as the main source of that voice. I gained lessons mostly informally from the societal voice that influenced my actions. I received encouragement from my family, as well as from understanding the principle that hard work pays. Peers, friends and other community members added to my sources of societal voices. Growing up in a rural community, I learnt from the community the value of helping one another. The last form of voice that shaped my growing

up was the professional voice. Typically, the first common source of the professional voice was the school. In school, I was introduced to technical knowledge which I found interesting. I now realise that the journey of life involves the interaction of the three voices which occur as one reflects and engages the unconscious, subconscious and conscious minds.

As a self-driven child from my primary school days, I have always been motivated to learn and determined to excel. I was encouraged by my parents who would now and then emphasise that education is the key to life. These words would make me wonder where and how education opens doors in life. The motivation from parents (social voice) and teachers (professional voice) intrinsically (stimulated my personal voice) and drove always me to work hard at school. I completed primary and high school before enrolling in a bachelor's degree in humanities and a postgraduate certificate in education at a local university in Eswatini. I qualified as a geography and history teacher. My favourite major was geography. I taught for eight years as a geography high school teacher. Through determination, I produced good results in both schools where I taught.

In the course of my teaching, I was elected president of a geography teachers' association. This position taught me a great deal. Primarily, I observed that teachers respected social voices as they relied on and expressed pleasure at the various workshops the association organised for them. The workshops were responding to a gap which appeared when the curriculum of Eswatini was changed. The teachers were not fully equipped to handle what was called an integrated curriculum. The professional voice was then silent. The position I held in the teachers' association qualified me automatically as a member of the national geography panel representing teachers (societal voice). The panel, among other things, oversees all issues pertaining to the teaching and learning of geography in the country. The panel has subject inspectors (professional voice) as members. I noticed that they preferred to drive teachers as per the professional voice dictates despite the association encouraging them also to consider societal voices. It was this experience which exacerbated the tension between the societal and professional voices. The personal voice which would ease the tension was missing.

At this time, it became clear to me that teachers find themselves torn by demands of the professional and societal voice apropos of numerous actions in their practice. One example of the clash was when as an association we drew up what we thought was a "user-friendly" syllabus for teachers to use. The professional voice discouraged teachers from using such as

they had the “official” curriculum drawn by the Ministry of Education to be used by the teachers. In this clash, the personal teacher’s voice was silent whereas it is the teacher who is entrusted to enact the curriculum to learners. In 2014, together with two other teachers we were engaged by a publisher to write a geography book for junior secondary learners for Eswatini schools. As we wrote the book, we discovered that content knowledge from literature on climate change had much dissimilarity. This was a learning area for me as I saw a weakness in the professional voice which emphasises relying only on prescribed books. I thought it would be advisable also to allow societal voices to enhance the professional voice instead of encouraging tension.

I left teaching at school and was recruited to a teacher training college. I saw this opportunity as one in which I would possibly empower pre-service teachers to understand the interplay between giant voices in the teaching and learning space. While teaching in the college, I was given study leave to attend a South African university to complete my master’s degree. This was a great opportunity for me as I was able to develop in-depth professional content as well as to research on the curriculum. I was intrigued to discover that curriculum is a complicated conversation, and indeed it is as it is driven by voices. In the course of my study, I also discovered that teachers can understand their voices in curriculum spaces through, for example, applying curriculum theories such as *curre*.

Moreover, I learnt that teachers need to decolonise their reflection on curriculum and practice. I pondered that Eswatini’s geography curriculum seemed colonised; I wished that teachers would be liberated to enjoy their practice. I was influenced by curriculum scholars such as Hoadley, Pinar and Young. The professional understanding of the curriculum and research helped me to enjoy my master’s studies such that I became interested into studying the voices of teachers on curriculum spaces. In this way my PhD study came about.

In conducting this study, I sought to gain more insight into the interplay between the two giant voices that drive the curriculum: professional and societal voices. I wanted to explore how and why these voices drive teaching and learning, specifically finding out how the tension can be addressed by encouraging the space also being afforded to personal voices in the curriculum landscape. I aimed to discover how teachers can provide unique personal voices that meet their needs. I discovered that the professional and societal voices are in constant tension. The individual teacher must realise and address self-identity to become self-actualised in order

develop a voice uniquely different from the tension between the giant voices. The personal voice would further equip individual teachers in such a way that they would be motivated and capable of meeting their own needs; it is the personal voice that takes the lead and summonses curriculum enactment activities. The personal voice may contribute towards the development of a distinctive and self-actualised teacher with a clear self-identity equipped to teach naturally, as opposed to being coerced by exterior voices.

I therefore theorised how teachers can take advantage of the clash between the two giant voices so as to arrive at personal voices that will yield pragmatic practices. A theory of teachers' voices was born, which suggests that teachers can make use of the strengths of both professional and societal voices to produce personal voices relevant to their different contexts, further catering to their individual needs. I have developed a passion for the personal needs of teachers as they are key in curriculum enactment. I therefore see this study as one that contributes towards the importance of self in all activities undertaken. It is crucial to note that as human beings we have a unique DNA which directs our needs. We also have the subconscious mind which reflects on our past, present, and future experiences to inform our actions. In this study I present the importance of the personal/ individual voice which can liberate teachers from entanglement in external voices that influence practice.

I argue that if teachers can apply the theory of teachers' voices, they would enjoy their profession, reducing frustration of demands of either professional or personal voices. This study showed that teachers' actions during teaching and learning are driven by personal voices which are informed by their individual needs. Instead of entertaining the tension between professional and societal voices, teachers should find their exclusive personal voices to enact the curriculum.

Philosophically, I have explored why the voices in curriculum spaces are the way they are. I then discovered that the tension between the professional and societal voices negatively affects curriculum enactment decisions. My exposure to the geography teachers' association and in writing the learners' book raised a desire in me to contribute towards emancipating teachers from the stress of being overwhelmed by two competing voices. This long journey of undertaking this PhD study has also helped me advance my academic expertise in many areas: writing skills, theorising findings, generating a new theory, as well as contributing new knowledge to the academic field. Moreover, I have generated an article for publication drawn

from this study's findings. I would also use this study phenomenon (teacher's voices) as my 'niche' domain in publishing more articles. I hope to develop expertise in "voices" as my way of adding understanding to the dynamics of teaching and learning.

CHAPTER ONE

BACKGROUND AND OVERVIEW OF THE STUDY

1.1 INTRODUCTION

According to the United Nations Educational Scientific and Cultural Organisation (2014) teaching climate change should be aimed at promoting literacy on climate change in all societies of the world, so that learners in schools are better placed to comprehend climate change. It is anticipated that literacy on climate change would create awareness in learners that would make them understand its impact. Such can encourage people to change attitudes and actions on issues of climate change. Teaching climate change considers how effects of climate change may be reduced. Leal Filho, Manolas, and Pace (2009) posit that the United Nations Educational Scientific and Cultural Organisation (UNESCO) instructed all countries to integrate the teaching of climate change into their curricula.

Climate change is considered one of the life-threatening ecological challenges facing human kind today. According to Anderson (2012) and Ekpoh (2015), climate change threatens to reverse the progress that has been made by the world towards meeting the sustainable development goals (SDGs). Climate change has seen most countries in the world experience the worst environmental catastrophes that have ever been witnessed (UNESCO, 2014). The crisis brought by climate change affects all living organisms and ecosystems on planet earth; and failure to take significant action promptly may impede countries' progress towards achieving SDGs.

In his speech at the state opening of the 2020 Eswatini parliament (SONA) the king of Eswatini, Mswati III, commented on the seriousness of the problems brought about by climate change. Such forces the government of the country to engage in research and find possible solutions to address the climate change challenges. Some of the bad effects of climate change the king mentioned were the destruction of infrastructure, and loss of life and property, to mention but a few. Education is an effective vehicle for driving climate change awareness in the nation of Eswatini. This is possible if the teachers' voices are explored. As teachers are tasked with enacting education on climate change, this study can determine the effectiveness of climate change education.

In acquiescing in UNESCO 's recommendation, Nhamo and Shava (2015) note that Eswatini committed herself to this appeal by signing binding international conventions and protocols, as well as by developing relevant sector policies within the country to support the teaching of climate change in the country. Policy was translated into action when climate change was incorporated into the country's geography curriculum for teachers to enact in their classes. The new curriculum was the International General Certificate of General Education (IGCSE) introduced in 2009. Other school subjects would also incorporate climate change into their curriculum. However, the nature of geography as a subject made it the ideal vehicle for climate change to be taught in secondary and high school levels in Eswatini. Geography is a subject that deals with the physical world and all living things that exist therein.

The teaching of climate change by the geography teachers is driven by voices that influence teachers' actions. Two giant voices (societal and professional) summon the teaching of climate change and these two voices are in constant tension. Khoza (2021) notes that the tension that occurs between the societal and professional voices affects the enactment of any curriculum. I found it crucial to explore the teachers' voices on the teaching of climate change in order to discover the interplay of voices that drive teacher's actions. Moreover, this study adds to the existing debate on how a relationship of voices in enacting the curriculum meets the needs of teachers and learners. Furthermore, the exploration of voices is crucial in academia as it enables the understanding of voices that summon individual teachers in practice.

There has been little discussion on voices that summon curriculum enactment in Eswatini; therefore, this study took upon itself a duty to explore teachers' voices on teaching climate change. Thus, this chapter presents the outline of the whole study. It offers an in-depth explanation of the background to the study, the rationale, and the problem statement. The significance of the study is also presented here, followed by the study's objectives and guiding research questions. This chapter then discusses the paradigm, design, and methodology that guide this study. The organisation of the entire thesis is also presented; the chapter summary is provided at the end.

1.1 Laying the Background and Context

As reminded by Makumane (2018) and Mabuza (2018), teachers have a substantial role in enacting the curriculum. It is critical to note that the teachers' actions in practice are driven by specific voices that inform the way teachers comprehend and enact the curriculum (Okoth, 2016; Raselimo & Wilmot, 2013). Voices are therefore critical in informing the way teachers enact the curriculum. The voices that drive any curriculum are usually indicated by the nature of the intended curriculum. The Eswatini General Certificate of Secondary Education (EGCSE) is integrated (Dlamini, 2018; Mabuza, 2018). This implies that it is competency based/horizontal curriculum. However, Mabuza (2018) notes that the actual strategy of the geography curriculum follows the performance curriculum design which is in line with some universal standards; it endeavours to be relevant to global requirements (Berstein, 1999a; Hoadley & Jansen, 2009; Khoza & Biyela, 2019; Tyler, 2013). The EGCSE is influenced by two dissimilar voices – societal (integrated curriculum) and professional (performance curriculum).

The challenge in the enactment stage of climate change is witnessed by the differences between the professional and societal voices' viewpoints (Dlamini, 2016). One of the disagreements is on the description and causes of climate change. The professional voices describe climate change scientifically, basing the description on research. These voices uphold that tornados and cyclones (some climate change results) are caused by the low-pressure and high-pressure zones affected by temperature variations in the atmosphere. Such causes the various cyclones that are occasionally experienced in Eswatini.

The professional voices backed by science and research describe the causes of global warming until the resultant climate change effects witnessed in Eswatini. Professional voices explain how chlorofluorocarbons (CFSs) which include smoke or pollution from industry, motor vehicles, and many other sources, destroy the ozone layer, which results in global warming and climate change. Moreover, professional voices supported by research state that cattle droppings release methane which is another dangerous gas in the atmosphere; thus dung of cattle is perceived as one of the causes of global warming.

Eswatini, however, is a developing country where a majority of the people do not fall under the influence of professional voices, but instead mostly rely on societal voices, which include

common knowledge found in the society. On the issue of cattle dung and methane raised by the professional voices, there is a strong contestation between the professional and societal voices. Most people in Eswatini, including the king, own large herds of cattle. These cattle play an important socio-cultural function in Eswatini, thus voices which suggest methane from cattle has a negative effect on climate change are disliked. Cattle for most people in Eswatini are still considered a sign of wealth.

Households rear cattle for a number of purposes. Cattle for most Eswatini are a source of food (meat and milk). Beasts are used for ploughing purposes, oxen are used to pull the ox-plough in most families; cattle are economically important as they are sold to cater for family. Sale of cattle pays school fees in some families. Cattle serve a socio-cultural function – the people of Eswatini use cattle to pay a dowry or ‘lobola’; ancestral sacrifices are common in Eswatini, and in almost all cultural celebrations in homesteads and nationally, cattle are slaughtered. Cattle are important for the people of Eswatini, thus the view from the researched professional voices that cow dung (methane) is one of the causes of global warming leading to climate change is faced with opposition from societal voices.

Furthermore, societal voices clash with professional voices on the causes of cyclones. The societal voice claims that tornados, cyclones, floods and storms or any rainfall disasters are caused by a certain “snake” which when it flies from point A to B, damaging buildings and trees along its route. The “snake”, it is said by these societal voices resides in water bodies like dams or rivers and it migrates from one place to another. When it moves it leaves a trail of infrastructural damages along its way. Lastly, the societal voices claim that climate change disasters are caused by ancestors who are said to be angry about issues wrongly tackled in the country.

The contextual discussion shows that geography teachers are faced with a situation where, as social people themselves, they pose societal voices on climate change which disagree with professional voices which they acquired in professional learning. This study is therefore significant as it provides empirical evidence on how the voices on the teaching of climate change should be better handled by teachers to address the tension that exists between the two giant voices.

1.3 The Study's Rationale

Addressing issues that have to deal with climate change has been accompanied by strong disagreement. The controversy on issues of climate change has been witnessed at a number of global climate change summits, at which political leaders argue over the possible causal factors, as well as how climate changes affect human beings: they reach no consensus (Change, 2014; Robinson, 2020). Generally, scholars claim that the teaching of climate change in schools is faced with numerous challenges (Anyanwu, Le Grange, & Beets, 2015b; Moser & Ekstrom, 2010; Waldman et al., 2019). There are various complications in many countries that make the teaching and learning of climate change challenging (Anyanwu, Le Grange, & Beets, 2015a). According to Béneker, Palings, and Krause (2015) and Ogbuigwe (2009), there are various aspects which make climate change teaching problematic. One is that climate change is a controversial issue (Heffron & Valmond, 2011).

Van Eeden, Warnick and Golightly (2018) describe a controversial issue as a topic based on disagreements and lack of universally accepted agreement on causes and effects. As a controversial issue, climate change teaching and learning should not be clouded in controversies between voices. However, in Eswatini, the teaching and learning of climate change is clouded by the conflict of voices that summon the teaching of climate change. The voices' debate could be linked to the nature of the enacted geography curriculum.

The Eswatini General Certificate of Secondary Education (EGCSE) is supposedly a horizontal/integrated or competence-based curriculum. According to Mabuza (2018) and Makumane (2018), the integrated curriculum is mostly driven by societal voices. Furthermore, the horizontal curriculum aims at achieving learning outcomes more than content mastering. According to Stenhouse (1975), the integrated curriculum is socially constructed. The horizontal curriculum positions the community at the centre of teaching and learning settings. Learning is opened to general opinions and knowledge, together with oral conversations learners engage in and hear in their societies (Khoza, 2016b).

In actual fact, the horizontal or integrated curriculum assumes that, as learners become more involved in the learning progression, and their own familiarities are integrated in their everyday geography learning, they obtain a deeper understanding of climate change content (Beane, 1995; Brown, 2006; Hall-Kenyon & Smith, 2013; Mustafa, 2011; Watkins & Kritsonis, 2011).

Contrariwise, Mabuza (2018) observes that, even though the EGCSE curriculum is said to be horizontal, its nature is vertical. It summons professional voices. Thijis and van den Akker

(2009), Bernstein (1999) and Tyler (2013b) posit that the performance curriculum, which is the way the geography EGCSE curriculum is designed, affords written documents which plainly enunciate the contents, objectives, relevant activities, and assessment criteria to be followed by the teacher. The teachers are required to drill the geography learners with prescribed content (Budden, 2016; Khoza & Biyela, 2019; Mpungose, 2017; Thijis & van den Akker, 2009; Tyler, 2013b). Shoba (2018) decries that the performance curriculum with its prearranged specific content and objectives does not give geography teachers the flexibility of adding to and adjusting the dynamic geographic knowledge that continually increases especially on climate change knowledge. There is therefore a need to address the tension between the two major voices in order to bring about a neutral voice (personal) which would be unique, addressing the individual needs of teachers, hence this study's significance.

The EGCSE curriculum creates a challenge for the geography teachers: their enactment of climate change becomes a battlefield between the societal and the performance voices. Bernstein (1999) posits that the two voices, horizontal and vertical discourses, are always a challenge in the educational field. In the teaching of climate change in Eswatini, the teachers' voices have not been heard. Hence this study purposes to explore their voices, as the personal voices of teachers would show that the teachers are liberated. Teachers should teach in such a way that their needs and those of the learners are met. In the course of my practice, it became apparent that many teachers as well as learners held diverse beliefs about the topic of climate change. The geography teachers, who are tasked to teach learners themselves, were also caught in the middle of the conflict of voices. I noticed and observed, and through anecdotal evidence I realised that there is tension between the voices that drive the teaching of climate change. The geography teachers are faced with contradictory voices about climate change which topic they have to teach in their classes.

This study aimed to discover the voices of teachers on the geography curriculum. Furthermore, it sought to understand why the voices are the way they are. I assume that if voices are explored, a way out can be suggested which would meet the teachers' and learners' needs. Such would help learners receive the best knowledge on climate change in their geography lessons. Education has the ability to raise awareness, to improve and change attitudes of learners, which can lead to a change in how society responds to climate change mitigation (Ekpoh, 2015). The study takes the perspective that understanding geography teachers' voices on climate change teaching can assist in promoting climate change literacy in Eswatini learners. Teachers can in

that way contribute towards enacting the geography curriculum to the expectations of the intended curriculum.

1.4 The Problematic Issue

Teachers are viewed by the society as those who pass on correct knowledge to learners through effective teaching and learning. Scholars such as Hoadley and Jansen (2009), Hunsader et al. (2014), Khoza (2015a), Khoza (2016a) and Okoth (2016) posit that teachers are essential agents in educational spaces, being tasked with enacting the curriculum. This submits that teachers have a critical role to play, as they are interpreters of the curriculum. It is therefore critical that voices that influence and drive teachers' actions are explored, such voices accounting for the position on the ground with regard to the curriculum enacted.

The curriculum which teachers are tasked to enact at the intended stage has an idealised image summoned by voices of what teachers should achieve when enacting it (Dixon, Excell, & Linington, 2014). The assumption at the intended curriculum stage is that teachers would always do their best towards the successful enactment of the curriculum. However, in actual practice, as teachers enact the curriculum, they may be faced by numerous challenges, one of which could be the tension between voices that drive the curriculum.

Béneker et al. (2015) argue that in the twenty-first century geography teachers need to work hard to make their subject more meaningful and useful to learners, especially when they teach contemporary issues such as climate change. Teachers should enact climate change with a clear understanding that is not clouded by voices which they do not comprehend. The two giant voices that summon the teaching of climate change present some inconsistencies and tensions on the topic. These diverse conceptions about climate change brought about by the two giant voices affect teachers' enactment practices. According to Fortner (2001) and Low (2006), most teachers in many countries encounter difficulties in teaching climate change. In Eswatini, through anecdotal evidence, teachers find it difficult to enact climate change: they are overwhelmed by two conflicting voices which leaves them wondering how best to handle the tension between the voices so as not to confuse learners. This study explores the voices that guide the teaching and learning of climate change and how and why the voices are the way they are.

According to Anyanwu et al. (2015) the field of teaching climate change is emerging: geography teachers need to be able to teach it with confidence and full knowledge of the entire

topic. Therefore, it is crucial that the voices that drive the actions of geography teachers should be explored, based on the assumption that there is a tension between the two giant voices; and that the body of knowledge around climate change is limited and also controversial (Anyanwu, ., 2015). The two voices that make climate change teaching a contested field are the professional and societal voices. The professional voice usually presents itself with an unquestioned voice that directs teachers' actions per cut-and-dried fact. The societal voice, on the other hand, presents ideas that are generally known from the society/community that contest the validity of knowledge from the professional voice.

For example, the professional voice presents what is considered to be convincing evidence that several human activities are the major cause of global climate change. However, societal voices consider that the climate changes we are witnessing are due to natural cycles only. This presents a glimpse of the nature of the contestation between the two giant voices. This study argues that there should be a neutral voice that will establish the best available honest knowledge on climate change that will neither be dogmatic nor socially inclined, but will instead address the teacher's needs. This study assumes that the teacher's personal voice can address the controversy that results from two giant voices.

Since it has been noted that there exists conflict between two giant voices on the teaching of climate change, the study went on to theorise how the tension can be addressed by taking advantage of strengths of both professional and societal voices to realise a personal voice that meets unique needs of geography teachers and learners. It is assumed that the teachers who must satisfy demands of the two competing voices are disturbed by the missing personal voice; and such affects negatively the smooth enactment of climate change lessons. As there are two giant voices that summon the teaching of climate change, this implies that the geography teachers lack control over the curriculum they are expected to enact.

In a qualitative study, Khoza (2016b) notes that a solution is required to liberate teachers from being overwhelmed by the two voices (professional and societal) they are expected to enact. The study by Khoza (2016b) concluded that teachers must comprehend both the professional and societal voices in order to enact climate change effectively. This highlights the need for teachers' voices to be explored, as the voices will give reflected practices of the geography teachers that would then propel them to address their own needs first. Thereafter, they can deal with the contestation between the professional and societal voices.

Moreover, there is very little published research on teachers' voices in teaching climate change in Eswatini using the education design research and pragmatic paradigm. There is one study by Dlamini (2016) on generic understanding of the teaching of climate change in Eswatini. However, I consider the exploration of teachers' voices as significant in informing and understanding the reality of teaching climate change which is an important geographical topic in the 21st century. Additionally, the government of Eswatini has adjusted her strategic road map to infuse climate change into the five key growth sectors for the development of the country and its economic development. The king on several occasions has encouraged all sectors in the country to work towards the country being classified as first world. The king, together with the government, considers climate change an important issue which calls for attention: even teachers in schools should teach it effectively. Effective teaching and learning of climate change is interconnected in the consideration of voices that summon its teaching.

1.5 Significance of the Study

This study's phenomenon is teachers' voices. Voices may be variously explained, thus for the purpose of the study it is essential to precisely clarify the meaning of voices. Fowler and Fowler (1991) describe a voice as a particular view or feeling articulated by an individual who becomes aware of such through interrogating the self. The interrogation occurs in the form of reflections which are generated from the subconscious mind of an individual (Khoza & Biyela, 2019). According to Bainbridge and Macy (2008), voices represent the thoughts, and experiences of individuals. The description of the voice suggests that an individual generates the voice from experience. If anyone experiences any activity, it leaves that person with a feeling or voice they are aware of. This submits that the voice is stored in the unconscious mind and is triggered through reflections to which an individual is exposed.

Geography teachers who teach climate change undoubtedly are driven by voices in practice that inform their actions. Rightly expressed, the voices of the geography teachers signify their views, actions, as well as feelings about teaching climate change (Bainbridge & Macy, 2008). The voices of geography teachers as the ones who enact the curriculum are of great importance in informing how climate change teaching is enacted, the voices expressing their needs (Celia & Elize, 2014). This study explored teachers' voices as these are crucial in offering opportunities to realise causal factors of classroom teaching and learning, whether successful or failed (Tsang, 2004).

Rahimi and Zhang (2015) and Tsang (2004) argue that teachers' voices underpin the way in which they teach in classrooms. Voices inform the teacher's actions and decisions made during teaching and learning. According to Ross, Sinclair, Knox, Bayne, and Macleod (2014), teacher's voices which are self-consciously created are a complex matter. Voices have a number of issues centred on them. However, even though teachers are complex, they must be studied in understanding how classroom teachers enact the curriculum. Crucial as teachers' voices are, in Eswatini to date, no study has been undertaken on geography teachers' voices on the teaching of climate change. A qualitative study interviewed forty-seven student teachers from two Canadian universities that sought to find their voices in teaching literacy in elementary classrooms. The study discovered that the teachers gained the ability to state and express their voices as elicited in various aspects of English teaching (Bainbridge & Macy, 2008). Accommodating the voices of the participants helped researchers discover issues that were held by the students.

This suggests that seeking voices of teachers gives them an opportunity to express their feelings and experiences on any phenomenon which may have a positive influence on practice. The qualitative study by Bainbridge and Macy (2008) discovered that once voices of teachers are elicited in curriculum and pedagogy spaces, ways of addressing frustrations and alleviating fears among concerned teachers soon emerge. This is because voices become powerful in informing what could be done to provide a solid teaching and learning environment. Accommodating teachers' personal voices calms the tension between professional and societal voices in curriculum spaces.

Fomunyam (2014) posits that the voice of teachers is significant as it is useful to both construct and reconstruct meaning for learners. The teachers' voices are valuable in improving teaching and learning. Moreover, Samuel (2009) submits that it is imperative that the voices of teachers be considered seriously as they produce fundamental actions which help in curriculum enactment process. This study seeks to dwell on the geography teachers' voices; as it has been theorized that the voices can be a powerful element in teaching and learning (Shoba, 2018). Likewise, Freeman (2002) asserts that an understanding of teachers' voices can be helpful in disclosing the fundamental elements that affect how to enact a topic such as climate change. Teachers make decisions on how they practise teaching and learning climate change, based on voices. According to Khoza (2016), the teachers' voices are not static as they are affected by political, historical, and social factors. The small developing country of Eswatini where the study was conducted has its own history that influences its socio-political landscape. It is thus

likely that some of the decisions geography teachers make are influenced by factors/voices operating out of their control.

Moreover, Shoba (2018) argues that the numerous factors that affect teachers as they enact lessons in classes produce unique understandings and voices for individual teachers. Such would in turn make teachers approach their climate change lessons under particular individual influences. Teachers' voices are influenced by societal, personal, as well as professional backgrounds on which teachers depend for active teaching and learning. The understanding of their voices can offer a glimpse of what may lead to any failure or success that takes place during the curriculum enactment process.

This study assumes that geography teachers might have various understandings on the teaching climate change because of the tension between voices. I therefore explored the voices so as to address the tension between the two giant voices informing practice. Furthermore, the study could also be meaningful to policymakers as well as to the Ministry of Education as a whole; for it can show areas in which geography teachers can be assisted. The study may also inform teacher training institutions on the need to revise their courses to include ways of handling tension in voices that summon general teaching and learning.

Furthermore, Schwab (2016) imagines that such sensitive and controversial topics like climate change may be done taught through a robotic teaching process in this era of the Fourth Industrial Revolution (4IR). Under robotic teaching and learning it is assumed that learners would perhaps feel more included as opposed to learning with a teacher whom they might regard as partial in concepts of climate change. Thus, the study might lay a foundation towards ideas of robotic teaching. Moreover, this study complements the voice of the existing body of information on the dynamics of curriculum enactment.

1.6 The Study's Purpose

This study was determined to ascertain geography teachers' voices on teaching of climate change. The focus was on geography teachers who were enacting climate change to Form Fives (Grade Twelve). These teachers provided varied views on the description of voices, how and why the voices are the way they are in the geography enacted curriculum.

1.7 The Study's Location

This pragmatic, educational design research study was carried out through engaging teachers from four high schools in Eswatini. Eswatini is positioned in south-eastern Africa in between latitude 25° and 28° South and longitudes 31° and 32° East. It is some 48 to 225 kilometres inland of the Indian Ocean. She has a total surface of 17,360 square kilometres. Eswatini is physically landlocked as she is nestled by South Africa from the south, north, and west, with the east covered by Mozambique. See map, Figure 1.1 showing the location of Eswatini.

Figure 1.1

The Location of Eswatini.



Note. The figure was sourced from the Central Statistical Office (2014)

Even though Eswatini is small, it has a great variation in climate, landscape, and geology, having four climatic regions. The regions from the West to East are the Highveld, the Middleveld, the Lowveld, and the Lubombo plateau. The effects of climate change are evident in the country as rainfall distributions as well as temperatures have drastically changed over the past twenty years (Manyatsi, Mhazo, & Masarirambi, 2010). According to Nhamo and Shava (2015), some studies have been conducted in Eswatini to determine whether the country experiences climate change, and there was evidence that affirmed that it does. For example, there has been a steady decline in rainfall received in the country over the last twenty years (Manyatsi, Mhazo & Masarirambi, 2010; Nhamo & Shava, 2015).

Furthermore, the country from 1990 has been experiencing recurrent droughts, tropical cyclones, as well as torrential rains which have led to flooding especially in the years 2000, 2007, 2010, and 2018, to name but a few. As a result, the Ministry of Education was tasked with introducing climate change education in all classes of the Eswatini formal education system. For the secondary and high school levels geography was chosen as one of the subjects which can be a vehicle for teaching climate change to learners. Geography teachers therefore, found themselves having to enact climate change; whereas Fortner (2001) states that there is practical evidence from various countries that the teachers' basic understanding of climate change is insufficient and too scanty for its teaching. This study sought to find out whether teachers' understanding is indeed inadequate or whether the teachers are confused and frustrated by demands of either professional or societal voices. It was also a possibility that teachers' knowledge was adequate.

Four schools were purposively selected from each of the four regions and were given pseudonyms: H, M, L, S. Four teachers from each school were selected to be part of this study. The schools were chosen purposively by the researcher from each of the four regions of the country. The schools were conveniently located for the researcher.

1.8 The Research Objectives and Questions

1.8.1 The research objective

The study is guided by these objectives:

1. To explore geography teachers' voices on the teaching of climate change in Eswatini.
2. To understand how geography teachers' voices influence the teaching of climate in Eswatini.
3. To explore why the geography teachers' voices are the way they are on the teaching of climate change in Eswatini.

1.8.2 Research Questions

The study's critical research questions are;

1. What are geography teachers' voices on the teaching of climate change in Eswatini?
(descriptive)
2. How do the teachers' voices influence the teaching of climate change in Eswatini?
(operational)
3. Why are the teachers' voices the way they are on the teaching of climate change in Eswatini? (philosophical)

1.9 The Study's Research Methodology

1.9.1 Research paradigm

Kivunja and Kuyini (2017), state that paradigm refers to the world view of a researcher. In simpler terms, a world view refers to the school of thought or viewpoint or philosophy or perspective that tells how data will be interpreted (Creswell, 2021; Maree, 2017; Okeke & Van Wyk, 2016). The paradigm is significant in a study as it offers beliefs that inform how a study is to be carried out and further prescribes the way results would be interpreted (Kivunja & Kuyini, 2017). The three leading paradigms in educational research are the positivist, the interpretivist and the critical paradigm (Kivunja & Kuyini, 2017). Teddlie and Tashakkori (2003), however, proposed a fourth paradigm that derives its components from the three (positivist, interpretivist, and critical paradigms), that is, the pragmatic paradigm which this study embraces. Lincoln and Guba (1994) as well as Kivunja and Kuyini (2017) point out that a paradigm encompasses four important elements, namely, ontology, epistemology, axiology, and methodology.

Cohen, Manion and Morrison (2011), Lincoln and Guba (1994), Krauss (2005) and Scotland (2012) state that epistemology's concern is the nature and forms of knowledge. Epistemology for a paradigm explains how in that paradigm we come to know reality. For the pragmatic paradigm, the epistemological position suggests that either objective or subjective interpretations can provide knowledge for a research study and focus on realistic application to matters (Ihuah & Eaton, 2013). This tallies well with this study as it seeks to explore teachers' voices who teach climate change. Ontology, according to Krauss (2005) and Scotland (2012), involves the philosophy of reality. This suggests that ontology concerns itself with the nature of reality and for the pragmatic paradigm, in which the researcher is external. The views of the participants inform reality as the participants possess reality voices from the real-world practice

(Ihuah& Eaton, 2013). This ontological position of the paradigm was an advantage for this study as the teachers' voices do inform reality.

Lincoln and Guba (2005), Krauss (2005), Merriam (1998) and Scotland (2012) describe methodology in research as the plan or strategy of selecting the research tools. Methodology is concerned about the what, why, how, and where of the study's data being collected and analysed, methods being the particular techniques as well as procedures a researcher uses to collect and analyse data. Under the pragmatic paradigm, the methodology is flexible on the utilization of mixed or multiple methods.

This study utilised a reflective activity/questionnaire, artefact inquiry, observations, semi-structured interviews and focus-group discussions. Axiology concerns ethics that have to be applied and well thought out when the plan of a research study is conducted (Kivunja & Kuyini, 2017). Axiology deliberates the philosophical approach to reaching the right decisions through assessing, defining, and applying concepts of right and wrong behaviour relating to a study. Thus, axiology questions the nature of ethics or ethical behaviour in a study. Consequently, Ihuah and Eaton (2013) posit that values play an important role in interpreting results through subjective and objective reasoning under the pragmatic paradigm.

According to Kivunja and Kuyini (2017), and Biesta (2010), the pragmatic paradigm is most appropriate to studying actual behaviours of participants. As this study sought to search for geography teachers' voices, the pragmatic paradigm's strength of being practical was helpful in shedding more light on the teachers' voices, the voices solicited in a pragmatic way. Mackenzie and Knipe (2006) posit that the pragmatic academics focus on the how, what, and why of the research problem. The attention to these critical questions allows the researcher to explore the participants satisfactorily as this paradigm places the research phenomenon in the central position. Furthermore, the pragmatic paradigm allows the use of mixed methods as the most realistic way of understanding human experiences. This made it an advantage as I chose procedures helpful in generating appropriate data for the study. Cresswell (2021), Teddlie and Tashakkori (2003) argue that the pragmatic paradigm has the advantage of opening the opportunity to the researcher to be both subjective and objective in analysing the viewpoint of participants. The use of mixed methods helps to reach practical solutions.

1.9.2 Research approach and design

Research approaches or methodical paradigms are divided into two: qualitative and quantitative approaches. This study utilised both; however, it is mostly dominated by the qualitative approach. Such, according to Maree (2017), employs forms of data analysis that are meaning-based instead of numerical. According to Okeke and Van Wyk (2016), the sole intention of a qualitative researcher is to develop an improved understanding of self. This understanding would then assist to transfer understanding to human situations and their actions as well as reasons for those actions. The qualitative approach fitted well in this study as it permits a researcher to interact with participants where they are in their authentic setting (Creswell, 2014). Additionally, I theorise that the qualitative approach is best when the research on a specific phenomenon is dependent on the communication of the participants. This applies to studies like this one which is based on teachers' practices.

In addition, McMillan and Schumacher (2010), Creswell (2014), and Maree (2017) state that the qualitative approach depends on data collected from real participants' situations. The data generated is mainly in words – another strong point of the qualitative approach. This gives the researcher leeway to generate rich data. Moreover, as noticed by McMillan and Schumacher (2010), the data becomes rich as it is generated directly from the participants. Rahman (2017) points out that the qualitative approach has advantages as it produces thick descriptions of participants' voices. It allows researchers to elicit participants' inner experience, and to understand them in their natural settings. Besides the advantages of qualitative research, there are noticeable limitations. One of the limitations is that it leaves out contextual sensitivities.

This implies that the qualitative approach tends to focus more on experiences and meanings (Silverman, 2016). However, qualitative researchers do not leave out contextual factors as they reach the field where the participants are found (Leed & Ormrod, 2015; Rahman, 2017). Moreover Flick (2015), Silverman (2016) and Yin (2006) argue that the small sample sizes utilised by qualitative researchers is a disadvantage for generalizability of findings. However, Rahman (2020) argues that no educational study (either qualitative or quantitative) has to be considered generic: there are a number of background factors that can influence the generated findings.

This study adopted the educational design research (EDR) as its design. (Plomp & Nieveen, 2014; Van den Akker, Gravemeijer, & McKenney, 2006) theorise that this design is suitable to develop research-based explanations for compound problems in educational practice,

especially in curriculum-related issues. Berkvens (2009) notes that the educational design research encompasses the making of interventions which aim at improving educational practices. The educational design research is also iterative and cyclical, thus evaluation of phenomena and its revision is conducted to assess intervention measures (Berkvens, 2009; van den Akker, 1999). This study was about exploring voices of geography teachers, which on their own are complicated; and climate change, which is a controversial topic to teach. The educational design research was the best design as it targets momentous problems facing educators (McKenney & Reeves, 2013; Pors, 2014).

Teaching climate change in Eswatini is a problematic process for geography teachers which can be best tackled by engaging a study like this one through the lens of educational design research. Furthermore, the EDR seeks to ascertain fresh knowledge that can assist and inform practice which helps others facing similar problems. The design works to achieve dual goals for researchers, which are solving a problem and also ascertaining new knowledge to address a problem and further meet the needs of affected participants. The EDR aims to understand the problem and then improve the interventions discovered in the process. This made the educational design research appropriate for this study in finding solutions to real contexts (Kelly, Kelly & Melograno, 2004; van den Akker, 2009). The interventions generated from EDR are owned by the participants and characterised by collaborative interactions. Berkvens (2009) notes that the collaboration and interaction with participants raises their commitment to the solutions or interventions that are suggested and learned.

The EDR moreover, is conducted in very close collaboration with educational practice, dealing with problems situated in educational practice like this study which sought geography teachers' voices. The geography teachers, as educational practitioners, became actively involved during data generation (van den Akker, 2009). Even though the involvement of the teachers who are in the field is an advantage, Pros (2014) and van den Akker (2009), see it as a disadvantage as it creates some issues with quality and validity of data. To address this limitation, I utilised a number of data-generation tools (triangulation) to increase the dependability and quality of the data generated.

Furthermore, the researcher in educational design studies can be what Thijs and van den Akker (2009) describes as a 'cultural stranger' in the field. EDR expects that studies are conducted in real-world settings as they address complex issues in practical educational spaces. McKenney and Reeves (2014), for this limitation, emphasise the significance of partnership or

cooperation between the researcher and participants so to gain the trust of participants; and also to gain full comprehension of their setting. Additionally, being an outsider works to the advantage of the researcher in permitting the researcher to develop some degree of impartiality (van den Akker, 2006). In fact, Berkvens (2009) cautions researchers using the EDR to be mindful of bias in their role during the research process.

Considering that this study intended to discover geography teachers' voices on teaching of climate change, it falls under two types of EDR: developmental and exploratory. The developmental type of EDR focuses on developing ground-breaking mediations that are relevant for educational practice in contexts (Nieveen, McKenney & van den Akker, 2006; van den Akker, 2009). Moreover, this study could be said to be exploratory as it sought to discover the teachers' voices (exploratory); while at the same time it developed interventions that would address the problems teachers face (developmental). To arrive at solutions, the EDR become interactive and cyclic (Berkvens, 2009). It is interactive in the sense that it employs data-generation methods that fully involve the participants (reflective activity, interviews, artefacts, focus-group discussions as well as observations for this study). It was cyclical in going on through three phases: Phase One the preparatory phase; Phase Two the design and implementation phase, Phase Three is the evaluative phase (Berkvens, 2009; van den Akker, 1999).

During the preparatory phase, a thorough contextual understanding of climate change teaching and analyses of the needs of the geography teachers was conducted. The preparatory phase helped me better to comprehend the nature of the problem (voices of teachers on climate change teaching). Moreover, this stage helped me to learn the causes of the problem as the analysis that EDR permits allowed the teachers to express their voices. The outcomes of the preparatory phase informed the design and implementation phases which together with the participating teachers, suggested interventions from Phase One which were implemented to address the problem at hand. The teachers applied what they had gained in the first phase to present their voice. After the design and implementation phase came the evaluation phase, where once again, together with the geography teachers, a new model or practice was designed and implemented. The innovation was checked to decide whether it met the needs of the participants which constituted the last stage of the EDR.

1.9.3 Sampling

According to Creswell (2021), Cohen et al. (2018) and Maree (2017), sampling is a process employed in selecting a certain percentage of the total populace from which to collect data. The aim of selecting the sample is to find participants who could supply the richest data so as to fully respond to a study's research questions (Maree, 2017). In this thesis, purposive and convenience sampling were utilised. Purposive sampling occurs when the researcher selects participants purposely for a particular study (Okeke & van Wyk, 2016). According to Kumar, Mohri and Talwalkar (2012) and Maree (2017), purposive sampling is best when a researcher attempts to describe a phenomenon explored or alternatively, advances an issue about which little is known. Teachers' voices in geography are a phenomenon that has not been tackled in Eswatini. Such makes purposive sampling relevant to this study as it allowed the researcher to gather rich data. Additionally, Creswell (2014) states that purposive sampling occurs when a researcher selects participants intentionally.

The selected participants, commonly, are those that possess all the characteristics which make them suitable to generate data required by the researcher. For this study, sixteen geography teachers from four different high schools were purposively selected as participants. The sixteen geography teachers were adequate. Ritchie, Lewis, Nicholls, and Ormston (2013) highlight that a qualitative research may use a minimum of four participants in a study. Purposive sampling is supplementary for studies that employ the qualitative approach (Babbie & Mouton, 2012). However, purposive sampling is considered biased since participants are deliberately selected by the researcher, thus transferability of a study can be compromised (Cresswell, 2014, Maree, 2017, Okeke & Van Wyk, 2016). To enhance transferability, in this study the purposive sampling process will be described thoroughly to allow other researchers to follow, thus enhancing generalizability.

Convenience sampling was used to select sixteen most reachable geography teachers as participants for this study. Convenience sampling involves selecting the most accessible persons who fit the conditions and criteria of a study to serve as participants (Babbie & Mouton, 2012, Christiansen, Bertram, & Land, 2010; Cohen et al., 2018; Creswell, 2014, Maree, 2017, Merriam, 1998). Okeke and Van Wyk (2016) observe a possibility of a high chance of sampling error if a researcher utilises the convenience sampling method. In this study, the participants selected were those teaching geography at the time of data generation. Additionally, to reduce sample error, I used a specific selection criterion to choose these teachers. The criteria applied were based on factors such as teaching experience: the participating teacher should at least

have five years' teaching experience. Also the participants should have sufficient teaching experience; secondly, the participants should be easily reachable for the researcher; and lastly, the participants should be willing and prepared to partake in the study.

1.9.4 Data-generation methods

Babbie and Mouton (2012), Cresswell (2014), Merriam (1998) and Okeke and Van Wyk (2016) state that data-generation methods are the tools, techniques, or processes that are used in research to obtain facts. In order to fully attempt to respond to the research questions and increase credibility in this study, five data-generation tools were used. These were the reflective activity/open-ended questionnaire, artefacts, one-on-one semi-structured interviews, and observations, as well as focus-groups discussions.

1.9.4.1 Reflective activity/ open-ended questionnaire

For Cohen et al. (2011), and Coghlan and Shani (2013), the reflective activity is considered an open-ended questionnaire. This tool is commonly a written activity in which participants are requested to fill in a series of short answers to questions on a phenomenon of the study. The reflective activity allows participants to freely voice their thoughts or understanding on their practice roles (Samuel, 2009). This method of data collection allows participants to think independently as they reflect on their actions in practice. This feature of the reflective activity is a transformative experience for participants, as they think and reflect on their past, which affects their future actions. The reflective activity was a suitable data-collection tool as it permitted the participants to reflect on their practices on the teaching of climate change, and the voices that drive the teaching process.

Khoza and Mpungose (2018) note that the nature of the reflective activity allows participants to fully unpack the phenomenon studied. The reflective activity concentrates on the phenomenon only, and thus encourages deep concentration as the unconscious minds are put in action to elicit the voices of participants. Furthermore, the pragmatic paradigm which guided this study does not allow the values of the researcher to be controlled or concealed, but instead they should be accepted. This consciously fits well for the reflective activity as its basic assumption is on generating the actual voices of the teachers without my influence. The reflective activity generated data for the first research question and participants were given

some time to complete the set of questions that were asked to generate their voices on the teaching of climate change. However, there are some limitations of using the reflective activity as a tool for generating data.

Cohen et al. (2018) note that usually participants feel uncomfortable to reflect on and evaluate their own practices. To address this limitation, I clearly explained to the participants that this questionnaire was for their benefit. Since the study adopted the educational research design, the first phase of the questionnaire assessed their present practice (the voices that drive climate change teaching). The gaps realised from then on were addressed in the second EDR phase to improve practice. Any teacher would welcome an endeavour that is aimed at assisting practice. Secondly, because it was a written activity, participants complained that it was time-consuming. I addressed this by giving the participants two weeks to complete the activity in their own spaces and at own pace. Participants also often failed to comprehend the questions of the reflective activity which is commonly seen (Brookfield', 2017). To overcome this problem, I provided my contact details to the participants. If any sought clarity I could assist promptly.

1.9.4.2 One-on-one semi-structured interviews

Maree (2017) states that the semi-structured interview is a data-generation tool which allows the researcher to use open response questions that probe the participants' meanings on the phenomenon studied. Okeke and Van Wyk (2016) state that the semi-structured interviews have the advantage of allowing further probing and clarifications of answers by the researcher. The researcher is able to collect additional data from the participants. Alshenqeti, (2014) asserts that interviews are ideal as they assist in obtaining participants' viewpoints, voices, attitudes, and experiences in using the curriculum. The semi-structured interview was the most suitable data-generation method since it allowed the participating teachers to give more comprehensive responses to questions posed on voices in teaching of climate change.

The semi-structured interviews become suitable when studying people's voices and insights. This allowed participants to express their diverse perceptions or voices freely from their subconscious minds (Kallio, Pietilä, Johnson & Kangasniemi, 2016). This was made possible by the questions in the semi-structured interview being structured in such a way that the participants reflect on the phenomenon studied. The questions were well formulated such that they were participant-oriented and were not leading; so that the richest data possible on voices

of the geography teachers was attained. With such questions the interviewer was able to generate responses that reflected the participants' personal voices on teaching climate change (Kallio, Pietilä, Johnson & Kangasniemi, 2016). Additionally, within the educational design research, interviews are the most suitable data-generation tool as they allow the participating teachers to give insight into how and what and why voices on the teaching of climate change are the way they are.

However, interviews are sometimes considered time-consuming (Cohen et al, 2018; Kumar, Mohri & Talwalkar, 2012; Maree, 2017; Merriam, 1998). To curb that limitation in this study, each participant was given up to 30 minutes so that time would not be an issue. To save time also, an interview guide was used so that set questions were followed by the researcher and participants to avoid wasting time. In addition, Creswell (2014) and Cohen et al (2018) posit that there are usually some elements of inconvenience experienced when conducting interviews.

The difficulty lies in initiating rapport with participants for the purposes of gathering rich data from the participants. I assured anonymity to participants to make them feel comfortable in freely expressing their voices on teaching climate change. I also asked them questions that were open, clear, and unrestricted. This allowed the participating teachers to answer in their own words. Furthermore, I conducted these interviews by telephone calls which found participants in a peaceful state that allowed freedom of communication (Cresswell, 2021; Maree, 2017). While minding ethical issues, the interviews were recorded to allow the transcription of data and to further ensure trustworthiness and dependability of the findings.

1.9.4.3 Artefacts

An artefact is generally described as any object of that is important and signifies a specific link to an individual and a situation or scenario (Clandinin & Connelly, 1990). Clandinin and Connelly (1990) emphasise that artefacts are not just simply objects; they are valuable tools that assist in connecting participants with important events and activities generated through reflections. Yin (2003) mentions that artefacts are used as common sources of data for research studies. According to Reid and Lucas (2010), artefacts are perfectly utilised when trying to discover voices of individuals. Artefacts are able to elicit the voices from what an individual brings as an artefact. This is because artefacts reveal vital depths on participants' voices (Clandinin & Connelly, 1990). A key aspect about artefacts is that they enable participants to

narrate their own story in their own special way as prompted by the artefacts. The artefacts that the geography teachers brought allowed each teacher to give different unique voices about the teaching of climate change in Eswatini.

Artefacts act as good repositories of one's experience as they prompt memories through reflections. This gives the advantage of using artefacts as opposed to other data-generation tools in which the participants respond to questions prepared by the researcher; thus the researcher's intentions in those questions take precedence (Clandinin & Connelly, 1990). Moreover, artefacts generate rich and detailed data from participants as they ignite memories to produce voices that may have remained unexplored or untouched if other data collection methods were used (Leavy, 2017). Conversely, artefacts igniting more memories for participants becomes a disadvantage, the researcher may gain bulky data which may have an effect during data analysis (Yin, 2003). To address this, I made sure that I timed each participant during narration as guided by the artefacts.

1.9.4.4 Observations

Macmillan and Schumacher (2010), Cohen et al., (2018) describe observation as a tool that generates data by noting what takes place in the field. Observation calls for the researcher to view what happens in the place where the study is conducted. For De Vos, Strydom, Fouche, and Delpont (2017), classroom observations take place as a researcher gathers facts by simply looking, without asking any questions. The scholar witnesses and registers all that takes place during teaching and learning. Furthermore, Creswell (2014) postulates that the researcher gains first-hand data during observations. I made observations to see how teachers enact climate change and to discover what summons the teachers' voices during teaching and learning. The lesson observations offered "live" data from the classrooms (Cohen et al., 2011). The observations I made helped me to affirm whether the information generated by the reflective activity was reliable.

I drew up a schedule for the observation and set out to observe the lessons as an outsider. Being an outsider during observations implies that I was a non-participant observer (Maree, 2017; Okeke & Van Wyk, 2016). However, there are some challenges of employing observation as a data-generation tool. One of the challenges is that a lone observer offers perceptions of what is likely to occur during observation which might possibly have a negative effect on trustworthiness in a study (Robson, 2007). Nonetheless, concerns of trustworthiness will be

considered later. Also, Robson (2007) notes that an observer can be limited and can therefore only see a few issues in a class. This was catered for by the observation schedule which guided that all planned observations were conducted appropriately. However, despite these flaws, as a data-generation method, observations give a truthful record of what takes place during the teaching and learning of climate change.

1.9.4.5 Focus-group discussions

According to Silverman (2015), a focus group is formed by individuals who fit a specific condition, as did the geography teachers in this study. This group of the selected individuals then focus on discussion centred on a topic such as voices of teachers. The discussions are based on seeking for the participants' experiences with regard to a particular phenomenon. The focus-group discussions are based on the participants' voices which is what this study seeks to find (Brooker, Rogers, Ellis, Hallet, & Roberts-Holmes, 2010). The focus-group discussions also have the advantage of creating a platform for other participants available to react to each other's views or voices. Unlike a one-on-one interview, the platform created in a focus-group discussion becomes more like their daily natural environments. Participants influence one another in real life settings. This space of participants gives insights into how each of the participants thinks, which leads to a deeper and more thoughtful understanding of the studied phenomenon (Muijeen, Kongvattananon, & Somprasert, 2020).

Inasmuch as the focus-group discussions are good at eliciting experiences of participants, sometimes the participants may have their responses fabricated; some vocal ones may tend to dominate the discussions which can compromise the findings (Krueger & Casey, 2014). To curb such, I made sure that no participant dominated the discussions so that all could equally share their experiences without being intimidated. I was the moderator who practised the nine qualities of a good moderator. These qualities are: a) having good listening skills, b) being a good observer, c) being passionate in attending to the needs of participants, d) being non-judgmental, e) being welcoming and open minded, f) respecting all participants equally, g) having good leadership skills, and h) possessing adequate relevant knowledge about the research study (Dilshad & Latif, 2013).

1.9.5 Data analysis

Maree (2017) describes data analysis as an organized and logical action by a researcher which aims to split a whole into different parts. The researcher comes with raw data from the field and breaks it down into a meaningful data-analysis process. For this study I used guided analysis. Guided analysis entails defining specific themes and categories beforehand (Samuel, 2009). Guided analysis suited this study as there was a possibility for new themes to surface from the field which I had not anticipated or imagined. The themes, as well as the categories were prompted by the phenomenon of this study (teachers' voices). The themes also were informed by some curriculum concepts that made up the theoretical model for this study. The data generated from the five tools will be structured and organized for subsequent analysis.

1.9.6 Trustworthiness issues

1.9.6.1 Trustworthiness

According to Maree (2017) and Cohen et al. (2018), quantitative studies are mostly associated with reliability and validity, but for studies like this one which is not fully quantitative, the concern for researchers is to ensure trustworthiness and credibility. Trustworthiness is described as the ways that a researcher embraces to assure people that the study's findings are reliable and should be considered of the required worth (Cohen et al., 2018; Creswell, 2014; Maree, 2017). Cohen et al. (2011) theorise that there are numerous ways researchers can utilise to ensure trustworthiness. These include generation of thick/rich data, thorough long-term involvement with participants, as well as triangulation. In this study, trustworthiness was guaranteed through the use of five data-generation tools: reflective questionnaire/activity, artefacts, one-on-one semi-structured interviews, and observations, as well as focus-group discussions.

1.9.6.2 Transferability

According to Maree (2017) and Cohen et al. (2018), transferability in a study has to do with its generalizability. This occurs when transferability of findings of a specific study may be applicable to other studies or contexts. Transferability in this study was ensured by eliciting correct findings which may be applicable and of benefit to other researchers, curriculum scholars, and/or teachers not part of this study.

1.9.6.3 Dependability

Dependability is defined by Cohen et al. (2011) and Creswell (2014) as the uniformity of a study's finding. Dependability is concerned with guaranteeing that the researcher presents truthful data. Dependability in this study was safeguarded by adding direct quotes from participants to allow readers to go through to check their answers. I also recorded the interviews to improve this study's dependability. I played back the recorded interviews so to capture exactly what participants said during the interviews.

1.9.6.4 Confirmability

Creswell (2014), Maree (2017) and Cohen et al. (2018) describe confirmability as the necessary stages a researcher takes to guarantee that findings presented reflect the truthful data generated from the field. Confirmability aims to ensure that explanations of data in a study are not a creation of the researcher (Lincoln & Guba, 1994; Merriam., 1998). To guarantee confirmability in this study, I did not allow my personal interests to hinder the process of data generation. Moreover, I made sure that participants' responses were not tampered with. I did this by recording the answers verbatim (Maree, 2017). To further ensure confirmability, I made sure that the questions for the reflective activity, semi-structured interviews, and focus-group discussions were identical for all the participants.

1.9.6.5 Credibility

Creswell (2014) and Cohen et al. (2018) uphold that credibility in academic studies is based on the truthfulness of findings. In this study, credibility was accomplished by including the participants in the analysis process. Participants were given a copy of the transcribed interview and focus-group discussions to establish authenticity and transparency. In addition, data-analysis results were made accessible to the participants to ensure that the findings echoed their views. Moreover, adjustments were to be made in relation to their recommendations and approvals.

1.10 Organisation of the Thesis

1.10.1 Chapter One: Introduction and background of the study

The first chapter presents the whole study by providing contextual information to help in understanding the study. Further, the chapter outlines the problem, rationale, as well as a generic understanding of the phenomenon “voices of teachers”. The chapter further discusses currere as a foundational theory that guides this study. The study’s location is discussed, together with the methodology that has been adopted to guide it. Lastly, a summary that indicates how the full thesis proceeds is presented accordingly for each of the chapters.

1.10.2 Chapter Two: Understanding Professional Voices

This chapter forms the opening part of the review of the literature sections. It theorises on the phenomenon of “teachers’ voices”. In particular, I present various scholars in this chapter who theorise on the nature of professional voices. Curriculum concepts that summon professional voices, prescribed content knowledge, objectives, content-centred activities, teacher as an instructor, and summative assessment are then deliberated upon in depth in the chapter, to broaden understanding of the nature of professional voices.

1.10.3 Chapter Three: Conceptualising Societal Voices

This chapter formed the second fragment of the literature review, discussing societal voices. A detailed discussion on the nature of societal voices is presented as the literature interrogated displays the constructs of societal voices. The curriculum concepts that summon societal voices, learning outcomes, software resources, everyday knowledge, teacher as a facilitator, learner-centred activities, peer assessment, as well as field trips, are discussed in depth to present how societal voices drive the curriculum.

1.10.4. Chapter Four: Understanding Personal Voices and the Theoretical Framework

This chapter is the last one on literature review and it dwells on personal voices. It theorises on the nature of personal voices and how they come about. Currere curriculum theory is discussed here to lay a foundation on how the personal voice of a teacher comes from the reflections afforded by the phases of currere. The literature presented here shows that the tension between the giant voices, professional and societal voices frustrate a teacher whose voice is absent in the curriculum. Thus, at this stage, a theory that brings about the personal teacher's voice is presented. The theory suggests that the personal voice should take advantage of both the professional and societal voices' strengths to provide unique voices that meet teacher's individual needs. The personal voice constructs – teacher as an artist, teacher as ideological-aware, teacher as a researcher, formative assessment, as well as blended learning, are discussed at length.

1.10.5 Chapter Five: Unearthing Methodology to explore Professional, Societal and Personal voices

This chapter deliberates on the methodology adopted to conduct this study. This study employed the educational design research positioned within the pragmatic paradigm. Both qualitative and quantitative approaches were utilised to conduct this study; however, mainly the qualitative appears. Data-generation methods utilised to conduct this study are the reflective activity, artefacts inquiry, semi-structured interviews, observations, and focus-group discussions. Each of these methods is discussed in detail, providing evidence for their suitability for the study. This chapter also discusses sampling and shows how purposive and convenience sampling have been used to select the sixteen participants. Moreover, the chapter extended the discussion to indicate how the data was analysed in the study using thematic analysis. Trustworthiness and ethical concerns together with the limitations of the study are presented at the end.

1.10.6 Chapter Six: Addressing the Descriptive What and Operational How Questions of the Study.

In this chapter the first part of findings is presented that responds to the descriptive and operational questions that guide the study. The data utilised here was that which has been generated from the reflective activity, artefacts inquiry, as well as lesson observations.

1.10.7 Chapter Seven: Addressing the Philosophical Why question of the Study

This chapter discusses concerns of the philosophical question “why” and presents why voices are the way they are on the teaching of climate change. Semi-structured interviews and focus-group discussions were used to generate data for answering this question. Participants gave reasons based on the seven curriculum themes that were used in the analysis stage.

1.10.8 The Summary of Teachers’ Voices

The chapter provides a conclusion and summary of findings according to the study objectives as well as the critical questions. It presents a summary on the themes that drive teachers’ voices. To finalise this chapter recommendations are presented as well as recommendations for future research.

1.11 Conclusion

This chapter presented an outline of the whole study. It gave firstly the study’s background and context. The rationale, the problem statement, its significance, purpose, location, research objectives and questions, and the research methodology that guides this study are briefly discussed. The organisation of the entire thesis is also presented. The next chapter focuses on professional voices. It discusses literature that addresses the constructs of the professional voices.

CHAPTER TWO

UNDERSTANDING PROFESSIONAL VOICES

2.1 Introduction

The preceding chapter gave the synopsis of this entire study on voices of geography teachers in climate change teaching in Eswatini. The background, the rationale, location, a brief review of relevant literature, the objectives and research questions, the research approach, design, paradigm, data collection methods as well as ethical issues were presented. This chapter engages literature on voices of teachers which is the phenomenon. This chapter reviews literature on the professional voices.

A key aspect of the literature review section of a study is offering varied ideas on a topic being studied through critically analysing other scholars' work in that particular field. Ultimately, the literature review offers scholars' philosophies on a particular topic, thus developing a deeper understanding on such (Shunda, 2007). According to Okeke and Van Wyk (2016), the literature review is a critical evaluation of present studies on a specific phenomenon. Cohen et al. (2011) also believe that the literature review helps to clarify key concepts, and to connect and contribute to the broad discourse on the topic which improves literature on that particular field. As the literature review discusses existing literature about a topic, it also points out gaps in a particular topic (Creswell & Poth, 2016; Silverman, 2016).

In this chapter literature on voices of teachers is interrogated to understand firstly the meaning of voices in this context. Secondly, it attempts to comprehend how the voices are produced and stored in the subconscious minds of teachers. I do this by interrogating five principles of the professional voices: prescribed content, teaching objectives, teaching activities, the instructor role of the teacher, and formative assessment that drive the professional voices.

2.2 The conceptualisation of teachers' voices

While a variety of definitions of the term voice are available in literature, all through this study, a "voice" refers to individual actions informed by experiences that in due course directs action

(Bainbridge & Macy, 2008). Bainbridge and Macy (2008) elaborate that the voice attempts to represent one's feeling about self and actions that result from experiences. Correspondingly, Fowler and Fowler (1991) as well as Khoza (2019) refer to a voice as a particular view or feeling that is articulated by an individual. Someone becomes aware of this through interrogating subconscious thoughts and experiences by means of the conscious mind.

Worth noting in the description of the voice and what the concept means in the study is that the voice talks of actions that are exhibited by individuals. Secondly, it is noted that the voice is personal, depicting individual feelings that reflect the individual's experiences or thoughts. The feeling that informs the voice is born of experiences. This study explored geography teachers' voices on the teaching of climate change seeking to elicit the teachers' individual views, explanations or meanings of their experiences that pertain to climate change teaching. Ultimately, the teacher's voice is a crucial source of knowledge in informing how climate change is enacted (Booyse & Du Plessis, 2014; Hoadley & Jansen, 2009).

The significance of exploring teachers' voices in curriculum enactment spaces has been appreciated by numerous of scholars such as Fomunyam (2014), Khoza (2019), Rahimi and Zhang (2015), Samuel (2009), Shoba (2018) and Tsang (2004). Accordingly, Shoba (2018) and Tsang (2004) assert that it is essential to explore teachers' voices because they offer an opportunity to recognise causal factors of failed or successful curriculum enactment. The teachers' voice is behind the understanding of how, what, and why teachers handle a topic like climate change the way they do in their classrooms during teaching and learning (Rahimi & Zhang, 2015; Tsang, 2004). Moreover, the teachers' voice adds value during curriculum enactment as the teacher uses it to both build-up and re-construct subject content for learners (Fomunyam, 2014). The voice of teachers' stems from practice experiences; understanding the voice may help to improve teachers curriculum enactment practices.

Furthermore, Samuel (2009) concedes that it is imperative to take teachers' voices into educational deliberations as understanding the voices has the potential to produce crucial data that may help educational curriculum researchers. This is made possible by understanding of the teachers' voices helping to unveil fundamental pieces of information that would have been concealed if voices were voices of teachers ignored. Teachers' voices play a variety of roles in teaching and learning of a contentious topic like climate change. Clearly, one of the roles is that the voices may inform teachers on how best enactment practices can be enriched. This submits that teachers' voices are a powerful element in teaching and learning spaces.

More so, the importance of exploring voices of teachers was realised in a qualitative study in two Canadian universities where forty-seven teachers voices were consulted on teaching literacy in elementary classrooms (Bainbridge & Macy, 2008). The findings of this study unearthed many concerns on the topic which were exposed after their voices were explored. The recommendations of the findings from the voices of the Canadian teachers were useful in improving the teaching of literacy. Furthermore, the voices from the teachers suggested other measures that could be taken to improve practice. If teachers' voices are heard, experiences and further suggestions on how some of their challenges in practice can be addressed. In the Canadian study referred to here, the findings suggested possible alternatives to address some of the besetting challenges of literacy teaching in Canada.

On another note, Ross et al. (2014) support that gaining teachers' voices is vital in educational landscapes, but observe that the concept of teacher's voices is a complex issue. This suggests that voices of teachers engage a number of multi-faceted philosophies. One of the dynamics around voices is that they are not inert (Khoza, 2016). Khoza (2016) notes that teachers' voices are affected by political, historical as well as social factors. Politically, teachers may be made to experience a certain phenomenon because of political atmospheres which may be operating at institutional (school) level and or even in a country or at international level. Since climate change is a global concern, the likelihood of political influence on Eswatini geography teachers cannot be disputed.

Furthermore, teachers' voices can also be affected by historical and social factors (Ross et al., 2014). These factors exist in the social spaces which teachers are in or have been exposed to; such in turn will affect their identities and needs. Historical and social factors could be affecting the teacher's background, from place of birth to where they grew up and schools as well as tertiary institutions they attended. Their present working spaces also constitute social factors; where the school is located has an effect in the voice of teachers. The voice of teachers is affected by exterior factors that may not be within them, nevertheless, as the teachers' experience the political, social and historical dynamics, their voices on teaching climate change emerges.

As much as voices of teachers could be an intricate subject, studying the voices of geography teachers may help to understand climate change teaching in Eswatini. Apart from the complexities of the nature of voices, it is imperative for one to establish how and where the voice is sourced. Voices are moulded from reflections which are generated from the

subconscious minds of individuals (Khoza & Biyela, 2019; Mabuza & Khoza, 2019; Mpungose, 2018). Reflection is described as a process which utilises the conscious mind to cross-examine past and present actions, experiences, and thoughts from the subconscious mind (Budden, 2016; Dlamini, 2018; Khoza, 2019; Khoza & Biyela, 2019; Mabuza & Khoza, 2019).

In particular, Dewey (1933) grants that reflection is a particular way of thinking which professionals such as teachers utilise to produce their voices. Mpungose (2019) observes that reflection denotes meaning making of individuals, which involves their experiences that are expressed in the form of voices. The voices of teachers are expressed in personal actions which affect their personal teaching habits (Khoza, 2016). The personal actions gained from experiences which constitute the voice of geography teachers possess volumes of information that can offer insights into the dynamics of climate change teaching in Eswatini.

According to Khoza (2019) the insight from the teachers' voices is generated through professional reflections. This occurs when teachers interrogate their minds and consciously reflect on their past experiences to produce voices that can be useful in developing new teaching habits (Mabuza & Khoza, 2019). Voices from teachers assist to identify, analyse and tackle problems in teaching and learning spaces in order to realise solutions (Mpungose, 2019). Teachers' voices can be divided into three: professional, societal and personal voices. The section that follows discusses the professional voices in order to address the purpose of this chapter.

2.3 Theorising Professional Voices

This section of the study seeks to address the descriptive or "what" query of the study: what are geography teachers' voices on the teaching of climate change in Eswatini? The teachers' professional voice stem from the teachers' experiences in professional spaces where actions and habits are guided by strict rules of a specific profession. These strict rules and procedures according to Amory (2014), Khoza (2017a) and Waghid and Davids (2016) are obtained from formal learning and based on scientific researched facts. The geography teachers' professional voices are generated from their knowledge obtained from formal learning spaces. Such formal learning spaces include their school and tertiary institutions. In these institutions, the formal learning where the formal voices are obtained is such that individuals are forced to follow specific instructions to meet needs of the discipline (Khoza, 2015b).

Professional voices are produced from teachers' exposure to spaces where prescribed climate change content is dominant and further given preference. Schools, as well as tertiary institution knowledge can be said to be professional, as learners consume prescribed curricular that involves researched knowledge (Bernstein, 2006; Booyse & Du Plessis, 2014; Pinar, Reynolds, Slattery, & Taubman, 1995; Tyler, 2013a). The prescribed curricular content is also labelled formal school/powerful knowledge which is characterised by facts (Hoadley, 2017; Young, 2013).

Moreover, the professional voices the teachers acquire in the learning institutions are driven by a form of content that gives more privilege to the cognitive domain than other domains (Bernstein, 1999). The cognitive domain within the professional spaces is utilised in deciding whether learners will be successful in geography lessons through mastering the specific content given. Significantly, Khoza (2015) avers that the geography teachers' voices are built from a specific geographic pool of terminologies, concepts, ideologies, knowledge as well as theories. The professional voices undoubtedly support the performance curriculum described by Bernstein (1999) which proposes specific and particular emphasis on objectives, content, activities, and assessment practices. These concepts will be discussed to comprehend how they anchor the professional voices of geography teachers.

Worth noting is that, in Eswatini, high school teaching and learning has been driven by the performance curriculum from the British colonial times up to 2009 when a localised curriculum was rolled out. This performance/vertical curriculum was characterised by having internationally identified content for every subject. Learners were taught foreign knowledge, which was not about their local country but covered many countries. Even the learners' performance was measured against global standards. Notably, the assessments which learners undertook were summative and concentrated more on what learners had achieved, focusing mainly on what was cognitively missing in the learners' responses. As Khoza (2015) noted, this form of curriculum encouraged mastering of geography content more than reconstruction of geographic knowledge. Teaching followed a curriculum document that was a blueprint which expected teachers to efficiently enact specific content following laid down objectives. Such guided teachers' activities in class and learners had to be summatively evaluated by international standards (Khoza, 2021; van den Akker, 2013).

It is noteworthy that the present crop of geography teachers was taught the performance curriculum briefly discussed above. Their exposure to that curriculum may have contributed in

giving them a voice which the study aims to probe. The professional voice is driven by the content teachers enact in their geography classes. The following section dwells on climate change content.

2.3.1 Climate change content

Before going on to discuss climate change content, an effort should be made to comprehend what climate change means allowing that the discussion of professional voices and content of climate change teaching is understood on the basis of the meaning of climate change.

2.3.1.1 Understanding climate change

The climate of planet earth is one of the most complex natural systems. The earth's climate affects the atmosphere, all living things (plants and animals), land and water surfaces. The entire geographic phenomenon that takes place on planet earth is influenced by the climate. On a narrow scale, climate is defined as the average weather condition experienced in an area (Bunnnett, 1985; Singwane & Malinga, 2012; STRACHAN, 1988; Strahler & Strahler, 2007; Vilakati, 1997; White, 1984). In a more rigorous description, the World Meteorological Organisation describes climate as a statistical description or the mean of climatic elements ranging over a period of about thirty years. The common weather elements which are usually used as variables include precipitation, sunshine, wind, humidity, and temperature to count but a few. The climate experiences change now and then.

The climate of our planet earth is indisputably very important as human activities and all of nature depend on it (Hartmann, 2015; Miller, 2019). However, according to Anyanwu et al. (2015a), armed with evidence, scientists are claiming that the climate of the earth is changing. The scientists posit that the changes in climate will be taking place all the way through the 21st century and further. The Intergovernmental Panel on Climate Change (IPCC, 2014), however, laments that the negative results of climate change disturbs much of humanity if not attended to by governments. Interestingly, climate change is one of the extensively debated environmental disasters among scientists and politicians, yet there are disagreements amongst experts on the definitive meaning of climate change. This has led to various meanings of climate change in the literature. According to Vogel and Vallabh (2013), climate change denotes the significant changes in long-term patterns of weather specific to areas/regions or even the whole earth.

Moreover, climate change can result in seeing a rise or decrease in the occurrence of dangerous weather conditions in an area/region. Alternatively, climate change may cause a dramatic shift of an area/region's normal weather patterns (Anyanwu et al., 2015a). Although geographers argue endlessly about the cause of climate change, Vogel and Vallabh (2013) state that experiencing climate changes is a natural phenomenon, but lately it has been fuelled by various activities human beings engage on. The IPCC (2014) report claims that climate change at this time is mainly a result of global warming. Global warming refers to the rise of usual average temperatures of the earth. This rise is attributed to an increase in the absorption of carbon dioxide together with other greenhouse gases.

The greenhouse gases are those gases that cause ultraviolet rays to be retained in the earth's atmosphere increasing the earth's temperature (IPCC, 2018; Vogel & Vallabh, 2013). The main sources of greenhouse gases are produced from the burning of fossil fuels: carbon dioxide is one of such gases. The cutting down of trees /deforestation also is a major cause of global warming. Methane that comes from rice paddy plantations together with that which comes from the waste of livestock (cattle and sheep) also causes global warming. Other sources of gases that cause global warming are chlorofluorocarbons which are sourced from manufacturing of turpentine, refrigerants, spray-can propellants and from nitrous oxide (Lidstone & Stoltman, 2008; Low, 2006; Mochizuki & Bryan, 2015; Nguyen, 2018; Nhamo & Shava, 2015).

Global humanity is faced with the problem of climate change. It has become one of the most pressing problems, thus the way in which education responds in addressing the challenge of climate change is crucial (Nhamo & Shava, 2015). Anyanwu et al. (2015a, p. 1) observe "*that one of the worldwide reactions to dealing with global climate change issues is to foster introducing climate change in the curricula of all school levels*". The Eswatini geography curriculum embraced this universal response and climate change was introduced in the geography curriculum. Geography teachers were expected to enact this topic in their classes when the new curriculum was introduced in 2009. The teachers, it was assumed would enact the correct content to the learners. Furthermore, climate change content offered to learners is critical in that learners have to be equipped with mitigation and adaptation knowledge from climate change lessons. This is because climate change impacts in countries are evident.

According to Nhamo and Shava (2015), some studies have been undertaken in Eswatini to determine whether the country experiences climate change. And there was evidence that it does. For example, there has been a steady decline in rainfall received in the country over the

last twenty years (Manyatsi et al., 2010; Nhamo & Shava, 2015). Furthermore, the country from 1990 has been experiencing recurrent droughts, tropical cyclones as well as torrential rains which led to flooding, especially in the years 2000, 2007, 2010 2018. The Ministry of Education was tasked with introducing climate change education at all school levels of the Eswatini education system (Mbabane, 2011). For the secondary and high-school levels geography was chosen as a vehicle for teaching climate change to learners. Geography teachers therefore found themselves having to enact climate change in their classrooms. The geography teachers who are to enact climate change need climate change content or knowledge to do so.

In essence, the curriculum has specific general broad objectives that the geography teachers are expected to enact (ECESWA, 2020). Teachers are to describe and explain the causes of climate change to their learners. This expects teachers to introduce learners to the general causes of climate change globally and concentrate on local examples. The teachers are also expected to suggest mitigation as well as adaptive responses on climate change. Moreover, the teachers are to select a case study which should be used to further understand climate change. The teachers require a specific voice to enact climate change and as such there is need for them to understand the voice that drives the teaching of climate change.

2.3.1.2 Content in climate change teaching – the professional voices’ perspective

Scholars in the educational space have failed to give a specific meaning to the concept ‘content’. There are various meanings that have been provided to define content (Bernstein, 1999; Hoadley, 2017; Khoza, 2015; Shulman, 1987; Tyler, 2013; Villegas & Lucas, 2002). Firstly, Villegas and Lucas (2002) describe content as major concepts, facts, main beliefs and theories that require to be conveyed to learners. Furthermore, content which will be sometimes framed as knowledge in this study has been defined by Basil Bernstein (1999) as what is to be learned. Shoba (2018) pronounces content as a combination of teachers’ pedagogical knowledge combined with the teachers’ belief systems that include silent talk about a subject or topic such as climate change. Climate change content knowledge describes what the geography teacher expects to teach in class or expects the learners to learn (Hoadley, 2017; Shulman, 1987).

Additionally, Shulman (1987), together with Khoza (2015), concur that content is the main knowledge source which teachers rely on for teaching and learning. Likewise, Mpungose (2018) also maintains that content knowledge refers to facts about a particular subject.

Geography teachers, it is implied, ought to have or to acquire sufficient content about climate change so as to provide learners with relevant and reliable knowledge that is meaningful to them and their society. The content knowledge is important in professional voices' spaces (Booyse & Du Plessis, 2014; Fisher & Binns, 2016; Tyler, 2013b).

The strength of content knowledge is that it is constructed by incorporating vertical knowledge which scientific in nature (Khoza, 2018; Mabuza, 2018; Makumane, 2018; Mpungose, 2018). Researchers, Bernstein (1999), Khoza (2017) together with Hoadley and Janson (2009) aver that scientific knowledge is that kind of content that is systematic knowledge of the present. Furthermore, scientific knowledge is the kind of knowledge obtained through subject specialists and research. Such content knowledge is then made available in the form of books and articles. According to Khoza (2018) such content knowledge focuses mainly on the subject needs.

Scholars such as Tyler (2013a) and Shulman (1987) posit that content knowledge is a key element in teaching and learning. According to Anyanwu (2015), teaching climate change is a complex activity. This intricate action of teaching always commences from the teacher's comprehension of the content which is what the learners should know. It can be argued that in teachers' professional voices, content occupies a pivotal role (Khoza, 2016). Geography teachers thus require a certain level of climate change content knowledge to effectively enact the prescribed curriculum. Mweshi, Munyati, and Nachiyunde (2019) assert that the comprehension of content facts is the most important component for teachers. Shoba (2018) observes that content knowledge greatly influences teaching and learning as it affects how a teacher will teach a topic such as climate change. Content knowledge is strongly connected to successful climate change teaching.

Undoubtedly, the subject matter information or facts are a crucial requirement for classroom teachers (Koehler & Mishra, 2009). Geography teachers should master climate change subject matter as subject content knowledge varies from subject to subject. According to Mpungose (2018), van den Akker (1999), Shulman (1987) and Bernstein (2006), it is unreasonable for teachers to teach a lesson without the necessary and correct content knowledge. Such a situation places learners in danger of hearing incorrect conceptions about climate change. When geography teachers attempt to teach climate change without reliable content knowledge, they may fail to serve the needs of the learners.

Additionally, Berkvens, Van den Akker and Brugman (2014) observe that teachers driven by professional voices are reliant on content knowledge. Teachers are expected to have subject-matter proficiency. Under the professional voice standpoint, the teachers are expected to assist learners in class to master climate change content knowledge (Pratt, 2002). Concurring with this viewpoint of professional voices on teachers and content knowledge is Kinuthia, BrantLey-Dias, and Clarke (2010) who posit that the teachers admit that the demonstration of truthful and precise well-organized content knowledge is an essential principle in climate change lessons. Hyndman and Pill (2016) note that the reason content knowledge is required as from the professional voices' angle is that teachers are aware that professional voices strongly prioritise tests and examinations of the content knowledge. Khoza (2019) admits that teachers from the professional voices perspective teach content knowledge in order to help make their learners grasp the content so that they pass their grades.

The teachers from the professional voices' standpoint prioritise the climate change content knowledge which is usually prescribed content of the performance curriculum (Bernstein, 1999; Hoadley & Janeson, 2012; Khoza, 2015). The content knowledge is prioritised from the professional voices viewpoint. Teachers become technicians whose obligation is to deliver content that is planned. Teachers may therefore, have some deficits in planned climate change content knowledge. It is assumed that if the teachers experience challenges in delivering climate change prescribed content, it is likely that they also will have some difficulties in assisting learners who find it difficult to comprehend climate change content.

Fomuyam and Khoza (2018) assert that content knowledge is a lifeline for any enacted curriculum like geography in Eswatini. The scholars argue that generally curriculum is about content and how it impacts consumers. Thus, content is vital for any subject area. Without content there can be no meaningful teaching and learning which involves knowledge construction by learners. Furthermore, content is vital as it helps to shape learners' understanding of a topic like climate change. The resonances across all the studies here have suggested that content knowledge under professional voices standpoint refers to all prescribed information written and prearranged for a particular subject like geography, for teachers to deliver to learners. Content knowledge for professional voices as content knowledge addresses the subject needs (Khoza, 2018; Sokhulu, 2020).

A qualitative case study conducted by Fomuyam and Khoza (2018) on literature modules taught in a Cameroonian university found that content knowledge is important for lecturers guiding them on the knowledge that was expected by the intended curriculum. Geography teachers' professional voices rely on specific content. Teachers should understand the content so as to enact it clearly and further be aware why they teach any particular content in their classes. The type of content is mainly cognitively driven content. The identified content furthermore is organized in such a way that all the learners are exposed to a similar form of content facts ranging from the highest to the lowest levels of any given content (Khoza, 2016b).

Furthermore, Booyse and Du Plessis (2014) posit that the type of content professional voices rely upon requires conceptual thinking. Conceptual thinking implies that such content knowledge is driven by a specific learning or subject discourse which is specific to a particular subject such as climate change. The content is also based on evidence; it is based on researched facts on a particular subject. Such content knowledge will always be written down and enacted for the learners. Teachers who rely on such content knowledge may not accommodate other sources of knowledge like everyday knowledge (Marsh, 2009; Pinar, 2012; Young, 2013).

Shoba (2018) observes that the professional voices of teachers bank on cognitively driven content whereby the "educated" geography teacher will transfer climate change knowledge to the "uneducated" learner. Once a teacher assumes this position of being a carrier of content knowledge, teaching and learning automatically becomes teacher-centred dominated by rote learning (Booyse & Du Plessis, 2014; Hoadley, 2017; Ornstein & Hunkins, 2009; Thijs & Jan van den Akker, 2009a). Having noted the importance of content knowledge for teachers, Fortner (2001), states that there is first-hand proof from various nation states that teachers' content knowledge on climate change is inadequate. Anyanwu et al. (2015a, p. 2) lament the observation made by Fortner (2001) noting that, as the climate change issue in the world has become one of the main topics in the curriculum in many countries, it is important for geography teachers to gain up-to-date facts on the basics of climate change. This would enable teachers to present climate change perceptions in ways that encourage learners to study climate change further developing a deeper understanding of this crucial topic.

Geography teachers teaching climate change in Eswatini should therefore possess adequate content knowledge to enable them to enact the topic effectively. Moreover, the content knowledge teachers should possess must be current, climate change being a dynamic

phenomenon. For McCaffrey and Buhr (2008), climate change teaching requires sound content knowledge in the geography teacher. If teachers have a limitation on content knowledge McCaffrey and Buhr (2008) fears that misconceptions on climate change knowledge will reach learners. Martin (2008) assures that content knowledge is an important factor in geography teacher's effectiveness. However, research in some countries has uncovered that geography teachers are deficient in content knowledge. Nhamo and Shava (2015) point out that in most countries in Southern Africa geography teachers are not conversant with climate change content knowledge.

This limitation, according to Nhamo and Shava (2015), negatively affects the success of climate change education in the Southern African curricula. Van Eeden et al. (2018) concede this limitation for South African geography teachers. Some geography teachers do not teach climate change because of lack of content knowledge. For Van Eeden et al. (2018) the cause of lack of climate change content for the teachers may be ascribed to dearth of training on climate change education. Wilmot and Irwin (2015) point out that if teachers lack content knowledge, the teachers will lack confidence to effectively teach climate change.

Furthermore, qualitative studies by Boon (2010) in Australia and Ekpoh and Ekpoh (2011) in Nigeria, respectively, discovered that geography teachers had very little content knowledge as well as general understanding of climate change. In both studies the teachers hinted about lack of learning experience in climate change knowledge. The teachers argue that they had not had the opportunity to learn climate change either at high school or in tertiary institutions. The teachers lamented that climate change teaching started when they were already in practice. As they enact it, they realise their shortcomings in content knowledge. In a quantitative study on geography teachers' knowledge bases for effective teaching in Britain, the interviewed participating teachers overwhelmingly admitted that they drew on their prior school experiences and content in their teaching (Martin, 2008).

Additionally, a qualitative study using semi-structured interviews conducted by Vujovic (2014) involving 32 geography teachers in the Gauteng province of South Africa found a more or less similar situation. The study discovered that the teachers had some limitations in their understanding of climate change concepts and processes. The geography teachers also showed limited understanding of the whole topic of climate change. These teachers, according to the findings of the study, confused some concepts of climate change learning which put their

learners in danger of consuming false knowledge. The teachers, according to the study, recommended in-service training which would help on the issue of climate change content.

These three studies cited above were conducted by geography educators with vast experience in climate change. The findings suggest that geography teachers in the three cases under study seriously lacked content knowledge on climate change. The teachers were not confident to enact the climate change topics in class. Mpungose (2018) notes that such a situation is unfair to the learners who are entitled to factual content. Likewise, in Eswatini in 2009, the geography curriculum was reviewed specially to take care of emergent topics, like climate change (Nhamo & Shamva, 2015 p. 214). When climate change was introduced in 2009 into the EGCSE curriculum, most teachers had not learnt climate change as a subject in tertiary institutions or at schools. Thus, it was realised that most of the geography teachers lacked content knowledge and were not confident to enact the curriculum as expected.

However, a quantitative study by Anyawu (2015) that used questionnaires to gather data from 194 teachers of geography in South Africa offered different findings. The study measured the level of the FET geography teacher's literacy of climate change knowledge and pedagogy in the Western Cape Province. Its findings were that a considerable number of teachers from the region were confident of their climate change content knowledge. Even though there were some inadequacies in teachers' content information on climate change, generally, findings through the tests that the teachers wrote showed that teachers were confident about their climate change content knowledge. This study suggests that it is conceivable that teachers possess relevant content information to teach climate change. However, teachers are channelled by specific teaching objectives in their teaching which is the next topic to be discussed.

2.3.2 The significance of objectives in professional voices

Objectives are defined as statements of desired teaching and observable behaviour that become evidence for teaching and learning (Chen, Kolmos & Du, 2021). Moreover, Mpungose (2020) and Tyler (2013) continue to describe objectives as specific statements of any teaching intention. For Santos, Mandado, Silva and Doiro (2019) objectives are statements that clarify expected or anticipated learning outcomes. Khoza (2015) concurs with Mpungose (2018) upholding that objectives address subject needs. Furthermore, Khoza (2016) posits that

objectives belong to the teacher; consequently, they are clear expressions that are framed in accordance with the teacher’s intents. In professional spaces, teaching objectives are crucial as the objectives arguably play a variety of important functions for teachers.

In professional voices’ spaces the drawing of objectives is guided by Bloom’s taxonomy. Bloom’s taxonomy is a method of classifying objectives as well as intellectual behaviours that are thought to be vital in the process of delivering content knowledge to learners (Forehand, 2010). Since content knowledge is critical in professional landscapes; teachers use educational objectives that are classified under six categories to describe the intellectual processes which learners come across when learning (Armstrong, 2016). The six categories of Bloom’s taxonomy range from lower-order objectives which call for less cognitive processing to higher-order objectives that require a greater degree of rational processing (Adams, 2015). Khoza (2013b, 2015b, 2016b), Dahri, Munir, and Dahri (2018) and Mpungose (2018) agree that Bloom categorises instructional objectives cognitively to meet demands of prescribed content knowledge; and they belong to the teacher.

The cognitive dimension which is concerned with subject/content knowledge addresses six categories (from the simplest to the most complex) as shown in Table 2.1 below.

Table 2.1

The Cognitive Domain, what Learners are expected to do, and Action Verbs.

Cognitive Domain	Expectation of Learners	Outcome Phrasing/Action Verbs
Remember	Recall and recognise appropriate knowledge from long-term memory	Define, list, state, name, tell, identify, show, enumerate
Understand (Comprehend)	Discern, create meaning and interpret content knowledge learnt	Classify, compare, infer, explain, solve, distinguish, discuss
Apply	Use a learned technique in a new or familiar situation	Show, demonstrate, illustrate, modify,

		select, assess, examine, organise, construct, find, predict, relate, calculate, develop, use
Analyse	Break down information into different parts; think about how the parts relate to overall structure	Categorise, determine, divide, separate, deduce, compare, examine, distinguish, calculate, connect, arrange, experiment, contrast, relate
Evaluate	Critique, give personal opinions, and check	Conclude, convince, decide, argue, justify, criticise, assess, predict, assess, contrast, appraise, judge, ascertain, compare, interpret
Create (Synthesise)	Accomplish creative tasks, generate and produce new information	Create, argue, develop, compose, revise, manage, create, reconstruct, generalise, construct, compile, device, modify, assembly

Note. This table has been sourced from, Booyse, C., & Du Plessis, E. (2014). *Curriculum studies: Development, interpretation, plan and practice*. Van Schaik. Khoza, S. B. (2016). Is teaching without understanding curriculum visions and goals a high risk?. *South African Journal of Higher Education*, 30(5), 104-119. Krathwohl, D. R. (2002). A revision of Bloom's taxonomy: An overview. *Theory into practice*, 41(4), 212-218.

Table 2.1 displays the six categories of the cognitive domain, the anticipated learning to be attained by learners as well as the action verbs for phrasing the objectives which assist the teacher in formulating measurable learning objectives for learners. Since Khoza (2016b) maintains that objectives belong to the teacher, the phrasing of objectives using action verbs assists teachers to express learning objectives appropriately. When the objectives are correctly expressed, the geography lesson will be directed towards meeting the needs of the teacher; the expected content knowledge will be delivered as the teacher has planned. Furthermore, the action verbs associated with each category of the cognitive domain assists teachers in framing assessment tasks for learners. Learning then is towards fulfilling these domains.

The lowest cognitive domain demands learners to remember and recall appropriate knowledge. This is the foundational cognitive skill and expects retention of specific discrete knowledge or information (Adams, 2015). The remembering of the cognitive domain stage simply expects learners to state or define any climate change content. On the next level, comprehension, learners are expected to display some understanding of the meaning of the knowledge or information on climate change. Learners should be paraphrasing it in their own words to display their own understanding. In comprehension, learners are driven by an objective where they would be expected to discern knowledge learnt. In the comprehension cognitive level, the objectives assist learners to incorporate existing knowledge on climate change into their cognitive schemas to show understanding of climate change content. The learners can do this through explaining or discussing in own words any climate change content learnt.

In the application domain the learners are expected to use a learned technique to demonstrate or illustrate knowledge in new or familiar situations. Furthermore, learners are expected to analyse knowledge into different parts relating these to the overall structure of a particular lesson. This becomes the analysis domain; learners relate, compare, and contrast any climate change content. In the analysis cognitive domain learners are expected to be critical thinkers who can distinguish between a climate change fact and opinion. Some domains on a higher-level demand a learner to evaluate by giving personal opinions on climate change issues. The learners are expected to justify, appraise and judge. The pinnacle of the cognitive domains is the creation stage where learners are expected to generate and produce new information.

The cognitive categories shown and discussed in Table 2.1 cater for each learner's cognitive needs as they accommodate learners' varied cognitive competencies (Mpungose, 2018). The use of objectives in professional voices is of great worth to teachers as it caters for all learners, irrespective of their cognitive capabilities. The first and lowest cognitive domain for example, is that in which expects learners remember any climate change phenomenon that they are learning. The learners, by the end of a climate change lesson, can be expected to define climate change. This domain expects learners simply to recall the definition of climate change. The domains stretch to the highest cognitive domain, where learners are expected to synthesise or create knowledge on their own. This can be when learners are expected, for example, to argue on effects of climate change in crop production in their community. Through the use of the six cognitive domains, the objectives are clear for the learners. Teachers should draw them in such a way that they show the learners what will be achieved by the end of every climate change lesson.

The use of Bloom's taxonomy (thinking domain) in drawing objectives was examined in Dahri and Muneer's (2018) mixed methods case study that sought to investigate the use of the Bloom's taxonomy cognitive objectives in science teaching in Sidhi. The participants in the study were 508 science teachers and 50 principals. For data generation questionnaires and interviews were used. The study established that 83% of the science teachers were failing to employ the objectives that demand knowledge, comprehension, and application during teaching. A majority of principals also declared that they lacked understanding and knowledge of cognitive instructional objectives. Professional voices therefore utilise objectives to meet needs of the content. The lack of understanding the cognitive domain of Bloom's taxonomy may compromise the level of the subject content needs. This indicates that a geography teacher may fail to reach the expected levels of learners when teaching climate change. A study could thus explore the extent to which and ways by which geography teachers utilise Bloom's taxonomy in formulating cognitive domain objectives.

According to Booyse and Du Plessis (2014), Tyler (2013) and Jansen and Hoadley (2009), objectives are derived from three important elements: the needs of every subject discipline, as well as the needs of learners, and society at large. As such, objectives are a result of subject specialists' thorough scientific research, the needs of the society, as well as the needs of learners. Tyler (2013) refers to this as the 3-S model for the formulation of objectives. The 3-S model describes how objectives are derived from society, students, and subject specialists. Thijs and Van den Akker (2009) support the 3-S model and state that objectives have to be based on students or learners for the development of their self-esteem. This self-esteem becomes evident in the effectiveness and success of the learners in society. Secondly, objectives are to be derived from the society so as to capacitate learners with valued capabilities within the community. And lastly, subject specialists offer quality content knowledge that mirrors the needs of both the society and learners.

However, the 3-S model is critiqued by scholars such as Flinders and Thorton (2021) who lament that the idea of having objectives derived from subject specialists is criticised on the grounds that the objectives become too technical. The technicality of the objectives makes them inappropriate for a large variety of learners who are at different intelligence levels and situated in diverse societies. Moreover, the use of societal needs to formulate objectives is condemned on the basis that the identification of societal needs does not necessarily designate their desirability. This is because the societal needs or common activities that can be used to derive

objectives may not be interesting to the learners which objectives are set for. Originating the objectives from the learners themselves is censured because different children have different needs, thus it may be impossible to select objectives that suit every learner.

Although the EGCSE geography curriculum of Eswatini has taken the shape of an integrated curriculum, it appears to be a performance curriculum as it stipulates the general objectives as well as specific objectives for each theme and sub-theme. For climate change, for example, the general objective is climate change and the specific objectives are; “definition of climate change, causes of climate change, impact of climate change and describe mitigation measures and adaptive responses” (Eswatini Examinations Council, 2020, p. 6). Geography teachers, when teaching climate change, may be able to formulate instructional objectives using these given specific objectives. The teachers in their professional space enacting a performance curriculum are expected to formulate instructional objectives to cater for learners, the subject, as well as needs of the society, as they teach climate change.

In professional spaces more emphasis is laid on educational objectives because the objectives become the standard by which teaching material is carefully chosen, the subject content is drawn up, instructional actions are established, and assessment is prepared (Flinders & Thorton, 2021, p. 60). Tyler (2013) admits that objectives give any professional teaching a clear and defined purpose for teaching, educational purpose being to accomplish specific education. Being sure of objectives allows any educational course to be integrated intelligently and systematically into the professional space.

In actual fact, the essentiality of objectives in the performance curriculum that in turn influence the professional voices, is based on the belief that learning should be for behavioural change (Booyse & Du Plessis, 2014; Tyler, 2013). Overreliance on objectives by the professional voices is driven by the focus to gain knowledge which aims at changing the way learners behave. Learning therefore, is approached with objectives which can be seen or recognised in the learner’s change in behaviour. Geography teachers who use objectives for teaching climate change are aiming at changing learners’ behaviour upon gaining climate change knowledge.

The objectives also help geography teachers in selecting appropriate teaching activities and resources for a specific lesson. Objectives help the teacher in planning for a lesson. As such, under professional voices, objectives are crucial as a guide for both teachers and learners.

Biggs (2011) states that objectives give a clear idea to teachers of what they desire to teach. Resonating with Biggs (2011), Flinders and Thornton (2021) affirm that the major advantage of relying on objectives when teaching is that the objectives offer the capacity of promoting and enhancing improved precision in practice. Moreover, objectives also highlight the assessment procedures to be used by a teacher during teaching and learning (Dlamini, 2018; Flinders & Thornton, 2021; Marsh, 2009). Generally, teaching objectives pinpoint the desired behaviour learners are expected to exhibit after a learning situation within the professional voices' spaces (Snowman & McCown, 1984).

Stará and Stary (2019) view the essentiality of objectives for teachers as a guide towards all that happens during teaching and learning. Objectives are perceived to be responsible for directing teachers towards choice of teaching activities. Moreover, they serve as a guide towards choosing other teaching skills to achieve intended knowledge and skills during curriculum enactment. Objectives assist teachers in being a skeleton map to follow in their teaching. Enacting the performance curriculum is guided by learning objectives, the objectives giving a framework guide for a teacher to follow in enacting any school curriculum (Stara & Stary, 2019).

Shephard (2009) concurs with Stara and Stary (2019) and asserts that the purpose of using learning objectives in teaching is to give the education progression of pupils a clearer structure. The clear structure is obtained through the sense that the learning objectives help teachers to fulfil their expected role. Marzano and Kendall (2006) realise that if objectives are not clear to the learners, they are unlikely to understand the lesson. Furthermore, for significant positive consequences in learning, objectives, content, activities and evaluation procedures must be in agreement (Stara & Stary, 2019). If there is a discrepancy between these, the learners are lost on their way to knowledge. Accordingly, Marsh (2009, p. 46) asserts that objectives greatly assist teachers in the entire process of planning, as the objectives lay a foundation for well-planned teaching.

Another major importance of setting objectives for teaching and learning is that they assist the teacher in providing feedback to learners (Purcell, 2014). During teaching and learning feedback is an important component and a key element in formative assessment. Research has exposed that setting learning objectives and giving feedback are reciprocally linked (Marzano & Kendall, 2006; Stara & Stary, 2019). Quality feedback cannot be provided short of well-

formulated learning objectives, and if the setting of objectives is not followed by providing feedback, the significance of learning objectives is lost.

The learners themselves can use objectives to support each other's learning. Learners can efficiently evaluate their peers as well as their own advancement in learning through the support of clear formulated objectives (Shepard, 2009). Marzano and Kendall (2006) lament that the major risk that teachers expose themselves to when constructing objectives is the focusing of the learning objectives on cognitive knowledge only, neglecting affective and psychomotor objectives which are also crucial for addressing learners' needs holistically.

On formulation of objectives, Stara and Stary (2012, p. 231) posit that these should not be too briefly defined, causing a greater focus on the objectives. In other extreme scenarios, objectives may drive learners towards learning for the purpose of assessments only. Researchers also point out that the opposite extreme occurs when the objectives are too general. Teachers therefore require a certain skill or art in developing objectives that function well to perfectly meet their demands as also those of learners. According to Shepard (2009) teachers require to practice adequate flexibility when constructing learning objectives so that the objectives do not disadvantage their practice. Such suppleness is required in order to provide learners with enough space for personalisation of lessons through adapting the learning objectives to their needs.

In the professional voices, the teachers emphasise the setting of objectives because their aim is for learners to display specific skills or behaviour that is measurable and visible after enacting a lesson. Teachers use the objectives to organise their teaching and learning to allow them to control what happens in the classroom (Booyse & Duplessis, 2014). For the objectives to be able to guide teachers in professional spaces, it is argued that the objectives should be drawn in such a way that these are specific, measurable, attainable, realistic and time-bound (SMART) (Bjerke & Renger, 2017; Jung, 2007). This is one guideline towards formulating objectives in such a way that they are clearly expressed (Orstein & Hunkins, 2009). Being specific entails that each objective should be clear enough so that the behaviour targeted is also evident. A particular choice of action verbs is used when setting the specific objective. The action verbs act as a standard to measure the ability of the learner at the end of the lesson.

Being measurable, the objectives should have a particular benchmark that teachers can refer to as proof that a learner has learnt something. Anything attainable entails that the objectives must be achieved in the time allocated for a lesson. The objectives seek to guard that the lesson objectives align with the overall goal of the curriculum. By time-bound the emphasis again is on the feasibility of completion of lesson within the allocated time (Wolf & Akkaraju, 2014). It is argued that the SMART way of presenting objectives for a lesson helps to guarantee that vital content is provided to learners in an active and well-organized manner (Wolf & Akkaraju, 2014). However, Bjerke and Renger (2017) argue that the popular approach to the writing of objectives the SMART way is misleading. Therefore for some topics and in some curricular spaces the SMART objectives do not serve a good purpose.

Another guideline for formulating clear objectives is through adopting the use of the ABCD model which advocates that each objective should possess four components: Audience (A), Behaviour (B), Condition (C) and Degree (D) (Kiliçkaya, 2016). The audience refers to the consumers of the lesson, that is, the individuals for whom the objectives are intended. In professional teaching spaces, the audience is the learners. The behaviour refers to the abilities or actions that the audience should show during and after teaching. The condition describes the situation under which the audience should show the behaviour. Lastly, the degree refers to the set standard to be revealed by the audience at the end of the lesson. For both behavioural and instructional objectives, Tyler (2013) claims that they should be stated in such a way that they unambiguously and precisely specify what learners should learn.

Several studies have been carried out on objectives and have offered interesting findings. A qualitative study by Kozikoğlu (2018) which explored the application of objectives by 8th grade English teachers in the USA, established that stating objectives assisted to circumvent waste of resources as well as time in classrooms. The study's findings showed that the correct application of objectives guaranteed that fairness is achieved during teaching and learning. Less time is wasted as objectives guide teachers on how to effectively teach their lessons. Teachers in professional voices rely on their objectives in maintaining their work at a high standard. However, the study by Kozikoglu (2018) does not give details on the type of curriculum the English teachers were enacting.

Furthermore, a study conducted by Khoza (2013) which was intended to discover reflections of eight lecturers using Moodle in enacting their modules in a university in South Africa,

established that the construction of good objectives ensured that students using Moodle do so effectively. Using objectives is helpful to both teachers and their learners. Yet another qualitative study by Budden (2016) was conducted in a South African university that utilised both purposive and convenience sampling among a selection of students in a master's programme. The study established that the students realised the importance of objectives in teaching and learning. Furthermore, the participants accepted that they needed understanding of objectives. The students noted that their understanding of objectives facilitated in directing them when conducting their research. The objectives made them aware of what was expected of them. This study concluded that objectives are crucial in providing a strategy of action, additionally driving that plan.

Moreover, the impact of objectives in professional voices was discovered in a multiple qualitative case study by Stara and Stary (2019) which was aimed at discovering the way primary school teachers engage learning objectives in social studies teaching in the Czech Republic. The study utilised lesson observations as the major data-collection method. The study discovered that the teachers did not explicitly express the learning objectives in their teaching. The learning objectives remained unexpressed and only emerged during the course of the lessons. However, even though the learning objectives were not communicated to learners, it can be stated that all of them had objectives for their lessons. The social studies teachers relied on objectives for enacting their lessons. The study however, discovered dissimilarities in the awareness of learning objectives as well as in the extent to which the teachers drove their lessons with objectives in preparation for, realization of, and reflection on their social studies teaching.

A mixed methods study by Kiliçkaya (2016) interrogated the way pre-service teachers use objectives in a Turkish university revealing that teachers failed to produce efficient and specific objectives which led to a mismatch between teacher's activities and objectives. Professional voices frown on such a situation as it compromises the enactment of a curriculum. The study then recommended that the teachers who displayed limitations in understanding the objectives should be introduced to the ABCD model of objectives formulation. Teachers in professional spaces where objectives are highly valued may not be able to formulate good objectives; which may in turn, jeopardise the enactment of any curriculum. This is worsened by professional voices upholding the use of objectives for teaching.

However, Hoadley and Jansen (2009) and van den Akker (2009) observe that the professional voice's dependence on rigid objectives which are outlined and prearranged causes the teaching climate change to be too rigid. This is because relying too much on preset objectives reduces the geography teacher's chance of adjusting and welcoming up-to-date knowledge on climate change. The teaching of climate change, which is a dynamic topic with continuous new facts, may be negatively affected by the preset objectives. Shoba (2018) also criticises the use of prearranged objectives of the performance curriculum which leaves geography teachers with limited opportunities to adjust in adding their own knowledge to the dynamic climate change facts. Furthermore, Van den Akker (2009) abhors the professional voices' emphasis on achievement of preset objectives for placing more attention on factual content knowledge. The topic of climate change is concerned mainly with personal views and opinions of learners, which are likely to be disregarded if the curriculum is guided by preset objectives (McCaffrey & Buhr, 2008).

Scott (2007) also laments the reliance on preset objectives in professional voices. The objectives render teachers as simple technicians as the objectives are crafted outside schools, resulting on the situation being overlooked. Mabuza (2018) argues that such reliance on preset objectives overlooks the needs and interests of learners and teachers. Echoing Mabuza (2018), Lau (2001) observes that the predetermined objectives limit geography teachers and learners to a restricted form of skills, to knowledge that is expressed only in behavioural terms. Such a perspective ignores refined skills that target problem-solving skills as climate change comes with a number of challenges for societies.

Freire (1994) sees the reliance on preset objectives as a tool for oppressing teachers and learners. This is because the teachers in professional spaces, together with their learners, find themselves forced to follow given objectives, even if the objectives do not have a connection with their settings. Marsh (2009) is in accord with Freire (1994), affirming that objectives are for selecting learning experiences. When preset, the objectives compel the teachers to adopt a similar set approach; whereas their practices are exceptional, and cannot be easily anticipated. This is because understandings result from classroom communications, prior existing knowledge, as well as facts from the immediate society. Freire (1994) reasons that teachers, as knowledge creators, should be allowed to select what they teach without being channelled by objectives imposed from elsewhere. Gamson, Eckert and Anderson (2019) observe that

predetermined objectives prohibit inquisitiveness and intuitive thinking which the geography learner has to achieve when learning climate change.

Objectives guide teachers on selecting teaching activities for effective teaching (Killen, 2015; Khoza, 2015b; Ramirez, 2017). The next discussion is on teaching activities in professional voices space.

2.3.3 Content-centred activities in the professional voices' space

Shulman (1987) notes that teaching is an intricate activity in which teachers are obliged to display specific subject content knowledge by employing specific activities in order to expedite the learning practice, further advancing students' understanding. A number of scholars have described teaching activities as any form of practices or involvements that occur in the course of curriculum enactment (Berkvens, Van den Akker & Brugman, 2014; Biggs, 2011; Connor et al., 2010; Le Grange & Reddy, 2017). Expressing a similar view, Khoza (2015) and Naidoo (2017) define teaching activities as planned experiences to be achieved during teaching and learning that lead to a specific behaviour or competency. For Van Eeden et al. (2018), teaching activities refer to the manner by which content of any subject is taught. The activity a teacher chooses works in a two-fold manner; it denotes the means by which a teacher enacts a topic like climate change, as well as the technique the teacher employs with a crowd of learners when teaching.

The teaching activity becomes a combination of teaching strategies as well as practices that a geography teacher selects to use in any teaching opportunity (Van Eeden et al., 2018). A key aspect of any teaching activity is that it should bring about meaningful as well as effective learning experiences for learners. This entails that the teacher's pedagogical content knowledge (PCK) plays an important role for a teacher when making a choice of teaching activities. PCK refers to the application of a combination of the teacher's content knowledge, teachers' instructional approaches and the educational contexts where teaching and learning is taking place (Ramnarain & Fortus, 2013; Shulman, 1987; Worden, 2015). PCK infers teachers' skill, knowledge, and ability to plan an appropriate and effective teaching activity for learners. The teacher should be cognisant of the capability of learners, the context, and the content to be taught (Guerriero, 2014; Worden, 2015). When a teacher makes a choice of an activity or

activities for a climate change lesson, there are several elements to be considered and the choice of the activity displays the teacher's PCK.

According to Shoba (2018), teachers have the full privilege to select, plan and deploy activities that suit their context. Furthermore, Makhumane (2018) notes that the choice of teaching activities is an essential step for successful teaching and learning. Professional voices are reliant on specific teaching activities that enact climate change content in geography lessons. Principally, in the professional voices' space, teachers decide on activities that take into consideration laid down objectives to be attained by learners upon completion of a curriculum. This is because the professional voices are objectives driven as they drive the vertical curriculum (Booyse & Du Plessis, 2014; Hoadley, 2017; Marsh, 2009; Tyler, 2013a). Berkvens et al. (2014) maintain that under professional voices the choice of teaching activities for teachers is aimed at meeting prescribed curriculum's objectives. In using the professional voices, geography teachers select activities that are in line with the objectives of teaching climate change in Eswatini.

The EGCSE geography curriculum stipulates the general as well as specific objectives to be attained in the climate change topic. Geography teachers must select instructional activities that aim to achieve these objectives. Khoza (2015)'s study on student teachers' reflections on their practices on CAPS curriculum involved 22 purposively selected postgraduate university students in South Africa. The study used one-on-one semi-structured interviews and focus-group discussion as data-generations tools. This case study discovered that the participants failed to link their choices of activities for teaching to objectives and goals of the curriculum. As a result of this failure, there was a misalignment of the teachers' activities and the goals of the curriculum. If teachers' activities fail to match the laid down objectives, it suggests failure to prioritise the expected demands of the curriculum enacted. The study by Khoza (2015) strongly recommends that teachers should align themselves with objectives that underpin a curriculum so that when implementation time comes, they are in line with the expected enactment activities.

Van Eeden et al. (2018, p. 449) note that most geography teachers have a abundant diversity of teaching and learning activities available which they can put to use effectively to teach geography content and skills. The activity a teacher selects to use must aim to maximise the learners' accomplishment of subject objectives. According to Naidoo (2017), the activity

selected by a teacher for attainment of objectives should be inspiring so as to maximize learners' interest in learning climate change, because the teaching activity plays an important role during teaching and learning, it being an important tool for teaching (Mabuza, 2018). Activities become an ideal learning tool as they engage learners to attain lesson objectives thus enhancing the teaching and learning process. Berkvens et al. (2014, p. 18) insist that effective teaching and learning ought to take place by employing thought-provoking learning actions. Geography teachers should choose activities that are interesting as there is a strong connection between a teacher's activity and a learner's level of understanding (Berkvens et al., 2014; Guerriero, 2014).

On the contrary, Berkvens et al.(2014) observe that there is vast evidence that exists from global examples which portray that teachers engage learners in activities that seem to promote the opposite of what they intended to achieve in a lesson. Naidoo (2017) agrees with Berkvens et al. (2014) in that some activities chosen by teachers are in sharp contrast to the 21st century educational goal which promotes a variety of skills. These skills include creative problem resolving, critical thinking skills, as well as personal responsibility for learning. Teachers are blamed for choosing over-prepared activities which accept a single specific answer and fail to allow a variety of strategies for problem solving. Moreover, these skills are expected to be acquired by learners in a climate change lesson. It is assumed that geography teachers choose interesting activities ideal for their learners.

Literature on teaching activities has shown that they may be separated into three: teacher-centred, learner-centred/problem-centred and content-centred activities. Teacher-centred activities generally refer to any form of teaching and learning in which the teacher plays an active and dominant role in instruction and learning. There is very little (if any) student participation element in such spaces. For learner-centred activities there is a dominant and active student involvement during teaching and learning with little (if any) contribution from the teacher.

Professional voices are driven by content-centred activities. McLoughlin (2009) describes content-centred activities as the scenario where the learners, teachers, and resources used for teaching and learning are centred on and further driven by the content. All interaction in such teaching and learning spaces is through the content. The content becomes supreme and assumes the focal point in the learning environment. Content becomes the fulcrum. Every action the

teacher engages in with a learner is designed such that it illuminates the subject content. Accordingly, the teacher becomes an instrument for delivering the content Akdeniz, (2016) because the teacher aims to meet the requirements of the content. Makumane (2018) emphasises that teachers in content-centred activities aim simply to put across content knowledge as perceived by curriculum developers.

Brown (2006) claims that content-centred undertakings in the professional voices space focus more on what has to be taught instead of on the learners. As teachers grow more concerned with upholding the accountability normality of the subject-matter, the learners' needs in the process are to a certain degree neglected. Shoba (2018) contends that learners in content-centred activities' learning spaces are likely to listen to their teachers only. The learners are passive as they only listen to teachers delivering content without being engaged during teaching and learning. Brown (2006) concurs with Shoba (2018) that the content takes precedence as teachers focus on what needs to be taught, neglecting the learners in the process. Therefore, content-centred activities within professional voices require deep content knowledge for teaching. Teachers have to be conscious of arranging the content the way it was intended by curriculum developers so as to ensure that stipulated objectives for climate change are achieved. The geography teacher becomes an instructor. The instructor tends to rely on activities that assist learners to master content. The instructor chooses activities like a drilling method and a lecturing/telling method, for example. Further discussion on the instructor follows next.

2.3.4 The climate change instructor

According to İlhan-Beyaztas (2019) the teacher is the most essential agent in the teaching and learning process. The teaching and learning process, according to Harden and Crosby (2000) is both complex and demanding. The challenging responsibility of teaching compels teachers to assume diverse roles in order to carry out the multifaceted undertaking successfully. Consequently, teachers are driven by a variety of factors to assume specific roles on how to enact any curriculum. The role of a teacher refers to how a teacher facilitates learning. In the vertical curriculum, Bernstein (1999) notes that teachers concentrate on the content to be delivered to learners. Thus teachers access what they have been given in the curriculum, passing this on to learners (Mpungose, 2018).

Loon and Bell (2018) observe that the geography teacher who assumes the instructor role in professional spaces is an expert in content. This submits that the teacher as an instructor is at all times in charge of the curriculum presentation learning process. The sole mandate of the instructor in a climate change lesson is to accomplish the instructional objectives as well as aims given in the curriculum within stipulated time (Shoba, 2018). The climate change instructor organises content and activities for the learners. The teacher as an instructor is content-centred and is guided by curriculum aims and objectives (Khoza, 2016; Nkohla, 2017). Shoba (2018) notes that aims and objectives are aggressive in nature, coercing teachers to be instructors in order to achieve such, since failure to achieve them renders a teacher incompetent in the professional spaces.

The climate change instructor resorts to discipline knowledge, teaching from simple to complex tasks (Hoadley & Jansen, 2009). The geography teachers as subject specialists are informed by factual/school knowledge that they aim to impart to their learners (Bernstein, 1999; Hoadley & Jansen, 2009; Young, 2013). As such, the main goal of the geography teachers as instructors is to encourage learners' comprehension of factual content knowledge, further assisting them to master the content proficiently and precisely in a hierarchical manner (Brown, 2006). However, Loon and Bell (2018) view the role of teachers as instructors as passive. An instructor has only to learn factual content knowledge normally decided upon by curriculum developers delivering it to geography learners. The instructor operates like a canal which directs the flow of content from a knowledgeable teacher to a learner without modifying the content (Tosuncuoglu, 2019).

Furthermore, Loon and Bell (2018), Brown (2006) and Mabuza (2018) argue that the instructor's role assumed by teachers in professional spaces encourages passive learning in geography lessons. The instructor is driven by objectives and has content knowledge to deliver. Learners are only expected to listen and take notes. In an instructor's lesson, the teacher always seeks correct answers with limited explanation time. The teacher is always rushing to finish objectives as expected. Akmanoğlu and Ersan (2020) lament that learners in the 21st century are exposed to passive learning spaces. Learners' involvement is crucial and should not be limited by instructor's role during teaching and learning. Likewise, Loon and Bell (2018) oppose the instructor's role and argue that instructors must possess varied skills driven by effective learning. Simply being a subject expert replete with content is inadequate for climate

change lessons. Instructors drive objectives to enable learners to do well in summative assessments.

2.3.5 Summative assessment in professional voices

Scholars, Celia and Elize (2014), Hoadley and Jansen (2009), Marsh (2009), and Thijs and van den Akker (2009) have described assessment as the term typically used to refer to a variety of actions that teachers employ. Such actions are evidence of how learners have acquired skills, knowledge, attitudes, and abilities during teaching and learning. For Van Eeden et al. (2018), assessment is the process of gathering evidence on the attainment of learning intentions. Naude and Davin (2017) define assessment as a holistic approach which is used to determine the teaching and learning progress. The determination is usually through the measurement of various aspects of the potential of learners. Van Eeden et al. (2018) note that by its nature, the assessment process is multidimensional and inextricably linked to the teaching and learning process.

Marsh (2009) concurs with Van Eeden et al. (2018) that assessment is multifaceted. However, the crucial idea in assessment is that it is concerned with learning as well as grading. On a generic basis, assessment is undertaken by teachers for a number of reasons. It is carried out as a diagnosis of teaching and learning (Celia & Elize, 2014; Marsh, 2009). The diagnosis function of assessment is evident when assessment helps each learner to realise personal weakness in a lesson. Simultaneously, teachers use assessment as a guide to direct instructional energies. Furthermore, assessment is undertaken to grade and motivate learners. For every assessment task given to learners, teachers usually attach a mark or a score as a grade that indicates each learner's performance. Learners who do well in each assessment activity receive a good grade that motivates them. The grade indicates a learner's eligibility in a topic or subject. The learners who cannot do well in any assessment task, however, grow demotivated (Marsh, 2009).

Scholars posit that there are various types of assessment. According to Naude and Davin (2017), the different types of assessment are produced by asking, "Why" assessment is done as well as "when" the assessment takes place in the course of the teaching and learning process. Van Eeden et al. (2018), Naude and Davin (2017) state that there is a baseline assessment commonly undertaken at the beginning of any new unit or topic to determine what the learners

already know or can do on that specific topic. There is diagnostic assessment which is usually a group kind of assessment in which teachers seek to identify learners' strengths and weaknesses on any given topic. Khoza (2015), Khoza (2019), Mabuza (2018), Mahshanian, Shoghi and Bahrami (2019) and Moon (2003) assert that in educational spaces, three types of assessment play significant roles: assessment-*for*-learning (formative assessment), assessment-*of*-learning (summative assessment), and assessment-*as*-learning (peer assessment).

Formative assessment supports learning as it is conducted throughout the teaching and learning process (Khoza, 2015). Its most important aspect is that it provides both feedback and feed-forward which works to the teachers' and the learners' advantage (Van Eeden et al., 2018). Formative assessment offers an opportunity for the teacher to provide responses to learners on what has been done and also gives guidance on the way forward. It can be argued that formative assessment increases the quality of any learning that occurs. On the other hand, peer assessment involves learners in any teaching and learning space given an opportunity to assess one another. Lastly, summative assessment relied on mainly by professional voices focuses on assessing learners after a specific unit has been taught or at the conclusion of a defined teaching and learning period; term end or year end (Dlamini, 2018). The prevalence of summative assessment amongst the professional voices space is justified by it being formally testing the level of achievement of a curriculum's objectives (Berkvens et al., 2014; Hoadley & Jansen, 2009; Khoza, 2016). It determines whether the content that was prescribed was attained; and whether objectives were aligned well with aims permitting a solid basis for summative assessment (Makumane & Khoza, 2020). In other words, summative assessment is the replication of what learners are knowledgeable on in relation to specific assessment standards (Ahmed, Ali & Shah, 2019).

Ideally, the major purpose for summative assessment is to evaluate what learners have learnt. Khoza (2019) maintains that summative assessment concentrates on what learners have learned or retained, and concentrates on what is cognitively omitted from the learners' answers. Summative assessment addresses subject needs rather than needs of learners. It measures the content mastered by each learner in a particular discipline such as geography usually at the end of the curriculum year. Moreover, summative assessments are high-stakes in nature and are usually planned externally (Kennedy, 2006; Dlamini, 2018; Khoza, 2019; Thijis & van den Akker, 2009; Van Eeden et al., 2018). Summative assessments are mandated by other bodies

outside the school: teachers are unable to intervene. In Eswatini the EGCSE summative assessments are set by the Examination Council of Eswatini (ECESWA).

Lau (2001) realises that since summative assessments are directed from outside the subject teacher's intervention, it influences the teaching process. Teachers find themselves compelled to cover and complete the syllabus within the expected time period. This gives the learners the opportunity to perform exceptionally well in the standard national examinations. More so, some teachers use the items that are normally found in the high-stakes summative examinations in setting their own internal assessment in the course of classroom teaching. The use of test bank questions from the external sources boosts the teacher questioning skills which ultimately places the learners at an advantage. Learners can utilise summative assessment information to regulate their own learning.

On teachers and learners benefitting from summative assessment items, Bijsterbosch, Van der Schee, Kuiper and Beneker (2016) conducted a quantitative study in which data was generated through questionnaires to investigate practices and dispositions of geography teachers in the Netherlands. The findings of the study concluded that teachers rarely constructed their own questions, instead, most of the geography teachers relied on test pieces from outside sources, the past summative assessment questions. The geography teachers' practice was positively affected by the high-stakes national examinations.

However, the overreliance of teachers on a bank of items from previous external examinations commonly used in professional voices is stressed by other scholars. Marsh (2009) together with Taras (2009) avers that such practice may tempt teachers to drill their learners in particular examination questions. Correspondingly, Bijsterbosch, (2018) bemoans the reliance of geography teachers on summative assessment as it makes geography teachers focus mainly on memorisation instead of evocative learning. An educational design research study exploring the professional development of geography teachers on summative assessment practices in the Netherlands was conducted by Bijsterbosch (2018). The study found that a majority of the teachers admitted practising rote learning, a type of learning considered to be less beneficial to learners in terms of acquiring desired knowledge.

In teaching climate change, teachers are encouraged to practise meaningful learning, which is the opposite of rote learning. Meaningful learning, unlike rote learning, calls for learners to be actively involved in developing their personal understanding of a topic like climate change. The learners' personal understanding develops as learners relate new knowledge to existing

ideas on a topic. This is totally against focusing on reproducing knowledge passively (Bijsterbosch, 2018). Rote learning focuses on memorisation which is not encouraged; instead, learners should be encouraged to create their personal knowledge which they may be able to connect to real-life problems offering real-life solutions to climate change issues.

Most teachers in professional spaces situate their attention more on exams and focus mainly on rigid forms of teaching. If lacking flexibility, the teachers may fail to make topics such as climate change encouraging of behavioural change for the betterment of the society (Van Eeden et al., 2018). Summative assessment occurs at the close of any learning experience, making it less useful to learners (Le Grange & Reddy, 2017). Hence, learners do not achieve anything for their improvement during the course of the particular period. For Nkohla (2017) and Ahmed, Ali and Shah (2019), summative assessment is not of much help in improving the standard of teaching: it does not provide any possible direction to improve the performance of learners.

Marsh (2009) argues that summative assessment is conducted very late to help learners achieve good results. Additionally, Hoadley (2017) laments the idea of summative assessment of testing what is lacking. The scholars contend that summative assessment disappoints some learners who then perceive themselves as poor at a subject. By scoring low marks in any summative task, learners may then anticipate gaining similar marks even in upcoming tests.

2.4 Conclusion

This chapter delineated the concept of teachers' voices which is the study's phenomenon. Through the engaged literature, the voices were divided into three: professional, societal, and personal. The professional voices in teaching climate change were then discussed at length. The discourse of professional voices unveiled the fundamental principles that drive them. These major principles as discussed in the study are: climate change content, the essentiality of objectives, content-centred activities, the climate change instructor, as well as summative assessment. The subsequent chapter seeks to discuss societal voices in the teaching of climate change in Eswatini.

CHAPTER THREE

CONCEPTUALISING SOCIETAL VOICES

3.1 Introduction

The previous chapter deliberated on writings pertinent to teachers' voices as the phenomenon of the study. The preceding chapter two further discussed the main constructs that underpin professional voices: climate change content, the essentiality of objectives, content-centred activities, the climate change instructor, as well as summative assessment. These key constructs were utilised to frame the professional voices' discourse. This chapter aims to deliberate on societal voices, together with the fundamental concepts that frame them. The constructs to be discussed are: learning outcomes: software (SW) resources: utilisation of everyday knowledge: learner-centred activities: the teacher as a facilitator: peer assessment: and field trips as spaces for learning climate change. Subsequently, the conclusion will end of the discussion of these concepts.

3.2 Theorising societal voices

This section seeks to address the operational or "how" question of the study: How do the geography teachers' voices influence the teaching of climate change in Eswatini? Scholars propose that societal voices originate from opinions that are socially initiated, and further place the society at the heart of curriculum enactment (Berkvens et al., 2014; Bernstein, 1999; Khoza, 2015; Khoza, 2016a; Khoza, 2016b; Thijis & van den Akker, 2009; Waghid & Davids, 2016). This intimates that societal voices are aligned with horizontal knowledge.

Bernstein (1999) and Khoza (2019) describe horizontal knowledge as practical or communal knowledge that is founded on learners' information generated from problems and experiences in their immediate society. Societal voices are informed and dominated by local and general knowledge on a specific topic or phenomenon such as climate change. For Ngubane-Mokiwa and Khoza (2016) and Dlamini (2018), the general local knowledge that is socially constructed is adequate to meet the daily needs of geography learners as they learn climate change. Moreover, the local knowledge becomes helpful to learners as it assists them to solve daily life challenges caused by climate change in their communities (Hoadley & Jansen, 2017).

Other scholars, Celia and Elize (2014), Hoadley and Jansen (2017), Stenhouse (1975) observe that in the societal voices' spaces, the teaching encouraged is that which draws from real-life learners' experiences. It is assumed that the learners' experiences provide a strong base to support and develop confidence on what and how they learn. Besides, learning from the societal point of view can also take place anywhere: at home and at school. Hence, the learners have enormous control over their individual learning, and the role of the teacher is coveted; the teacher becomes a facilitator or guide. Accordingly, the learners have a major control over when learning takes place (sequence), their means of gaining knowledge or the way they learn (selection), and the speed of their learning (pace) (Mabuza, 2018, Makumane, 2018). Ultimately, every learner within the societal voices' spaces is viewed as competent. Each learner is presumed to possess the ability to arrive at certain outcomes, since for societal voices the built-in competence of each learner is encouraged to emerge (Dlamini, 2018; Hoadley & Jansen, 2017).

Furthermore, the course of teaching within the societal voices aims to achieve the following; knowledge construction and creativity since learners are actively engaged in their learning as well as enriched problem-solving skills (Kennedy, 2006; Makumane, 2018; Shoba, 2018). The geography curriculum of Eswatini that was launched in 2009 was redesigned, replacing the colonial curriculum that had been enacted from 1968 when the country was colonised. The restructured curriculum aims at addressing societal needs of the people of Eswatini. This illustrates that the EGCSE curriculum is societal and favours societal voices for its enactment. The new curriculum assumes that learners would likely advance in numerous essential skills as they consume the curriculum. Such include problem-solving skills, critical-thinking skills, working with others, as well as independent learning skills (Examinations Council of Eswatini, 2020). The curriculum is thus societal: teachers are expected to enact it in accordance with societal voices' constructs, the first one being learning that is guided by outcomes.

3.3.1 The learning outcomes for climate change teaching

A societal/horizontal curriculum is dominated by the attainment of learning outcomes. The outcome of learning can be described as that which a learner is capable of doing and knowing by the end of any learning phase (Celia & Elize, 2018; Kennedy, 2006; Khoza, 2013; Khoza, 2016). Moreover, Marsh (2009, p. 47), states that "*an outcome is a broad description of students' competencies which reflect long term learning which is of significance even beyond*

school". Learning outcomes matter for learners both during their school-going time and thereafter.

The learning outcome is crucial in societal voices' spaces. Learning outcomes address knowledge, capabilities, skills, attitudes, as well as values that learners are expected to have accrued upon completion of a grade or any period of learning (Makumane, 2018; Mpungose, 2018). The learning outcomes become significant for the social space of learners even after they complete school (El Sheikh & Assad, 2018; Khoza, 2016b; Paolini, 2015). Learning outcomes are societally driven. It is assumed that teachers inclined to societal voices use learning outcomes to enact any curriculum.

Accordingly, Khoza (2013c), Shoba (2018), Makumane (2018) and Mpungose (2018) agree that outcomes for learning are societally compelled. The learning outcome is concerned with outcomes to be achieved by learners by the end of a learning period and demonstrated in the society after a learning period has been completed. Learning outcomes are thus concerned with learners' needs instead of teachers' needs. Khoza (2016b) asserts that the learning outcome belongs to a learner. Principally, the learning outcome reveals skills, knowledge, and values that learners obtain through learning practices offered by a teacher during the enactment process.

The major focus of the learning outcome is on what learners are expected to achieve by the end of the stipulated learning period rather than how the content is achieved and what is provided by the teacher. Marsh (2009) avows that outcomes concentrate on the end result of a learning experience rather than the beginning. Specifically, outcomes allow learners to demonstrate what they have gained during learning. The teacher is expected to utilise learning outcomes to interact with learners so that each learner demonstrates a particular competency.

The learning outcome is influenced by the enacted curriculum which opens room for interaction between teachers and their learners (Makumane, 2018; Moon, 2003). The interaction that develops in a teaching and learning environment directed by outcomes, results in effective grasping of content as outcomes can be easily observed and measured (Adam, 2006; Shoba, 2018). This shows the desirability of learning outcomes as they guide what is expected from learners which leads to effective teaching (Adam, 2015; Kennedy, 2006; Khoza, 2013; Shoba, 2018). Effective teaching assumes that learners in a geography lesson display particular levels of their personal understanding of climate change content.

Celia and Elize (2014) postulate that learning outcomes relate to techniques a teacher uses during teaching as well as to assessment approaches to make certain that geography learners are exposed to clear and significant learning experiences. Khoza (2015), Chikwanha, Ndlovu, and Munambah (2017) jointly postulate that the learning outcome is demonstrated by learners in terms of skills acquired as well as attitudes and knowledge gained. The attitudes, knowledge and skills are domains that outcomes should embrace. Shoba (2018) declares that exposing learners to outcomes that embrace this trilogy of domains responds to their personal needs.

This suggests that when geography teachers enact climate change guided by outcomes that display the trilogy of domains, they will be able to recognise the level at which learners are moving ahead in their lessons. The domains are taken from Bloom’s taxonomy which is of great assistance in compiling appropriate learning outcomes. Bloom’s taxonomy guides teachers on formulating learning outcomes efficiently, as it addresses the cognitive domain (subject knowledge), psychomotor domain (skills), and affective domain (values or attitudes) (Wilson, 2016). In principle, teaching and learning in social voices is guided by outcomes formulated from the psychomotor domain.

Table 3.1

The Psychomotor Domain Levels and action verbs

PSYCHOMOTOR DOMAIN LEVELS	ACTION VERBS FOR DESCRIBING DOMAINS
1. Imitation A learner observes behaviour from another person, copying it.	Adjust, administer, adapt, apt, balance, choreograph, copy, bend, alter, rectify, detect, design, build, construct, combine, demonstrate, deliver, drive
2. Manipulation A learner acts or performs particular actions through following specified instructions and practising skills.	
3. Precision	

<p>A learner completes a task with slight errors becoming more precise without copying from the original source.</p>	<p>touch, grasp, estimate, dissect, fix, display, grind, execute, heat, examine, identify,</p>
<p>4. Articulation A learner co-ordinates a sequence of actions by involving two or more skills.</p>	<p>manipulate, handle, use, mix, mimic, mime, mend, measure, skilfully perform,</p>
<p>5. Naturalisation A learner links skills in their chronological order and persistently completing with ease.</p>	<p>organise, operate, sketch, refine, record, present, react</p>

Note. This table has been sourced from, Kennedy, D. (2006). *Writing and using learning outcomes: a practical guide*. University College Cork. Krathwohl, D. R. (2002). A revision of Bloom's taxonomy: An overview. *Theory into practice*, 41(4), 212-218. Sönmez, V. (2017). Association of Cognitive, Affective, Psychomotor and Intuitive Domains in Education, Sönmez Model. *Universal Journal of Educational Research*, 5(3), 347-356.

Table 3.1 shows the psychomotor domain with its physical skills that are crucial in societal spaces. Psychomotor skills are generally important for every learner as they focus on promoting physical skills that may enable learners to contribute to being positive in society, the country, and the world at large. Physical skills may give geography learners the opportunity of being capable in the world of work to bring change to society. Further to geography lessons (climate change), the psychomotor domain of Bloom's taxonomy is of paramount importance as it capacitates learners with adequate skills. The skills which include drawing and sketching amongst others may become relevant to the learner even after completing school.

As shown in Table 3.1, Bloom's taxonomy addresses the psychomotor skills under five categories, namely, imitation, manipulation, precision, articulation and naturalisation (Booyse & Du Plessis, 2017; Kennedy, 2006; Sonmez, 2017). The psychomotor domain focuses on developing skills for learners. The physical skills may be put to good use by geography learners when they solve environmental challenges that result from the effects of climate change. In addressing the issue of litter in their communities for example, geography learners need

learning outcomes that will nurture their psychomotor skills. Furthermore, exposing learners to outcomes that encourage the use of their psychomotor skills may inculcate relevant skills applicable to their daily lives in society. Using Bloom's taxonomy for presenting learning outcomes for geography learners can help to develop learners holistically and address the needs of learners while still at school and even after. This implies the importance of understanding learning outcomes for geography teachers.

In line with the above assertion, Khoza (2013) conducted a qualitative study to search for the nature of learning outcomes as observed by facilitators in a South African university. Khoza's study used document analysis and semi-structured interviews to generate data. Purposive sampling was used to select six Bachelor of Education Honours facilitators. Findings of the study revealed that facilitators were not acquainted with the intended learning outcomes of the component they were expediting. Since they were not mindful of the learning outcomes, their enactment practices were greatly compromised. Furthermore, the recommendations of the study emphasised the significance of stating clear, observable and measurable learning outcomes. The study's findings imply the importance of learning outcomes for teachers.

In addition, the recommendations were on aligning learning outcomes to Bloom's Taxonomy. Such formulates appropriate learning outcomes with levels that assist teachers to realise competencies of each learner. Although the study by Khoza (2013) was carried out in a university setting in South Africa, it may apply to climate change teaching in Eswatini. It is vital that geography teachers be aware of the outcomes that drive the curriculum, so that they are in a position to address the needs of the learners. The EGCSE geography syllabus is societal; therefore it commands teachers to use learning outcomes to drive climate change lessons. The curriculum expects geography teachers to capacitate learners on competent geographic attitudes, skills and knowledge. However, the curriculum is silent on how teachers should achieve such.

The achievement of the said competencies might not be possible if teachers are not absorbed in learning outcomes. Moreover, the learning outcomes should be aligned with Bloom's taxonomy so that learners acquire the skills, knowledge and effective competencies that the curriculum expects them to own upon completing their EGCSE curriculum. Additionally, the use of Bloom's taxonomy when formulating the learning outcomes creates a better chance of academic achievement for learners. At the same time it increases their interest in climate change issues and the subject of geography in general (Booyse & Du Plessis, 2017). It is

assumed that learners are liable to attain any desired learning outcomes if they are exposed to an exciting and thought-provoking learning setting where the use of software resources is predominating. The software resources are discussed next.

3.3.2 Software (SW) resources

It is universally accepted that for efficacious teaching and learning, resources are essential. Chazbeck and Ayoubi (2018) point out that for teachers to organise their teaching activities appropriately, it is expected that they select convenient resources which they consider relevant to any learning process for the achievement of outcomes. Dlamini (2018) asserts that any effective teaching and learning process is enabled by the availability and usage of resources. Resources have an impact on how teachers in the societal spaces enact the curriculum. A number of scholars define a resource in the teaching and learning spaces as anything that enhances and promote learning (Berkvens et al., 2014; Khoza, 2016b; Rammapudi, 2010; Van den Akker et al., 2009). A resource could be anything or person that has led to learning. Studies of resources have revealed the significance of resources for the teaching and learning process. In the societal voices, Stenhouse (1975) sees resources as the most important component of any successful syllabus enactment activity.

According to Stenhouse (1975), even prior to the selection of content, it is imperative that teachers reflect on resources which determine the content to be taught. Thijs and van den Akker (2009), together with Booyse and Du Plessis (2014), concur that resources are curriculum carriers. Resources allow learners to reach desired outcomes as articulated in the curriculum. Booyse and Du Plessis (2014) further argue that some learners with limitations experience barriers if resources do not support learning. Therefore, the use of resources is vital for teachers because they support learners who might have learning limitations.

Resources also assist learners in knowledge construction during the teaching process (Van den Akker et al., 2009). This infers that resources spark learners' interest during teaching and learning which motivates the learner to understand the subject. A qualitative, naturalistic case study conducted by Zondo (2000) that aimed to ascertain the influence of instructional resources for the teaching of geography in some selected South African schools, established that a majority of teachers believed that resources are extremely important in teaching geography. The findings of Zondo (2000)'s study disclosed that a majority of geography teachers fully support the use of resources. The geography teachers stated that the use of

resources in their lessons contributed to more clarity for learners. Some teachers involved in Zondo (2000)'s study however, mentioned challenges in their failure always to use resources in their lessons.

The challenges stated by the teachers in Zondo's study were varied. In some schools, resources were unavailable, because geography resources are costly. In other schools, the geography teachers acquired proficiency in use of the resources and yet in some schools, teachers remained deprived by the lack of adequate spaces due to congested schoolrooms. Nevertheless, Nkohla (2016) advises that where there is dearth of resources, geography teachers should be innovative and improvise their own resources fit for their lessons. Teachers should not always rely on what their schools provide, but should also invent resources to guarantee meaningful geography teaching and learning (Van Eeden, Warnich & Golightly, 2018). Booyse and Du Plessis (2017, p. 74) state that the school also in as far as resources are concerned "*should be ready for the learner rather than the learner being ready for the school*". This entails that the school and teachers should combine efforts to ensure that learners are provided with necessary resources.

Studies on resources have shown that resources can be divided into three: hardware (HW), software (SW) and ideological-ware (IW) resources (Berkvens et al., 2014; Khoza, 2015, 2019; Waghid & Waghid, 2016; Yaman, 2017). Khoza (2015) describes the HW resources as any tool that is tangible that aids teaching and learning. Nkohla (2016) classifies HW resources as traditional, which include books, chalkboards, as well as desktops and laptops and cellphones. Khoza (2017) and Le Grange (2016) aver that HW resources are associated with professional voices in which factual knowledge is transmitted to learners by teachers who act as instructors. Instructors make certain that learners follow all specified guidelines when using these resources. The HW resources are mostly utilised to display SW resources.

SW resources, according to Khoza (2015), are tools/materials that may be utilised and combined with HW resources to present software information. SW resources are thus made for the HW to display information during learning. SW resources refer to resources such as overhead projectors, transparencies, PowerPoint slides, CDs, DVDs, YouTube, Facebook, e-books, Google, Yahoo, emails, Microsoft Office, websites, Twitter, Wikipedia, WhatsApp, Telegram, and Instagram (Khoza, 2015, 2017, 2019; Makumane, 2018; Nkohla, 2016). SW resources cannot be touched, and can only be seen when printed. Unlike the HW resources which are prevalent within the professional voices, the SW resources are found more with

societal voices because their use is dependent upon the experiences and associations of the learners (Khoza, 2017). Moreover, learners can utilise SW resources on their own without the presence of a teacher.

Shoba (2018) notes that SW resources have the latent ability to motivate learners in any teaching and learning space. SW resources trigger unpremeditated robust class deliberations on climate change amongst geography learners who become actively involved. Furthermore, Pećanac, Lambić & Marić (2011), note that SW resources propel learners to engage in higher-order thinking. This occurs as learners freely express their ideas and opinions in any teaching and learning space as influenced by SW resources at their disposal. Through using SW resources, higher-order thinking is encouraged for the improved teaching and learning of climate change. Additionally, Fien (2005) observes that the use of SW resources encourages interactive enquiry-based learning which allows learners to explore climate change issues in their communities.

Moreover, Flick and Bell (2000) maintain that SW resources support teachers in approaching challenging concepts in any subject like geography. Moreover, the use of SW resources lessens the need for frequent teacher explanations, decreasing noise in the classroom as learners acquire knowledge independently (Pećanac, Lambić & Marić, 2011). According to Van Eeden, Warnich and Golightly (2018), SW resources allow individual learners to meet their learning needs. They prompt learners' interest on a topic like climate change and expose them to more than what is available in prescribed textbooks. In the twenty-first century there are many SW modes that a geography teacher can use to support teaching and learning.

Using SW resources in this century meets the needs of the learners who are more broadband while most teachers are analogue (Van Eeden, Warnich & Golightly, 2018). Broadband implies that learners have high competence in the use of technological digital forms of media: whereas, analogue pronounces that the teachers have insufficient skills in the modern digital world. The learners in geography classrooms have been born in the digital era and Khoza and Biyela (2019) calls them digital natives. These digital natives comprise people born after 1980 (Prensky, 2001a). It is argued that these digital natives grew up immersed in technologies which provide them with extraordinary levels of ability to use such technology. On the other hand, the digital immigrants (teachers) speak of those born before 1980 who were raised without exposure to technology, thus they lack the ability to use technology.

The digital natives (learners) arguably, have vast knowledge of SW resources compared with the teachers who are analogue, implying that they are limited in the knowledge and use of SW resources. Digital natives, in one way or the other, are connected to SW resources (media world) in which information is continuously flowing and readily available. Li, Wang and Lei (2019) confirm the actuality of a digital generation difference between teachers and learners. Geography teachers therefore are expected to embrace the fact that the learners, as digital natives, are inherently proficient users of technology. Thus teachers should use SW resources because learners are used to such (Creighton, 2018; Judd, 2018). Teaching the current millennials generation thus will see a shift from HW to SW resources: a shift from chalkboard to keyboard (Lin & Chen, 2017). Learning takes place when learners utilise their SW resources to discover new knowledge as digital natives are able to use a variety of SW resources.

The development of technology together with the use of internet has led to the formation of varied range online resources that are online in the field of education (Chazbeck & Ayoubi, 2018). In the era of the 4IR, geographic information systems (GIS), for example, is a SW resource that has become popular for geography lessons in most countries (Demirci, 2009; McClurg & Buss, 2007). GIS has numerous positives, especially in geography education as it allows resourceful analysis of data linked to geographic information such as environment (Artvinli, 2017; Demirci, 2009; Lemberg & Stoltman, 1999). However, a qualitative study by Demirci (2009) that sought to explore geography teachers' attitudes towards GIS in Turkey found that the use of GIS was dramatically low in classes. Some teachers are insufficiently knowledgeable on GIS and others lacked adequate facilities in their schools. SW resources may be very useful; however its usage may have some challenges.

Chazbeck and Ayoubi (2018) conducted a qualitative case study on resources usage and factors that affect their selection and integration by Lebanese physics teachers. Four teachers were purposefully selected as participants for the study. Classroom observation and interviews were employed for data collection. The results exhibited that mostly teachers used a variety of SW resources to provoke their learners' minds during teaching and learning. The study highly recommended the use of SW resources for teaching physics as the SW resources enhanced learners' understanding of physics. However, the study conducted by Chazbeck and Ayoubi (2018) was limited to physics learners and the participating teachers were very few.

There is therefore a need for a local study that concentrates on the use of SW resources in teaching climate change. The results also revealed certain factors that affected the teachers'

choice of use of SW resources. Some of these factors were the teacher's lack of professional knowledge on the use of SW resources and time constraints. Even though SW resources have advantages, teachers may fail to use them because of lack of sufficient teaching time or their inability to utilise them. This indicates a need for studies to explore ways to advance teachers' use of SW resources.

Nevertheless, Artyinli (2017) conducted a phenomenological study on the views of geography teachers on innovative ways of teaching geography in Finland. The participants of the study were 15 geography teachers (8 females, 7 males). Semi-structured interviews were used to generate data. The findings of the study indicated that most geography teachers moved very slowly towards accepting the use of GIS in their geography lessons. The teachers, however, were fully aware that GIS offers many opportunities for geography teaching and learning. The most important issues that the geography teachers saw as obstacles for GIS applications were the unequal access to the SW as well as lack of preparedness on their side which was worsened by lack of technical support. The arbitrary availability of ICT in the schools affected the availability of SW resources. SW resources rely on the availability of ICT infrastructure in schools. The lack of such relevant infrastructure can therefore jeopardise any effort a teacher may have towards utilising SW resources in teaching climate change in Eswatini.

The EGCSE curriculum in Eswatini is silent on the kind of SW resources geography teachers can make use of when teaching climate change. The silence on the usage of SW resources in the geography curriculum indicates a gap in the effective teaching and learning of climate change in an integrated curriculum. Since the world is in the 4IR era, the assumption is that teachers encourage learners to use SW resources to support their learning. The EGCSE curriculum developers must recognise the crucial role played by SW resources in the teaching of climate change in geography lessons. Generally, most teachers enacting climate change have bemoaned the fact that learners are exposed to mass media information about climate change (Heffron & Valmond, 2011). The media information, Heffron and Valmond (2011) argue, can be confusing to learners, thus climate change teachers are entrusted to correctly utilise SW resources as everyday knowledge which is the next discussion.

3.3.3 Everyday knowledge in societal voices

According to Hoadley and Jansen (2018, p. 90), the societal spaces “*encourage teaching that relate to a learner’s experiences and everyday knowledge*” to obtain content knowledge instead of depending only on school knowledge. Bernstein (1999) submits a clear distinction between the two: the everyday type of knowledge and the school kind of knowledge. The school type of knowledge is described as specialised and official whereas ordinary knowledge is more locally generated information that can be described as being societally obtained. The home context as well as immediate community is influential in constructing crucial knowledge for learners before they attain school knowledge. Consequently, Bernstein (1999, p. 306) classifies school knowledge as a form of “*a vertical discourse and normal knowledge as a horizontal discourse*”. Moreover, Bernstein maintains that the two (school and everyday knowledge) are differently acquired and structured.

Concurring with Bernstein (1999), Bertram and Bharath (2011) see school knowledge as explicit and coherent. Since school knowledge is vertical, it is systematic and hierarchically organised. Walker (2009, p. 45), notes that school knowledge is “*inert; describing knowledge that is connected with nothing to the lives of learners or has little meaning for the learners*”. On the other hand, everyday knowledge is taken from dialogues in societies where learners and teachers live. It is also gained through observations as well as media sources that learners and teachers have access to. Hoadley and Jansen (2018, p. 106) observe that everyday knowledge “*is a kind of common-sense knowledge that a given society holds to be true, which is oral as well as practical and concrete*”. Furthermore, Celia and Elize (2014) observe that it is easy to acquire everyday knowledge, and it has a potential to contribute towards shaping a learner as a critical thinker. There is thus a vast difference between a school type of knowledge and everyday knowledge.

This complex relationship between learners’ orientation of the knowledge gained from school (society) and within the school has remained an area of great attention for curriculum researchers. Individually, and in separate studies, Dewey (1959) and Vygotsky (1987) were thoughtful on the existence of connections and incoherence of learners’ knowledge obtained in and out of school boundaries. For Dewey (1959) the experience accrued by learners in schools is expected to gradually grow out of the knowledge obtained from the society (out of school). Dewey appreciated societal voices and valued everyday knowledge, considering such to be a foundation for learners at schools.

Likewise, Vygotsky (1987) stressed the need to create a mutual relationship between everyday knowledge and school knowledge that is full of scientific concepts. Everyday knowledge is imperative as it can assist in scaffolding learner's knowledge on climate change teaching. Climate change conversation is a contemporary phenomenon. The societies where schools are located in Eswatini expose learners and teachers to various kinds of everyday knowledge about climate change, with societal voices upholding such. Indisputably, learners arrive at schools with vast information, understanding, as well as perceptions on climate change (Silseth, 2018).

Banda and Banda (2018) assert that everyday knowledge can be classified as indigenous knowledge (IK). Banda and Banda (2018) point out that IK is about societal peoples' knowledge obtained from interactions with one another and their immediate environment. Everyday knowledge is regarded as IK since it is passed on from one generation to another within a society, usually without any formal instruction. Silseth (2018) clarifies that everyday knowledge or IK is obtained from family and peers, which then becomes community knowledge for a geographical area. In Eswatini, a country that has strong cultural beliefs, IK is prevalent, a number of cultural activities and beliefs being based on such. Teachers within the societal voices hold to everyday knowledge or IK and incorporate it into their lessons.

Van Eeden et al. (2018) posit that ancient societies understood their environment and had particular ways of taking care of it. The societies had IK in place to adapt and obtain sustenance from the environmental species while observing the balance of the ecosystem. Everyday knowledge was informed by IK for environmental issues which included "*an understanding of rainfall patterns and the importance of rain*" (Van Eeden et al., 2018, p. 363). Geography teachers are expected to utilise such IK which they themselves possess in societal spaces. Teachers driven by the societal constructs are expected to invite local members of society to share their knowledge on climate change issues to geography learners. The learners can benefit from IK on how sustainability was practised, benefitting by this. Furthermore, exiting four-walled classrooms for outdoor learning including field trips or geographic excursions is one way geography teachers can make use of everyday knowledge for the benefit of their learners.

A qualitative case study by Silseth (2018) discovered that teachers can take advantage of learners' IK or everyday knowledge as a vital resource to create an understanding as they work with school and subject material. Everyday knowledge is crucial as it allows learners to link the knowledge they bring from society outside school to the school knowledge. Likewise, a qualitative study by Hung and Lim (2012) revealed that it works well for teachers if they

support learners by organizing effective means of combining learners' experiences out of school with the knowledge received in schools. Moreover, Bertram and Bharath (2011) conducted a study in selected South African schools which sought to discover how everyday knowledge is incorporated into Grade Four and Grade Six learners. The study discovered that the books integrated and prioritised IK or everyday knowledge which helped learners quickly to relate to the school content as it tallied well with common everyday knowledge they are used to.

Furthermore, Van Eeden et al. (2018) point out that in the geography CAPS IK or everyday knowledge has been included into formal education. The learners as per the CAPS curriculum are required to "*appreciate values, attitudes, beliefs and IK of others in socio--cultural, commercial, ecological and political concerns that have a geographic dimension*" (DBE,2011a, p. 66). Geography teachers in South Africa are expected to create an authentic contextual inspiring geography learning environment where learners will consume everyday knowledge through contemplating various learners' societal contexts. The Eswatini curriculum does not mention the incorporation of IK in formal geography teaching, which indicates a gap in this area. Eswatini teachers can make use of local newspapers, television, community resource persons, environmental clubs and societies in the communities where schools are located to share everyday knowledge on climate change.

Pereira (2012), states that the EGCSE curriculum was planned by designers to incorporate everyday knowledge. Teachers are expected to make the most use of this common sense knowledge. It is societal since it is sourced from the society where learners live. According to Bernstein (1999, p. 159), everyday information is communal "*since everybody has equal potential to access it*". It is described as being communal because it relates to all people, and common since it has a shared history in the sense that it arises from the communal complications of survival. This type of knowledge is formed and replicated in familiar settings such as the immediate society and at home level. Geography teachers when teaching climate change therefore have to incorporate learners' everyday knowledge by inviting the learner's ideas on causes, evidence of climate change in their immediate communities as well as effects and mitigation strategies. The teachers should be open to all the different ideas that learners bring into the discussion. Learning will then take place as learners put everyday knowledge into practice per the content taught in class. Learning is driven by learners as they interact with one another on everyday knowledge.

Silseth (2018) warns that everyday knowledge should be carefully used by teachers. Teachers should consider certain factors when using everyday knowledge. Van Eeden, Warnich and Golightly (2018) observe that in using everyday knowledge, teachers have to be careful to accommodate differences in cultural backgrounds, different living conditions, as well as different types of intelligence of the learners. Nevertheless, through the use of everyday knowledge, geography teachers can without difficulty achieve outcomes of climate change, the geography teacher approaching teaching as a facilitator or manager. For example, if a learner makes mention of everyday knowledge in reaction to a question, the facilitating teacher should use that opportunity to discuss the IK issue for the benefit of the whole class. The following section elaborates more on how a geography teacher as a facilitator enacts climate change within the societal spaces.

3.3.4 The teacher as a facilitator in climate change teaching and learning

Teachers normally utilise a certain mode of interaction with learners during their teaching practice actions. They also apply certain methods of teaching subject content. The strategy adopted for use in class, together with techniques and methods that a teacher chooses to utilise during teaching and learning informs the type of instructional approach selected by a teacher for any teaching opportunity (Van Eeden, Warnich & Golightly, 2018). There are many roles that geography teachers assume when teaching climate change (Arman, 2018). Educational psychologists argue that the choice of the role the teacher assumes has a substantial effect on the teaching and learning experiences of learners (Bruner, 1997; Dewey, 1959; Lambert & Balderstone, 2010). Shoba (2018) avers that it is generally expected for teachers to perform certain roles in order to achieve their obligations within the occupation. Thijis and van den Akker (2009) advise that any role that teachers assume should be to advance learning.

Accordingly, within societal voices' spaces for effective curriculum enactment, teachers are to be facilitators and to desist from directly transmitting knowledge as they enact climate change (Analou, 1995; Arman, 2018; Hoadley & Jansen, 2017; Lingefjärd & Meier, 2010). Hasim, Barnard, Mohtar and Maarof (2016) grant that there are theoretical convergences on what really constitutes facilitation. The issue of teachers as facilitators has received considerable critical attention. Scholars, nevertheless, have concluded that what mainly describes a facilitator is the way learners are perceived and engaged in class. A facilitator in every teaching and learning

space actively engages learners to meet their needs so that they develop their high-order thinking skills (Khoza, 2016; Mpungose, 2018). According to Khoza and Biyela (2019), the needs of learners are addressed when the teacher as a facilitator meets individual learners' expectations to address personal and/or social needs. As a facilitator, a geography teacher should work towards meeting each learner's needs throughout the learning progression.

Brown (2006) and Khoza (2015) insist that teachers as facilitators must situate learners' different needs at the core of the teaching and learning process. Likewise, Makewa (2019) proclaims that teachers as facilitators permit learners to think autonomously in class; which places the responsibility of learning on the learners. In this instance, learners share their individual experiences and thus construct their own knowledge on the content being taught. Furthermore, the teacher manages the ideas raised by learners, which makes the teacher a facilitator while assuming the role of manager.

The teacher allows learners to take a central role during learning. The teacher consciously removes self as a central dominant figure that imposes and transfers facts. Instead, the teacher assumes a position of facilitating knowledge creation during the learning process (Kennedy, Hyland & Ryan, 2006; Makumane, 2018). Primarily, facilitators assist learners to create their own understanding through critical reflection and interpretation. As a teacher acts as a facilitator during learning, this role is that of a coach or personal trainer: where the emphasis is on facilitation rather than conveying knowledge (Hasim, Barnard, Mohtar & Maarof, 2016). For Mabuza (2018), the facilitator is viewed as a proficient facilitator, one who acts as an advice-giver. The advice-giver only assists learners with lesson content matters without dominating and controlling learners' deliberations.

A teacher as a facilitator places emphasis on each individual learner as well as on self to employ collaboratively a form of learning that is interactively based (Van Eeden et al., 2018, p. 442). The most important element of a facilitating teacher is that a learner is viewed as a social being with knowledge to share in a teaching and learning space. The teacher also becomes actively involved during the learning process. In some instances teachers learn from their learners. The learners in a facilitator's class are stimulated to discover knowledge for themselves. In order to achieve self-discovery, the facilitator teacher engages the learners in various activities that direct them to develop skills of processing knowledge, improving their creativity (Andriani, 2017). The facilitator inspires more participation of learners as learners are in charge of their own learning. As the learners participate, learning takes place.

Caesar, Jawawi, Matzin, Shahrill, Jaidin and Mundia (2016) suggest that a facilitator has to create a healthy environment to allow active participation of learners. The teacher's role is that of being a facilitator during teaching and learning. This ensures that effective learning takes place in allowing the learning atmosphere to favour communication. Makumane (2018, p. 69) notes that as teachers "*consider the educational needs of their learners which allows the knowledge or voice from the immediate community to affect the choices the learners make in the classroom*". When teachers facilitate in their geography lessons, they incorporate societal voices. Furthermore, Shoba (2018, p. 71) notes that the teachers themselves "*in their facilitator roles use skills and community experiences*". The facilitator's role of a teacher is strictly societally driven. The teachers and learners draw knowledge from their societal context for use in teaching and learning.

Teachers therefore are to utilise diverse sets of activities to assist learners to participate and to provide societal voices at the heart of climate change teaching and learning. Shoba (2018) posits that teachers as facilitators become sensitive to society, thus they notice climate change dynamics within the society. In facilitating, the teachers create an atmosphere where the learners become responsible learners, also directing their own learning to meet their individual social needs (Khoza, 2015). Some common strategies used by facilitators include cooperative learning, fieldwork, problem-based learning, group assignments, problem-solving, case studies, inquiry learning, project-based learning, assimilation, role play, debates, and many more.

Moreover, the teacher as a facilitator has to be active in playing this role. In each activity learners involve their teachers who see that a democratic environment is created to allow equal participation and free discussions amongst learners as they interact with the teacher and amongst themselves. Additionally, the facilitator should recognise the numerous needs of the learners so that none is disadvantaged, such as by special needs issues, for example (Dlamini, 2018; Mpungose, 2018).

In an action research by Caesar et al. (2016) which determined the applicability of incorporating a problem-based approach into the teaching and learning of secondary geography in Brunei, it was discovered that learners enjoyed learning under a facilitator teacher. The learners were able to enjoy their lessons; and further grasped knowledge on contemporary issues such as climate change well. Geography teachers can facilitate during the teaching of climate change in Eswatini. Dlamini (2018, p. 74) points out that "*it has been proven that in*

the classroom context, learning becomes more meaningful if the teachers undertake the title role of being a facilitator”.

Hoadley and Jansen (2017) observe that most teachers who assume the position of being facilitators are challenged by a number of issues. In most countries like Eswatini, geography teachers who assume the facilitator’s role in their lessons are confronted by demands of high-stakes formal examinations. High-stakes examinations demand that teachers meet specified long-term and short-term goals of the curriculum, learners being examined on specific content. Facilitators who seek to meet learners’ needs are then faced with the challenge of changing tone. They become instructors who feed learners the content to be examined so that learners are not disadvantaged. Another obstacle that is faced by facilitators is overcrowded classes. Facilitation requires that every learner’s need is met and that each learner must be actively involved. In congested classes the active involvement of all learners becomes impossible. It disturbs classroom management since all learners cannot partake actively during their own learning.

The geography curriculum in Eswatini does not stipulate the role which teachers have to assume during teaching and learning of climate change. The teachers, therefore, use their own discretion in selecting their role for teaching climate change. Teachers may limit the active involvement of learners. The active involvement of learners demands that facilitators use learner-centred activities which are discussed next.

3.3.5 Learner-centred activities in climate change teaching and learning

A substantial number of scholars have published much on teaching activities. There are also numerous studies that have concurred that activities in teaching talk about all the experiences that transpire during teaching and learning. Any teaching activity in which a teacher chooses to engage learners aims to assist and support learners to acquire specific skills in the content being enacted (Biggs, 2011; Khoza,2015; Le Grange* & Reddy, 2017; Mpungose, 2016; Nkohla, 2017). For Connor, Ponitz, Phillips, Travis, Glasney and Morrison (2010), a teaching activity is an organised pursuit by a teacher which aims to enhance learners’ skills and abilities to grasp any enacted curriculum. Moreover, Mabuza (2018) sees activities as ideal learning tools in that activities engage learners who in turn achieve competences as anticipated by the expectations of the topic or subject learnt. Activities therefore assist learners to grasp enacted

content, this constituting how learners learn (van den Akker, 2013). Shoba (2018) observes that activities in teaching are essential.

Teaching activities may either be learner-centred or teacher-centred. Brown (2006) and Hoadley and Jansen (2017) describe activities that are centred on the learner as the kind of actions that consider interests and learners' needs. A key aspect of learner-centred activities as noted by Simm and David (2002) is that learner-centred activities offer learners an opportunity of exchanging thoughts and ideas. Furthermore, learner-centred activities allow learners to generate their own new knowledge. As learners engender their own knowledge, they become able to solve problems and address social needs (Pinar, 2012; Young, 2013). The most significant feature about learner-centred activities is that learners assume an engaging role all through their learning. Learners, in essence, are expected to negotiate as well as cooperate with their classmates and their teacher to construct their own knowledge (constructivism). Consequently, each learner is in charge of own learning. Khoza (2013b, 2015b) and du Plessis (2016) assert that learner-centred activities are ideal for use in societal voices spaces, learner-centred activities addressing the needs of learners and the society.

According to Le Ha (2014), learner-centred teaching is directed by the viewpoint which states that pedagogy ought to allow and encourage the following in societal voices' spaces: creativity, democracy, building of critical thinking capabilities and encouraging of social justice for learners. In societal voices, the assumption is that the learner-centred activities will improve social justice. Learner-centred activities are anchored in the following psychological principles: active learning advocated by Piaget (1976) and Vygotsky (1987) and discovery learning (Bruner, 1997). Active learning focuses on the importance of learners' activities in the acquisition of knowledge. By being actively involved in their own learning, learners are able to acquire knowledge from within. Learning in learner-centred classrooms is driven by the learners as they are actively involved in activities that promote their learning.

Discovery learning, which is the most common element in learner-centred teaching calls for the learners' active involvement, since it is assumed that actively involved learners discover knowledge on their own. These principles together approve that all learners are proficient for learning new content information well. These occur as teachers complement what is already known to the learner (prior everyday knowledge). The new information learners obtain comes as they participate in learning activities centred on them. Every learner has the ability to construct personal knowledge through simulation as well as accommodation (Arman,2018;

Mtika & Gates, 2011 ; Neilson (2013); O’Sullivan ,2004). Geography teachers using societal voices when teaching climate change need to make use of the learners’ everyday knowledge as they engage them in numerous learner-centred activities.

Several studies, Arman (2018), Blumberg (2016), Postareff and Lindblom-Ylänne (2008), O’Sullivan (2004), Polly and Hannafin (2011) support that learner-centred activities contribute towards equipping learners to being more relevant to the global society. Since learners become responsible and take charge of their own learning, they gain skills that apply in the outside world. Furthermore, learner-centred activities expect every learner to engage in small groups or in pairs to discuss and debate on climate change issues. These group engagements assist learners to develop a sense of working as a team and further advancing interpersonal abilities for use in global social spaces. Booyse and Du Plessis (2014) note that the discussions in learner-centred teaching motivate and encourage learners as they critically analyse issues which also develop learners’ cooperative skills. When enacting climate change teachers need to make sure that they meet needs of each learner so that each individual learner is equipped to fit into the society.

Hoadley and Jansen (2017, p. 139) submit that in social spaces, learner-centred activities ought to be managed in such a way that “*learners gain full control over the kind of knowledge that is carefully chosen for the purposes of teaching and learning (selection). Learners may be free to make choices about the direction in which learning process occur (sequence) and how quickly the learning proceeds (pacing)*”. Learner-centred teaching is characterised by the following: Learners assume full control of their learning; the teacher only facilitates and manages as learners take full responsibility of their learning. This entails that learners are fully engaged in their learning and are actively involved instead of being passive. The learners work with one another and the teacher collaboratively and respectfully, which suggests the existence of good mutual relationships during learning (Toledo & Valenzuela, 2015; Yap, Neo & Neo, 2016). Teachers have to understand how to use learner-centred activities so that they give learners control over their learning. Teachers may fail to employ learner-centred teaching as most favour teacher-centred activities.

In South Africa, the Curriculum 2005 expected teachers to adopt learner-centred teaching. However, teachers could not make sense of it and thus continued with teacher-centred activities which is what they were used to (Hoadley & Jansen, 2017, p. 179). Nevertheless, Van Eeden,

Warnich and Golightly (2018, p. 449) state that learner-centred teaching is emphasised in geography CAPS learning. Learner-centred teaching is recommended in geography lessons although the demands of high-stakes examinations, overcrowded classrooms, as well as poor resource provision, hold the geography teachers back in fully implementing learner-centred activities in South Africa.

The same challenges on fully adopting learner-centred teaching have been experienced by geography teachers in Namibia. An interpretative case study utilising semi-structured interviews and observations investigated grade ten geography teachers' understandings and putting into practice of the kind of learning that is learner-centred. Awases (2015) discovered that the teachers had challenges. Some teachers in Awases' study did not understand learner-centred activities. There was the pressure of learners to succeed in their Grade Ten formal examinations as well as lack of resources. Such impinged on the successful carrying out of the learner-centred type of teaching.

The same was observed in Botswana. A qualitative case study by Tabulawa (1998) explored perceptions of geography teachers in one senior secondary school in Kagisano. Teachers lacked the expertise to adopt learner-centred teaching, and also lacked adequate resources. Furthermore, in Uganda, Sikoyo (2010)'s qualitative study revealed that teachers' carrying out of the learner-centred activities was generally affected by external factors out of a teacher's control: some limitations occurring inside schools, as well as in the entire education system. Teachers should thus be assisted to develop stratagems for employing learner-centred activities even in congested classes which are often poorly resourced.

In Tanzania, the challenges of adopting learner-centred teaching were even greater than the ones cited by the studies conducted in Botswana, Namibia, and South Africa. Mtitu (2014), in an interpretive case study discovered that learner-centred activities could not be fully implemented by teachers because of language barriers, overcrowded classes, shortage of teachers, deficiency in professional teacher training opportunities as well as shortage of instructional resources. Learner-centred teaching has implementation challenges as it is a relatively new concept which teachers are struggling to master.

In Eswatini, no previous study has investigated learner-centred activities for geography learning. There is a need for studies to explore learner-centred activities in the entire EGCSE

curriculum and in geography in particular. Moreover, the geography curriculum does not state that teachers should engage learners in learner-centred activities. The curriculum states that geography learners should be given opportunities to develop essential expertise such as problem solving, independent learning, and critical thinking; as well as the skill of working with others. These skills, geographic values, and attitudes to assume aptitudes may be nurtured as learners enact the topic of climate change (Anyawu, 2015). Therefore, it is imperative that teachers work towards exposing geography learners to learner-centred activities which encourage peer-assessment which is discussed next.

3.3.6 Peer assessment in social voices and climate change teaching

Peer assessment occurs when individuals of equal status (peers) rate each other's work based on a criterion laid down by a teacher (Panadero, 2016; Reddy & Le Grange, 2017). The rating of each other's work that is done by learners in peer assessment suggests that the peers create knowledgeable decisions about the value of the peer's work presented. Peer assessment allows learners to be active in their learning. In social voices it is assumed that, as learners become actively engaged in their own learning by peer assessment, in one way or the other they are engaged in the attainment of learning outcomes (Dlamini, 2018; Mabuza, 2018; Makumane, 2018). In social voices peer assessment is indissolubly linked with the teaching and learning process (Naude & Davis, 2017). Shoba (2018) also elucidates that peer assessment should not be considered a grading procedure but should be viewed as a learning activity that develops numerous skills for learners.

Peer assessment enhances the general learning process. Khoza (2016) and Mpungose (2018) mutually defend that it should be considered assessment as learning. Peer assessment is thus critical in supporting the learning process in societal voices. In climate change lessons, Naude and Davis (2017), Booyse and Du Plessis (2014) and Van Eeden, Warnich and Golightly (2018) together grant that peer assessment should not be considered an incidental activity discrete from teaching and learning. Peer assessment ought to be consciously and deliberately part of the teaching and learning process. During teaching and learning, peer assessment engages learners and helps teachers to realise how the learners have discovered knowledge and skills in a specific climate change lesson. This advocates that peer assessment be totally incorporated into teaching and learning.

Peer assessment is informed by learners' point of views and opinions. This makes peer assessment societal in nature. During peer assessment, learners become more social as they interact with one another other and together with the teacher. This occurs as learners amongst themselves and or together with the teacher deliberate on the task being assessed (Panadero, 2016). Peer assessment is thus a social process. Primarily, peer assessment is driven by social constructivism principles which are driven by both the social (horizontal) and personal (diagonal) constructs (Khoza, 2016). Learners are driven by their daily social experiences together with their individual motivation to engage deeply in peer assessment. Moreover, this implies that peer assessment meets the needs of learners. Seifert and Feliks (2019), together with Lane and Bourke (2019), assert that peer assessment has numerous learning benefits for learners and teachers. Thus the societal voices are encouraged in engaging their learners on such.

Peer assessment encourages learners to be more responsible about their own learning (Lane & Bourke, 2019). This occurs as the peers learn from one another throughout the assessment process. The feedback that comes from peer assessment allows each learner to be more in control of personal learning as influenced by peers. Additionally, when the learners assess one another's work, they communicate. Such interaction enhances understanding of climate change. For Bozkurt (2020), when the learners provide one another's feedback, they become empowered: this inspires individual learning. Furthermore, the communication and feedback that is necessitated by peer assessment presents another approach increasing the learning proficiencies for learners and thus individual needs of learners are supported during peer assessment.

If learners' individual needs are met, peer assessment empowers learners to develop essential skills timeously. Peer assessment advances vocal communication skills; learners gain mediation abilities as well as negotiation skills (Bozkurt, 2020). This occurs as learners argue with one another and with the teacher, when assessing one another's work. These skills are essential in social voices spaces; geography teachers who practise peer assessment expose their learners to such. Moreover, peer assessment empowers learners to give and accept criticism (Dewi, Nurkamto & Drajadi, 2019). These are other essential skills that geography learners should possess that are stirred by peer assessment.

Furthermore, Double, McGrane and Hopfenbeck, (2020) declare that peer assessment improves academic performance. As assessment for learning, peer assessment is useful in

evaluating learning outcomes and further monitoring learners' progress in class. As the learning outcomes are evaluated, learners are enabled to master the content since peer assessment also enables provision of rapid feedback. According to Dewi et al. (2019), peer assessment entails that learners think critically, deliberating on each other's work as they assess. During the critical thinking, the learners will have a better understanding of the lesson enacted which improves their performance. As they critically deliberate on the answers of their peers, learning takes place. Moreover, as one learner assesses a colleague's piece of work, the learner learns that experience, another way of peer assessment supporting learning.

A qualitative study by Bozkurt (2020) involved twenty-one teacher candidates in a higher-education training institution as participants. The study attests to the significance of peer assessment. Semi-structured interviews and observations were employed to produce data for this phenomenological study. This study found out that peer assessment supports the growth of several skills. The study's findings unveiled that learners gain skills such as critical thinking, self-regulation and making of decisions when exposed to peer teaching. Most importantly, the study found out that peer assessment facilitates the enhancement of a learning atmosphere that is more participative, accommodating, and fitting to the scholastic needs of learners in the 21st century. Peer assessment might assist as a useful activity for learning rather than only as a simple assessment tool. Peer assessment is imperative in social voices' spaces as it boosts learners' essential social skills while improving their performance. Geography teachers must therefore use peer assessment in their climate change lessons.

However, Adachi, Tai, and Dawson (2018) criticise use of peer assessment by teachers. The argument brought forward is that those learners who consider themselves poor performers in the classroom may feel reluctant to partake. They may feel belittled by comments and feedback from other peers. According to Adachi, Tai, and Dawson (2018), the learners who perform better in class may also feel that their tasks have been unfairly marked. Teachers should be trained on conducting peer assessment so that such limitations are addressed. Van Eeden, Warnich and Golightly (2018, p. 462) recommend that geography teachers have "*the competency, the proper mish-mash of knowledge, attitudes and skills in order to plan, prepare and conduct the right amount, type and quality of assessments*". Teachers as assessors should be competent enough to handle all forms of assessment including peer assessment.

The quality of the peer assessment task matters as it reflects the teacher's competency. As geography teachers in societal spaces, it is imperative that the peer assessment given to learners

is fair, reliable, and valid (Van Eeden, Warnich & Golightly, 2018). The learners must be given a clear criterion which they understand for peer assessment to be meaningful and beneficial to learners. In Eswatini there is no study on peer assessment which indicates a need for peer assessment studies in the country. The EGCSE geography curriculum is also silent on peer assessment. This challenges curriculum developers to provide direction and understanding, giving ways in which geography teachers in Eswatini could make use of peer assessment to support learners in climate change lessons. Moreover, climate change learning can occur in diverse spaces, such as in field excursions. The discussion on field trips as ideal learning spaces for learning climate change follows next.

3.3.7 Field trips and climate change learning

Academic field trip/fieldwork/field excursion is defined as a journey that is planned and arranged by a teacher (with the learners sometimes) undertaken for educational purposes. For Van Eeden, Warnich and Golightly (2018, p. 376), fieldwork is “*an academic tour undertaken to a chosen place of interest where teachers usually create various learning opportunities for learners to obtain first-hand facts and experiences in an actual situations*”. An academic trip allows learners to obtain knowledge on their own, from reality. Field trips require learners to move out of their usual learning space (classroom) to an outdoor space with the aim of learning from this new environment (Mohammad, 2020). Learning thus takes place in the location of the geographic place visited. Commonly, field-work occurs outdoors, out of restrictions of classrooms. The duration of field trips varies. There can be a short field trip which usually takes place close to the school, such as a visit to a nearby river. A short field trip can last the duration of the scheduled time for the lesson or perhaps for hours. Longer excursions of more than a day include a visit to geographical places distant from the school. Usually, longer excursions embrace various geographic sites to be visited.

Field trips for geography lessons are one of the popular teaching strategies that replaces confinement to a classroom and allows learning to occur in a real-world setting (Minocha, Tilling and Tudor, 2018; Păunescu, 2018; Van Eeden, Warnich & Golightly, 2018). Undertaking an educational tour changes the location and space where teaching as well learning practice takes place. Location or a space of teaching represents the physical as well as social characteristics of instructional environments (Khoza, 2013; Mabuza, 2018; Nkohla, 2016; Van

den Akker et al., 2010). Changing from classroom learning necessitated by fieldwork creates a different and stimulating environment for learners.

The learners experience a new learning space away from the monotony of the classroom. Ferguson, Barzilai, Ben-Zvi, Chinn, Herodoto, Hod and Rienties (2017) explain that the location outside the classroom acts as a trigger for learning and sparks curiosity for the learners. Furthermore, Ferguson et al. (2017) illustrate that field trips or place-based learning helps learners to connect abstract geographic concepts in their textbooks to real practical issues in their society. Learning therefore takes place when the learners discover and create their own knowledge as they connect abstract concepts to reality.

This illustrates that field trips are an important component in societal voices and in climate change teaching and learning spaces. Fieldwork plays a key role in exposing learners to the real environmental issues. Any academic field trip is organised to attain specific purposes. Ye, Chang and Lai (2019), Opoku, Serbeh and Amoah (2021), together with Păunescu, (2018) are of the view that in geography the intention of undertaking field excursions is to enhance social, personal and emotional development of geography learners. Fieldwork places the needs of the learners' first and is societal in nature. Moreover, field trips add value to learners' academic achievement (Bursztyn, 2020). Learners introduced to field trips are likely to perform well in most assessment tasks.

According to Minocha, Tilling and Tudor (2018), fieldwork increases the chances of learners performing well. This includes vacating the schoolroom and becoming involved in geography learning by personal, direct, and actual experience of climate change occurrences in outdoor settings. The learning which takes place outdoors stimulates learners' curiosity and interest in climate change issues. Such increases their concentration on the topic that is learnt on that particular field excursion. Learners experience stimulation when they see geographic phenomena. The learning on field trips becomes more beneficial to learners when teachers plan well for the trip. The planning involves thinking of activities that will engage learners as they learn outdoors. Van Eeden, Warnich and Golightly (2018) warn that teachers need to plan well for a field excursion so that learners are able to benefit fully from the geographic tour.

Field excursions replace learning in the traditional teaching space where geography teachers would lecture within four classroom walls. A classroom is conceptualised as *“a four-walled entity where a teacher delivers a lesson to students”* (Van Eeden, Warnich & Golightly, 2018, p. 266). Many geography teachers in the societal voices' space see the classroom as a confined

space which makes effective geography learning difficult (Killen, 2015). Ye, Chang and Lai (2019) posit that classroom teaching is associated with the lecture/instructor role of a teacher, with learners passive during teaching and learning. The fundamental principle in teaching and learning spaces today is active engagement of learners: such is made possible by taking an educational tour (Okere, Mukwa, & Kafu, 2017). Furthermore, the teaching process is difficult in most schoolrooms where overcrowding and shortage of teaching and learning materials is prevalent. Geography teachers in social voices therefore devise strategies to minimise negative effects of confined classroom teaching by taking learners “out there” on field trips.

Field trips therefore enable the learners to enjoy learning out of the classroom, in a new physical space (the real environment) and in a place with social features that benefit a climate change learner (Păunescu, 2018). For example, geography learners can have their fieldwork in an area that experiences drought; learners can observe the plight of the inhabitants in that particular area. In this way learners’ social skills are developed. In addition, fieldwork offers an opportunity for learners as well as teachers to interact, getting to know one another better. This presents yet another important aspect of social voices. Mutual respect may thus be fostered, working in groups with peers of other cultures who offer crucial social skills (Van Eeden, Warnich & Golightly, 2018).

Working together on a field trip mirrors the reality of social life which learners will be equipped to face when they finish school. Fieldwork offers social learning opportunities which might have been impossible in a classroom. Furthermore, learners are exposed to opportunities of addressing the hidden curriculum (Hoadley & Janeson, 2017; Kelly, Kelly & Melograno, 2004). In climate change fieldwork, the cultivation of values and attitudes that are environmental are made possible. This could be through observation of littering, saving of resources like water and electricity to name but a few observations that learners can make. The value of field trips is that they develop higher cognitive and research skills for geography learners (Păunescu, 2018). These higher cognitive and research skills may include “*the skill of collecting/ generating data, through methods like observations, data analysis and synthesis as well evaluation and the making of deductions, data presentation and report writing*” (Van Eeden, Warnich & Golightly, 2018, p. 379).

A qualitative study by Okere, Mukwa and Kafu (2017) recommends that geography teachers take their learners out on field trips. The study concentrated on some selected secondary schools in Kenya: eighty-seven geography teachers were participants. Data-collection

techniques employed for the study comprised questionnaires built on a Likert scale, an interview schedule, and observation checklist of fieldwork study recordings kept by the geography teachers. The study's findings showed that a geographic field trip is an unchallengeable and important part of support for effective geography teaching and learning habits in secondary schools. The study discovered that field trips encourage higher learner participation, communication, as well as conceptualisation of geographic facts which results in the desired effective learning. The findings of the study were that field trips are one of the most effective ways of teaching geography and/or climate change in Kenya's secondary schools.

Likewise, Opoku, Serbeh and Amoah (2020) carried out a qualitative study in Uganda. Using interviews, three high schools were selected in which geography learners were interviewed on the value of field trips. The findings concluded that learners who partake in field trips generally had more benefits on the enactment of climate change lessons. Geography teachers should therefore engage their learners in fieldwork as this provides them with ideal settings for numerous geographic skills developments. These include discovery learning, inquiry, and problem-solving skills, which learners accrue on field trips. In South Africa, the CAPS documents for the intermediate and senior phases stress the importance of fieldwork (DBE, 2011). It is argued that field trips have the potential to develop important skills for geography learners. Such skills include observation, interviewing, and recording skills vital for climate change learning.

The EGCSE geography curriculum is reserved on field trips. Curriculum planners are not aware of the critical purpose of climate change teaching in locations out of the classrooms. Munandar, Maryani, Rohmat and Ruhimat (2020, p. 798) uphold that “*good geography teaching must now include fieldwork*”. This indicates the significance of fieldwork for geography learning as field excursions connect geographic theory to the real-world situation. Therefore, EGCSE curriculum developers have to recognise the crucial role played by field trips for geography learning; and provide direction and suggestions on how the teachers can use fieldwork. Moreover, there is a gap that geography researchers in Eswatini can fill on field trips and geography learning that may enrich knowledge in curriculum spaces.

3.4 Conclusion

This chapter deliberated on literature that provided in-depth understanding of societal voices, showing how climate change is taught in societal voices. The societal voices constructs were used to lead the discussion on how climate change is taught. The chapter revealed the following constructs, namely: societal voices are driven by learning outcomes; societal voices use software resources, societal voices rely on everyday knowledge; the teacher acts as a facilitator, learners engage in learner-centred activities, peer assessment is commonly used, and lastly, fieldwork is encouraged. The succeeding chapter discusses personal voices in which the model/theory that frames the study is discussed.

CHAPTER FOUR

UNDERSTANDING PERSONAL VOICES AND THE THEORETICAL FRAMEWORK

4.1 Introduction

Chapters Two and Three dwelt on the existing literature on geography teachers' professional and societal voices respectively, which drive the teaching of climate change in Eswatini. This chapter applies the currere theory as a theoretical lens to synchronise the literature discussed in the previous chapters. Theory is aligned with the determination/aim of this study in seeking to discover geography teachers' voices and further understand what informs the teachers' voices. The currere theoretical lens unveils the geography teachers' personal voices and helps in answering the philosophical question, "Why do teachers have specific voices on the teaching of climate change?"

This chapter puts teachers at the centre of their practice and as such assumes that the teachers' personal voices are crucial in teaching climate change. As an individual teacher is viewed from the currere theoretical lens, the teacher is discussed in line with specific constructs that drive personal voices. The discussion centres on the teacher as a researcher who uses a teacher's personal-centred action/practice as well as formative assessment in enacting climate change. The teacher takes a pivotal role in this chapter as an ideological-ware resource which is crucial in enacting climate change. Furthermore, the teacher becomes an artistic reflective practitioner who reflects on the past and also on the future of practice.

These constructs are consistent with Pinar's currere curriculum theory which positions the teacher's voices at the focus of the practice. Currere also allows the individual teacher to reflect. The reflection offers the teacher a platform on which to improve practice and further gain better personal understanding (Webb, 2015). The discussion in this section starts by conceptualising the purpose of a theoretical/ model in studies. Thereafter, the currere theory and its relevancy for this study will be discussed. The scrutinising of the currere theory has been used to produce a new theory that guides this study. This is the theory of teachers' voices which seeks to highlight how teachers' voices can be understood. Specific principles of the stages/moments of currere are also discussed

in order to develop a deeper understanding on how currere influences and informs voices of geography teachers. This chapter also theorises the constructs that drive personal voices and demonstrates how personal voices of geography teachers are vital in addressing their individual or personal needs.

4.2 Theory and its Purpose in Research

For Leed and Ormrod (2015), a theory is an organised form of ideas and principles that anticipate explicating a specific phenomenon. A theory is regarded as a description made up of a collection of related ideas that present a structured approach of viewing authenticity. A theoretical framework, according to Bertram and Christiansen (2014), is formed by incorporating theoretical features and practical conceptions of the literature of that researched field of study. For Henning (2004), a theoretical framework is an assertion that reveals how issues of a specific field of study are related or connected. A theoretical framework establishes interactions of a particular field through explaining how phenomena function and why they function in particular ways. The established relationship serves as a lens through which researchers view reality, applying the theoretical framework to make informed decisions based on research evidence.

Imenda (2014) notes that a valued theoretic framework selected for use in a study should be one that gives a precise and clear picture of the phenomenon or field it seeks to explain. A theoretical framework directs researchers to interrogate the phenomenon under study. Likewise, Cohen et al. (2018) concur that a theoretical framework is significant in research as it functions as a possible foundation for further information and findings. The use of a theoretic framework in studies enables the researcher to discover more knowledge as guided by the theory.

Furthermore, Osanloo and Grant (2016) view the theoretical framework as the foundation on which information and facts for a study are constructed. In an interpretive, qualitative case study that aimed to discover formative assessment practices in Context-Based Science Curriculum (CBSC) in Eswatini, Dlamini (2018) concedes that a theoretical framework frames a research study and further directs the researcher in generating new knowledge on the phenomenon studied. The theory chosen for a study underpins and guides it. The guidance takes the form of a travel plan or map that offers some sense of direction towards conducting a study successfully. Mabuza (2018)'s action research study that situated itself in the critical

paradigm resonates with Dlamini (2018) that a theoretical framework provides researchers with some kind of a roadmap to be followed when conducting a study. Osanloo and Grant (2016) confirm that the theoretical framework is a blueprint of a study that should be followed and without it the vision and structure of a study becomes unclear.

Primarily, a theoretical framework represents the philosophical base that guides a study from its development, to methodology, selection of data-generation methods, as well as to data-analysis stage (Dlamini, 2018). The theoretical framework anchors a study holistically. Cohen et al. (2018) note that employing the theoretical framework in a study positions it within an appropriate research paradigm to guarantee consistency. Even the framing of questions for data generation is achieved through the lens of a theoretical framework adopted for a study. Mabuza (2018) and Mpungose (2018) support that the use of theory in framing the questions for participants allows generation of new knowledge: such might not have been generated had it not been for the utilisation of a theory. Since theories are valuable as a possible source of generating new facts and innovations, the use of a theory in this study aims to assist in generating more details on why geography teachers have particular voices in the teaching of climate change.

A theoretical framework is applied in studies to deepen the understanding of a phenomenon (Henstrand, 2006). Dlamini (2019) conducted a qualitative interpretive study that utilised multiple methods, aimed at investigating history teachers' experiences of their curriculum in Eswatini. Dlamini (2019), points out that a theoretical framework becomes a strong foundation that supports and guide researchers. The theoretical framework allows a researcher to rely on prevailing formal theory to discuss dynamics of a phenomenon at hand, thus deepening its understanding.

Moreover, from the theory researchers obtain concepts as well as relevant issues that may need to be dissected during the data analysis stage. The theory assists in guiding the researcher when formulating predictions and descriptions about the phenomenon that can be generated during data collection. Theory, therefore contributes to formulating research questions. Theory helps in mapping out the kind of data likely to be generated from the field (Omirini & Falola, 2011).

As indicated above, the use of theory is indispensable in research work as it provides more understanding and deeper explanation of a phenomenon. The use of the currere curriculum model will support this study through the provision of direction on the category of data the

study is likely to generate. This study employs Pinar's currere curriculum theory which is discussed next.

4.3 Pinar's "Currere" theory

William F. Pinar (born 1947) is an American scholar and a curriculum theorist. Pinar is credited as being one of the scholars who started the reconceptualisation of the field of curriculum. Pinar conceives curriculum as educational experiences that are filled with complicated conversations. Through his vast experience in curriculum spaces, Pinar has contributed immensely to curriculum discussions. One of his profound contributions was the currere curriculum theory. As a field of study, curriculum has various theories that explain its practical usefulness and/or meaning. Most curriculum theories and models concentrate on both the technical and scientific perceptions of curriculum. The models tend to describe the precise and technical approaches towards curriculum issues (Celia & Elize, 2014; Hoadley & Jansen, 2017; Ornstein & Hunkins, 2017).

Moreover, Ornstein and Hunkins (2017) continue to clarify that a curriculum model should only not be predictive; it should also explain clearly specific concepts, principles of the field, as well as connections that are present within the curriculum field. This reveals an existence of a very close connection between the theory of curriculum and realities in actual practice spaces. Apple (1993) and Pinar (2004) however, lament a controversy between practice and theory in curriculum spaces. This controversy has generated debates amongst curriculum academics and politicians. In the midst of the controversy in curriculum spaces, Pinar (2004) notes that the most important player in curriculum issues is the teacher who is tasked with enacting the curriculum.

Pinar presents the currere curriculum theory which situates the teacher in the centre in discussing curriculum issues. In essence, Pinar (2004) believes that curriculum is a true-to-life experience in nature. Pinar grants that curriculum should not be regarded simply as what has to be taught; it should further be concerned about how teachers as curriculum enactors perceive themselves. This demonstrates the need for such a study that explores geography teachers' voices. Such will give an insight into how geography teachers understand themselves in the EGCSE curriculum in Eswatini. The absence of teachers' voices in curricular spaces has been noted in Eswatini.

A qualitative research study by Mabuza (2018) explored junior secondary consumer science teachers' reflections on their practice. The study discovered that although the curriculum of Eswatini is supposedly integrated, it is driven by curriculum designers and high-stake examination bodies. Such leaves the teachers without a voice in the curriculum they are supposed to enact. There is thus a gap for studies that explore teachers' voices in the enactment of the curricula of Eswatini. The voice of teachers originates from self-understanding.

Pinar (2004) states that by applying self-understanding in practice, teachers will gain their voices in enacting any curriculum. Self-understanding is made possible by *currere* since *currere* helps teachers become reflexive thinking about themselves and their work, thus establishing their voices. As they understand their voice Pinar (2004) envisages academic freedom as the teachers' scholarly purpose in curriculum spaces is made clear. Pinar argues that the controls in the curriculum that are usually set by politicians or/and the state led to the assumption that academics (teachers and professors) undergo some suffering as politicians limit them academically. However, it is the teachers' duty to enact the curriculum. Pinar argues that, while the anti-intellectual inclinations are belittling to the teachers, academic and intellectual liberty is essential for the advancement of quality education (Pinar, 2004).

This illustrates that seeking teachers' voices in the teaching of climate change affords the opportunity to recognise whether the geography teachers have reached academic freedom or whether their practice is tied by other factors which limit them from reaching intellectual freedom. Academic freedom is reached when teachers understand themselves. In an interpretive, quantitative case study, Khoza (2020) notes that if one understands personal identity, this results in self-directed learning which yields to self-actualisation. A self-actualised geography teacher becomes creative and aims to meet learners' needs which suggests an improved practice habit. *Currere* as a theoretical framework has the potential of unearthing personal voices of teachers. Such implies that the teachers reach personal intellectual freedom.

Furthermore, Pinar (2004) and Apple (1999) emphasise that teachers must enjoy freedom of practice so that they are able to express their voices and enact curriculum intellectually to learners. When teachers enjoy academic freedom, they not only appreciate and recognise themselves better as personalities, but recognise themselves as a group. Teachers need first to understand themselves, second their work, and third the specific roles they have to play in the curriculum enactment field. Pinar (2004) interprets the curriculum as *currere*, which is taken

from Greek word denoting lived experiences of someone, or running of a course. Pinar, Reynolds, Slattery and Taubman (1995) further clarify that *currere* refers to methods or means by which teachers as curriculum enactors draw relationships between social life issues/histories, school knowledge, and scholarly developments in ways that function self-transformatively. *Currere* can be used to generate teachers' voices that are produced from the relationship between life history and practice of teachers, *currere* describing the individual experiences in educational contexts (Pinar, 2004).

In a qualitative, interpretivist study on curriculum intellectualisation, an engagement with curriculum decision-makers, Mahabeer (2015) views *currere* as a theory that focuses on the individual by probing lived realities. The penetration to an individual that is afforded by *currere* is both intellectual and emotional which brings about a holistic voice of the individual probed. *Currere* engages inner voices from teachers who experience the teaching of climate change. This is because *currere* addresses the absence of individuality (personal) voices in curriculum enactment, forcing teachers to think deeply about what they do and how they do it (Mahabeer, 2015). *Currere* also addresses the "who" question which is fundamental in the quest to understand personal voices (Khoza, 2020).

Currere is cemented in existentialism and psychoanalysis which affords strategies for the study of self (Pinar, 2004). Existentialism in generic terms refers to human freedom. This illustrates that *currere* is anchored in liberating individual teachers from anything that limits their freedom in their practice. Existentialism upholds that individuals should experience and practice freedom. Freire (1994) supports the existential beliefs of *currere*. The author argues that teachers must be liberated by reflecting on their experiences to gain their voice or to regain if lost in curriculum spaces. Freire argues that schools are fertile grounds for clashes when talking about curriculum enactment.

The constant conflict is over meeting individual needs of teachers, learners, professional bodies, as well as the society. In the midst of the conflicts, Pinar advocates existentialism in *currere* to liberate teachers in their practice. Psychoanalysis is about both intrapersonal and inter-personal issues (Morris, 2019). Intrapersonal matters refer to issues that happen inside an individual (subconsciously reached), whereas inter-personal issues refer to an individual's relationship with another person. Psychoanalysis offers a chance for one to understand the self (Morris, 2019). *Currere* therefore offers a chance for an individual to examine self through existentialism and psychoanalysis.

Furthermore, *currere* supports the study of academic experiences which seek to recognise the actions that inform practice for teachers. Doerr and Doerr (2004) describe *currere* as a theoretical framework that concentrates on the scholastic experiences of individuals as informed by the same individual. This illustrates that through *currere* personal voices can be generated, and the voices are generated from the individual teachers enacting the curriculum. Pinar (2004) describes the method of *currere* as autobiographical/biographical, comprising four moments or steps that depict phases. The phases help in studying a teacher's educational experience. The educational experiences that a teacher reflects upon following the *currere* theory produce unique voices for each teacher which in turn influences the teacher's practice and decisions.

Autobiography is a term adopted from the Greek which refers to writing about oneself. For Blowers (1998), autobiography is founded on reality and is a true reflection of the life of its author. Autobiography takes the form of a narration whereby the author of the story conveys collectively various aspects or experiences of own life or educational experiences. It is vital that individuals are conscious of the self when writing an autobiography. Additionally, an autobiography provides one with some form of a mirror in which one can view oneself, allowing for reflection on one's own life. Reflection entails that an individual thoughtfully considers past experiences in the application of knowledge to any practice which produces the voice of that individual (Mpungose, 2020: Smith, 2013). Reflection thus includes critical probing of one's self.

When one becomes a reflective practitioner, one tries to understand one's own voice. The individual thus becomes more real in the process of endless development (Ferraro, 2000). For Mpungose (2020), reflection assists an individual teacher (personal) to evoke, revive, make sense of, and evaluate their practices in order to improve. Shoba (2018) observes that reflection is an important human activity that engages people in internal conversations or/and dialogue. This occurs as one recaptures the past, combining this with the present on-going experiences that in turn inform both present and future practices. *Currere* proposes the kind of reflection which allows an individual to consciously take a journey of self-understanding. Baszile (2015) notes that *currere* helps an individual teacher to explore the way academic subjects and experiences of the past aid in the understanding of one's life and how such experiences help a teacher to comprehend educational practice.

According to Pinar (2004), personal reflection that takes place when one crafts an autobiography uncovers teachers' voices. Autobiography through reflection is therefore a critical element of currere unveiling individual teachers' voices which inevitably influences practice. Furthermore, currere has the potential to evoke voices that may be absent in the complicated conversation of the geography curriculum. This happens when the curriculum discussion takes shape about concepts and ideas that imply that teacher's voices have either been ignored, absent, silenced, or misconstrued.

The four steps or moments of currere are: the regressive, the progressive, the analytical, and the synthetic stages. Pinar and Grumet (1976) observe that in all these four steps cognitive, emotional, and intuitive comprehension is involved. Fig 4.1 below shows the four steps of currere.

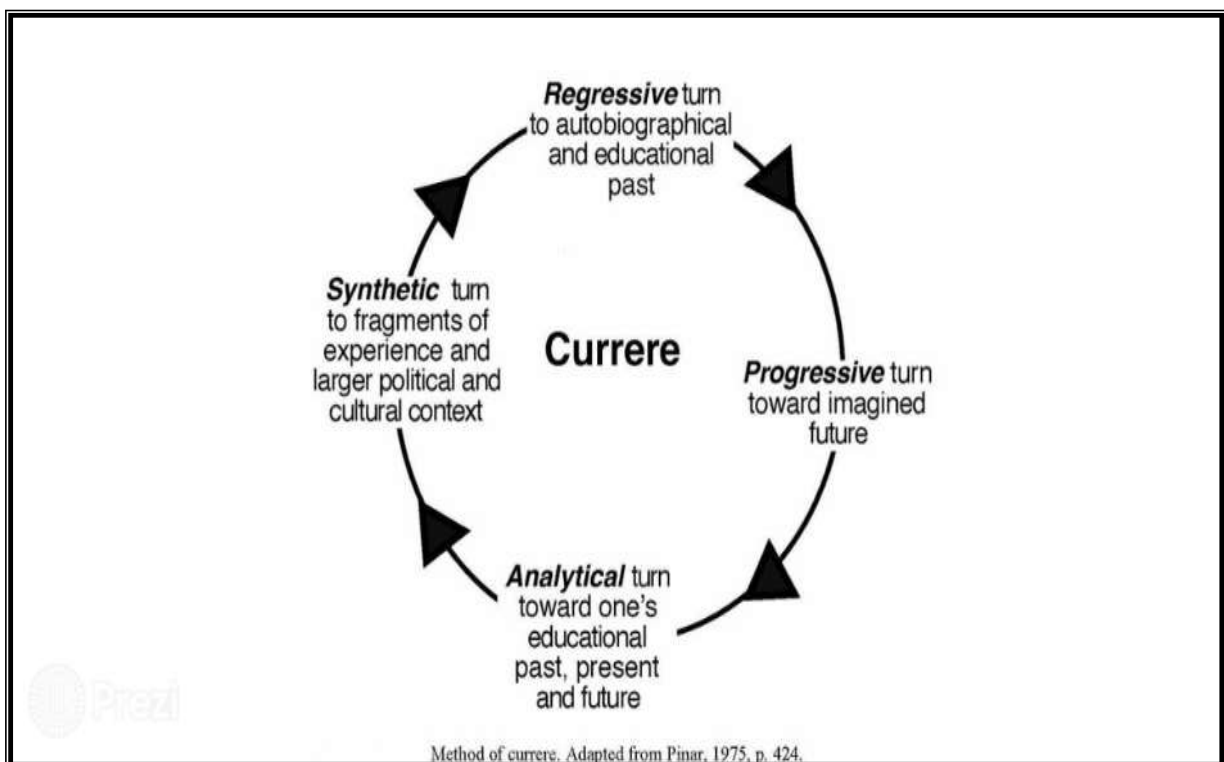


Figure 4.1: *The currere steps/moments.*

Note, this figure has been sourced from Pinar, W., & Grumet, M. R. (1976). *Toward a poor curriculum*. Kendall/Hunt Publishing Company.

In the regressive turn/moment when an individual remembers and reflect on past educational experiences the lived experiences of an individual become the source of data. On the regressive step, one returns to the past and captures it as it was, linking it to the present moment. The individual has to think of all the educational experiences of the past, such as learning in primary school, the teachers, parental support, involvement in extra-curricular activities, friendship choices and many other issues. The regressive step allows individuals to understand their own experiences in educational spaces which influence the present situation. The critical reflection made about the past affects what the teacher does in present practice.

In the progressive step, one contemplates desires and fantasies of the future moment. Progression is about turning towards an imagined future. An individual in this step projects into the future thinking of what the future is likely to be on issues of teaching as a practice. As one thinks of the imagined future, issues of pedagogy, societal issues, issues of technology in teaching, relationship with learners and colleagues need to be perused. In the progressive step one imagines possible futures that may have an effect on curriculum enactment.

The analytical moment considers the influence of both the previous and upcoming realities and how the two influence the present lived moment. This step of *currere* implicates a specific moment of phenomenological connection in which an individual is in the imagined middle of the imagined future as influenced by the past. (Kanu & Glor, 2006). The individual tries to discern how the imminent future presents itself in the past, and how the former experiences might be present in the yet-to-come experiences; and how the present might be influenced by the past and future. This demonstrates that one makes connections between past memories and the ideas about the future, ascertaining how those affect the present.

The last step, the synthetic moment, synthesizes thinking across all the three phases as a way of resolutely engaging one's learning experiences in the present. This step is taken when an individual combines all experiences so as to find the true meaning of one's voice. The synthetic moment looks at the meaning of the present. Moreover, this step interrogates the present and the contribution of an individual professional or scholarly work to present practice. At this stage, the individual teacher questions how the entry to the past and predicted future assists or limits making of conscious as well as informed decisions on the present practice. This stage presents the voice of an individual teacher who is critical in successfully carrying out the task of teaching. Pinar (2004) argues that through the critical reflection necessitated by *currere*,

teachers can identify their personal voices. Such will improve teacher instruction and improve student learning and achievement in any subject discipline.

The currere curriculum framework has been used by other studies as shown in Table 4.2.

Table 4.2

Background Information from Different Studies where Currere has been used.

Author of study and year of publication	Brief summary of study	Application of currere in the study
Dlamini (2019)	<p>A qualitative, interpretive, multiple case study that employed semi-structured interviews, focus-group interviews and document analysis for data generation. Eight teachers participated in this study.</p> <p>The study intended to explore history teachers' understandings on the adoption of a new history curriculum in eight high schools in the Manzini region of Eswatini. It additionally wanted to understand the reason behind the history teacher's experiences in the implementation of this curriculum.</p>	<p>Currere was used in teacher reflection on teachers' experiences of the new history curriculum. The study unearthed that teachers' reflections were not considered before the new curriculum was rolled out. Furthermore, currere showed the teachers' contextual realities and that curriculum implementation should be a product of teachers' reflection.</p>
Mahabeer (2015)	<p>An interpretive qualitative study that involved seven participants. The study explored identities, experiences, perspectives and conceptions of curriculum decision-makers as they engaged</p>	<p>When exposed to currere the participants reflected on their decisions and discovered that all their decisions were influenced by various webs. They found themselves caught in the intersection between these webs of influence.</p>

	and deliberated on issues of curriculum development.	
Brown (2007)	This study is on restoring teachers' selves using currere to examine teachers' careers. It is a qualitative study which addresses teachers' retention by increasing teachers' opportunities for reflection. Five participants wrote their autobiographies using currere as a form of narrative inquiry.	All five participants, after writing their narratives, claimed to have discovered new things about their practice. They also discovered that their childhood backgrounds had a great influence on their practice. Through the discoveries they made, they were able to understand themselves, which improved their practice.

Note this information on the table has been sourced from Dlamini, R. K. (2019). *History teachers' experiences of the implementation of the Eswatini (Swaziland) general certificate of secondary education (SGCSE) history curriculum* (Doctoral dissertation). Mahabeer, P. (2015). *Curriculum intellectualization: an engagement with decision-makers* (Doctoral dissertation). Brown, D. S. (2007). *Restoring ourselves: Using currere to examine teachers' careers*. Oklahoma State University.

Table 4.2: shows studies that have been conducted in different countries and at different times using currere as a theoretical framework. All three studies were qualitative. What comes out in Dlamini (2019)'s study is that the use of currere showed that the history teachers' voices were missing in the decision to implement a new curriculum. This submits that currere was able to detect that the teachers' voices were sidelined; such affected the smooth implementation of the new curriculum. The reflective cycle of currere was able to comprehend their contextual realities, revealing how they found themselves in that situation.

In Mahabeer (2015)'s study, currere was applied to the curriculum decision-makers and they were exposed by currere to their curriculum decisions not being personal; instead they were influenced by various "webs", which were either professional or societal in nature. Currere made them realise that they lacked their personal voice in whatever decision they made. Currere made them reflect so as to come up with their personal decisions vital to practice. Makumane and Khoza (2020), grant that an individual/personal identity is crucial in curriculum spaces.

Every individual has a unique understanding of own environment (personal) which makes up the individual practice and with a personal voice suited to such (Makumane & Khoza, 2020).

It is common that the daily choices teachers and educators make in their practice inclines to either societal or professional voices which removes the personal choice of enacting or interpreting the curriculum in light of an individual's own voice and experiences. As in Mahabeer's study, *currere* becomes useful in renewing individuals' thoughts on new actions and new voices required in curriculum spaces (Khoza, 2019b; Makumane & Khoza, 2020; Mpungose & Khoza, 2020a).

The *currere* curriculum theory in Brown's (2007) study where narrative inquiry was used allowed the five participants to discover new things about their practice. Their self-discovery made them understand themselves and their practice. This illustrates the transformative nature of *currere*. The reflection afforded by *currere* drove the participants to discover that their practice was influenced by childhood experiences. Khoza (2019) sees this transformative experience as a cognitive process in which the conscious mind interrogates the subconscious in order to renew practice for new actions. Personal voices of teachers are generated as they are exposed to *currere* which gives birth to new forms of practice.

Sokhulu (2020) concurs with Khoza (2019b) that new actions are birthed by academics when personal reflection driven by *currere* is engaged to critique experiences. Furthermore, Biesta (2015), together with Khoza (2019b), admit that academics reflect using *currere* to offer high-performance levels in their practice. The use of *currere* in this study aims to positively influence the geography teachers' enactment practices. When teachers practice in a better way it demonstrates that they have built new knowledge. Khoza (2020), Mabuza and Khoza (2019), together with Makumane and Khoza (2020), all agree that the knowledge that is built through *currere* helps teachers to generate specific personal voices which are useful in practice.

4.4 Pinar's *Currere* and its Relevance in this Study

This study explores geography teachers' voices in teaching climate change in Eswatini, anchored to Pinar (2004)'s curriculum theory of *currere*. Pinar calls for the use of the real-life historical background approach. This asks teachers to clearly express their memories and beliefs of the present lived moment as well as their wishes for the future. Pinar believed that this would help teachers to articulate their voices as they enact the curriculum (Pinar, 2004).

Since *currere* is a meaning-making course, it is concerned with interrogating and reconstructing teachers' voices, such becomes the source of teachers' actions.

Kanu and Glor (2006) posit that Pinar's autobiographical/biographical theory of *currere* is best used when understanding teachers' voices: it foregrounds the relationship between an individual teacher's descriptions of life history and the practice habits. This combination offers prospects for theorising specific events in a teacher's educational history which builds the voice of a teacher. Using *currere* in this study allowed the delving into participating geography teachers' personal, social, and professional autobiographies to obtain their voices in the teaching of climate change. Since *currere* is a reflexive cycle, the teachers were able to reflect on their history to inform the present practice and the future. Pinar and Grumet (1976) point out that the reflexive nature of *currere* deepens self-understanding which is then heard from the individual teacher's voice. According to Mahabeer (2015), *currere* allows an individual to reflect on real situations in practice instead of relying on professional and societal voices. *Currere* encourages personal reflection which leads to generation of a voice that relates to the understanding of practice.

Shoba (2018) observes that teachers' voices are heard because this best informs how the teachers perform the teaching activity. Shoba (2018) maintains that teaching is a highly significant activity which should be performed in meaningful ways. *Currere* in this study became the best way of obtaining teachers' personal voices. Such informed whether each individual teacher is conducting teaching in a meaningful way, seeing to needs of learners. Kanu and Glor (2006) also concur that *currere* used in a study has the ability to provide teachers with the necessary capacity to realise their individual voices. Utilising *currere* will assist in the attainment of the teachers' voices in the teaching of climate change since *currere* is a theoretical tool that allows for individual self-examination.

The voice to be generated in this study refers to the meaning that resides within an individual that enables meaningful participation in any community. The use of *currere* in this study presents an opportunity for the geography teachers to give meaning to how they enact climate change. Clandinin and Connelly (1990) admit that through using *currere* it is possible to generate teachers' voices. What is critical is that, if teachers' voices are heard, they become significant in responding to individual learners' needs. As teachers recognise their individual voice, they can aid learners in finding their own voices (Kanu & Glor, 2006). *Currere* in the study is employed as a multifaceted analytical tool for obtaining geography teachers' voices.

According to Mahabeer (2015), the teacher's personal voice is vital in the curriculum-enactment stage.

Moreover, the currere curriculum theory blends well with the pragmatic paradigm which this study adopts. Currere strives for obtaining individual identity which is related to or connected with the pragmatic paradigm applied to recognise personal experiences. Additionally, this study's design is the educational design research (EDR). The EDR has three phases: preparatory, design, and implementation, as well as the evaluation phase. The phases of the EDR blend well with the phases of currere, such that, when analysing each of the phases of EDR the currere moments will be employed to explore the geography teachers' voices. The pragmatic paradigm, as well as EDR will be at the heart of the understanding of teachers' voices.

The use of the reflective activity/open-ended questionnaire together with artefacts as data-production tools also tallies with currere. The currere theoretical framework also guides the data generation of this study. Reflection is at the heart of currere, as participants have to reflect in the four moments of currere to obtain their voices. Artefacts also assist in allowing participants to narrate the autobiographical stories that enable their voices to emerge. The autobiographical narration is what currere holds to. This elaborates that currere was the appropriate model in this study for allowing personal voices to emerge. Currere, together with the curriculum constructs that drive personal voices, is used in this study to coin the questions that participants will respond to in the various data-collection tools for this study.

However, using the currere model in studies has its critics. Currere is blamed for teaching individuals to guard against allowing the theoretical part of life to overwhelm, and further erase the personal realm (Smith, 2013). However, Kincheloe (2012) points out that currere insists that an individual teacher should not be allowed to sink into subject-content matters. Instead, identity and self should prevail and be cultivated more strongly so that the teacher will enact the curriculum fully aware of self and needs. This validates the importance of the personal voice in the teaching of climate change. Currere enables the teacher to rise against all professional and societal voices that can warp the teacher's self and identity. Kincheloe (2012) notes that the lack of personal voice on curricular spaces can be addressed by currere. This is the only theory that is better positioned to allow personal voices to be heard.

The use of a currere theoretical framework in this study sought to identify "who" is teaching climate change and "why" it is taught in such a way. Pinar and Grumet (1976) accept that

currere is a theory that refocuses curriculum in such a way that the teacher and learner are no longer considered simply objects to be driven by epistemological policies. Instead, the learner and the teacher, as individuals, should be in the centre of curriculum issues. Currere is a theory that advocates humanising the curriculum by focusing on the individual teacher's needs, critical in the curriculum spaces which this study seeks to explore.

Other scholars such as Apple (2000) criticise currere for relying on autobiography which, if it is left uncritically scrutinised, risks becoming a self-indulgent endeavour. Similarly, Apple (1999) asserts that autobiography has the potential of brewing individualism which can defeat the good course of curriculum issues. In contrast, Smith (2013) and Kincheloe (2012) argue that the method of autobiography employed in currere is best suited to providing the insights and views of an individual. The awareness of the factors that impacted individuals from their history makes the understanding of self possible. Moreover, in response to the critiques levelled against autobiography, Doerr (2004) sees autobiography as a practical application of meaningful reflection that can only ever be achieved by human beings. The autobiographical experiences individuals share in currere illuminate experiences that define individual's identities in a simplified practical manner, rather than as self-display (Apple, 2000).

Several studies have shown a successful application of the currere theoretical framework (Brown: 2007: Dlamini, 2019: Mahabeer, 2015: Smith, 2013). These studies demonstrate that all the participants appreciated the experience of currere in finding their voices through reflection. Reflections in currere were able to open up the participants' unvoiced concerns, ultimately offering more powerful personal voices.

4.5 Understanding personal voices in the geography EGCSE curriculum of Eswatini

Khoza (2020), Sokhulu (2020) and Zuma (2020) declare that personal voices are produced by a combination of societal and professional voices. Sokhulu (2020) observes that the personal voices are generated using strengths an individual gleans from both societal and professional voices. This makes the personal voice unique to individuals as it addresses specific needs. It seeks to solicit personal identities as well as individuals' special needs development (Khoza, 2016b: Mpungose, 2018). Personal voices are generated through and under the influence of individual autobiographical experiences (Khoza, 16b: Pinar, 2012).

It is essential therefore for geography teachers to recognise their personal voices on the teaching of climate change before addressing voices from the society (societal) and the prescribed curriculum (professional) (Mpungose, 2018). Khoza and Fomunyam (2020) postulate that the personal voice (self-actualisation voice) is the most important voice that a teacher should have. However, Khoza and Fomunyam lament that the societal and professional voices suppress the personal voice, whereas it is crucial in enacting the curriculum.

According to Khoza (2019b), Khoza and Fomunyam (2020), the personal voice demands attention in curriculum spaces because it stimulates self-directed education which in turn leads to self-actualisation. Teachers who are self-actualised individuals have numerous advantages for teaching and learning (Maslow, 1943). These include being highly creative, self-directed, able to perceive reality in an efficient manner, possessing democratic attitudes which are displayed in having high moral standards. This elaborates that self-actualisation (personal voice) upgrades confidence in individuals. The confidence makes one gain interest in practice thus developing creativity. The creativity later on is revealed as a personal voice in curriculum spaces.

All these attributes of self-actualisation equip an individual with unlimited problem-solving skills which are essential when enacting topical issues such as climate change (Khoza, 2020). As personal voices are generated by an individual through using strong points from both societal and professional voices, researchers lament that personal voices are too much influenced by either the societal or professional voice. Scholars Hoadley and Jansen (2018), Khoza (2016b), Mpungose (2018), and Pinar (2012), argue that most curriculum publications address mainly professional voices needs (the vertical curriculum) and societal voices needs (the horizontal curriculum).

Studies that discuss curriculum that is personally driven (personal voices) to attend to needs of teachers are conspicuously absent. Khoza and Fomunyam (2020) posit that teachers are taught to achieve professional and/or societal voices' needs: very limited emphasis is placed on the accomplishment of personal voices' needs. The teacher's personal voice has been ignored and overlooked whereas it should be the loudest and most dynamic voice in curriculum spaces. Khoza (2021) observes that personal teachers' voices are missing in curriculum spaces. This study therefore focused on this gap to search geography teachers' voices on the teaching of climate change.

An interpretative case study by Khoza (2017b) found that the personal voices of participants who were students in a tertiary establishment in South Africa were limited and were overwhelmed by societal voices. This elaborates that personal voices were more influenced by the societal voices which silenced the participants' voices as the societal voice took prominence. As a result, the participants' individual needs could not be addressed. Personal voices are silenced if any personal voice is more influenced by either professional or societal voice. Biesta (2015) concurs that there is commonly a one-sided emphasis on one of the two voices (societal or professional voices) which creates a gap in balancing these voices in order to deliver personal voices.

Makumane and Khoza's (2020) study also concurs that the personal voice should not be silenced by either the professional or societal voice. The findings of their qualitative case study involving twenty participants demonstrated that being seized by either societal or professional voices, while disregarding the personal voice may impede the enactment of any curriculum. The recommendation of the study by Makumane and Khoza (2020) was that there should be careful integration and alignment of the professional and societal voices in order to allow individuals to create personal voices which are vital for effective curriculum enactment. Dlamini (2018) asserts that the personal voice should be viewed as a basis for best interpreting the professional and societal voices.

Khoza and Biyela (2020) resonate with this alignment, and argue that there should be a balance between societal and professional voices to allow individual teachers to understand, find, and have their personal voices. The teacher's personal voice is important in effecting enactment practices: it can hinder or promote practice. Being more inclined to either professional or societal voices during enactment affects the teacher's practice, as Makumane and Khoza (2020) affirm. The personal voice of a teacher is important and unique. It has to be elicited so that the "who" and "why" questions can be answered in the teaching of climate change.

Makumane and Khoza (2020) assert that personal voices should drive the curriculum so that the geography teachers fully develop sufficient skills, knowledge, attitudes, and values to facilitate a comprehension of the SGCSE curriculum. The SGCSE curriculum is a complicated conversation (Pinar, 1995). The complexity stems from the fact that it is driven by both professional voices (prescribed subject content with high-stakes examination) as well as social voices (competency-based with specific skills and outcomes for learners to attain), (Budden,

2016: Dlamini, 2018: Khoza, 2018: Mabuza, 2018). This combination produces a pragmatic curriculum.

For Khoza (2016), a pragmatic curriculum such as the SGCSE is driven by personal voices. Being pragmatic refers to the way each individual teacher finds solutions when enacting a curriculum. Enacting a pragmatic curriculum is an overwhelming task if personal voices are neglected or shut down. This elaborates that exploring personal voices helps to empower teachers by addressing their needs so as to satisfactorily manage the pragmatic curriculum they are tasked to enact.

An interpretative case study by Khoza and Fomunyam (2020) which explored and sought to understand the placement of digital resources with the needs of people that partake in the teaching of master of education (MEd) students in a South African university, concluded that personal voices of teachers have to be welcomed in curriculum spaces. Through the use of semi-structured interviews, focus-group discussions, and document analysis to generate data, the study revealed that teaching exposes teachers to two voices: professional and societal. According to the study, this scenario creates a competing space for teachers which must be integrated into the personal voice.

The personal voice expresses the lived space for teachers. The study emphasised the need to comprehend the lived experiences (personal voice) of individual teachers in helping teachers to self-actualise. Once the geography teacher gains a voice, the needs of professional and societal voices will be balanced. Consequently, the understanding will have a positive impact on the teacher enacting climate change: the teacher will balance and fulfil the professional and societal needs. The teacher's voice can be understood when deliberated through the lens of *currere*.

4.6 An understanding of teachers' personal voices/identity through *currere*

The teaching and learning process is a completely personal/individual experience. Personal identities of individuals must be considered in the learning process. A qualitative case study was conducted by Fomunyam (2014) involving six university students. The study concluded that personal/individual identities have to be taken into consideration in curriculum enactment, being essential in meeting needs of individuals (teachers and learners). For successful teaching and learning, the identity of each person is critical. As personal voices seek to address personal

needs of individuals, they examine the affective domain which addresses personalised emotional reactions of individuals exposed to any learning experience (Booyse & Du Plessis, 2017; Kennedy, 2006; Sonmez, 2017).

Table 4.3 below displays the four levels of affective domain (from the simplest to the most complex), together with their currere moments, and descriptions of what individuals are expected to display, as well as action verbs associated with each level.

Table 4.3

The Categories of the Affective Domain and Currere Moments attached to each Category

Affective domain/moment of currere	Expectation of individuals	Action verbs/phrasing of activity
Receiving/reflective moment	Individuals pay attention to taught and learnt professional knowledge. They then respond by reflection on the professional voices	Listen, attend, notice, be aware, follow, practice, comply
Valuing/progressive moment	Individuals value what they perceive as important knowledge demonstrating some level of certainty	Argue, express your own opinion, debate, display, participate
Organising/analytical moment	Individuals reflect on personal organising skills: develop a personal routine	Select, formulate, compare, organise

	enabling comparison and relationship with practice	
Characterising/synthetical moment	Display a set of personal values that influence practice, resulting in self-identity/actualisation	Develop, provide an opinion, defend, argue against or for

Note this table has been adapted from Brown, D. S. (2007). *Restorying ourselves: Using currere to examine teachers' careers*. Oklahoma State University.

Table 4.3 presents the levels of affective domain with their corresponding currere moments, expectation for an individual, as well as examples of an activity an individual portrays in each domain. The affective domain seeks to address individuals' needs. For example, in climate change issues, each learner is expected to develop affective competencies in order to display appreciation and positive attitudes towards the environment affected by climate change. Geography teachers are expected to draw learning outcomes that are embedded in learners' attitudes and emotions so that learners appreciate the value of learning climate change.

As can be seen in Table 4.3, the first level in the affective domain is reflecting on professional past voices which were received by the teachers. This is presumably where the individual teacher reflects on what is professionally known about climate change. Climate change, as a topical issue, has various professional sources of content knowledge (school) that teachers can reflect upon and be aware of. Teachers are expected to reflect on such content knowledge and be aware of the professional voice in issues of enacting climate change. Chapter Two of this study deliberated much on the dynamics of overreliance on school knowledge prevalent in the professional voices space. Furthermore, objectives were also discussed as another construct that professional voices rely much on. Lastly, it transpired that professional voices rely more on summative assessment. It appears that all the constructs of the professional voices point more to what is professionally learnt and taught. Teachers in professional spaces will reflect and rely on these as they enact a curriculum that has been described by Khoza (2016) as pragmatic.

In the next level, teachers are expected to reflect on the progressive moment in valuing their personal content knowledge, expressing it as their own opinion. This is the moment of social voices

in which teachers are expected to react to climate change content obtained from everyday (indigenous) knowledge. Teachers are expected to enact such knowledge with learners and engage them in learner-centred activities so that individual learners can then participate in discussions. In the different kinds of discussions, the teachers are influenced by a number of social voices which help them value their practice. Here they start to attach value to information on climate change and further demonstrate some level of certainty. As they do that, geography teachers and their learners can argue, debate, and further express individual varied views on any climate change topic. Thus, in social spaces summative assessment ceases being crucial, peer assessment dominates and the use of software resources is encouraged. Chapter Three of this study was able to theorise more on the progressive moment or social voices.

Furthermore, teachers are expected to reach a level of comparison in which they are able to organise knowledge to formulate their own understanding. This becomes the analytical stage in which teachers reflect on their personal organising skills. Teachers start to develop a personal voice, displaying values that influence their behaviour. Such enables them to independently argue against or provide an opinion on any climate change issue. The crucial element is that each individual should display self-identity which leads to self-actualisation that occurs in the synthetic moment. The crucial element is the synthetic moment in which individual teachers can practise based on their personal voices instead of being influenced by either the professional or societal voices. The personal values teachers generate help them to practise as researchers who are lifelong learners capable of being artists in practice. They begin to have some autonomy in the enactment of the curriculum, and become reflective practitioners.

Geography teachers who are driven by personal voices will be able to put practice at the centre, and learning will be responding to their needs and the needs of learners (Freire, 1970; Hoadley & Jansen, 2018; Khoza, 2013; Makumane, 2018; Pinar, 2013). The discussion of the domains: cognitive domain for professional voices, psychomotor domain for social voices, and the affective domain for the personal voices, together with the currere theory, amplifies the influence of three voices in enacting the curriculum. The EGCSE geography curriculum does not suggest the crucial voice in curriculum enactment. This is a gap in the curriculum said to be pragmatic.

A qualitative study conducted in Canada by Ashraf (2019) discovered that teachers' voices have always been underrepresented in curriculum spaces. Such jeopardises the effective enactment of any curriculum. The crucial role is that of teacher's voices as teachers in the forefront, tasked with enacting the curriculum. Other scholars Bailey (2000), Cohen and Mehta (2017) and Priestley and

Humes (2012) also resonate with Ashraf, arguing that teachers are the sole active agents in enacting the curriculum, being at the forefront of implementing the curriculum in the classrooms. It is essential for the voice of teachers to be heard in issues that pertain to implementing curriculum, such as climate change. The common tendency in most curricular spaces is that the professional voices and societal voices take precedence over the personal voices.

According to Khoza (2021; 2018), Makumane (2018) and Sokhulu (2020), the personal voice portrays the individual's values applicable to practice. For that reason, this study sought to discover the teachers' voices on the teaching of climate change to address the underrepresentation of the personal voice that is generally common in teaching and learning environments. Teachers join the practice, bringing with them differing voices that influence their daily practices as they enact the curriculum. Teachers generally undergo training in which they are given facts on the discipline they have specialised in. In Eswatini teachers who handle the EGCSE curriculum are degree holders. These degree holders are divided into two: the first group are those who hold a Bachelor's Degree in humanities. In their bachelor's training, the teachers are made to consume and listen to professional voices through content knowledge they receive.

Those trained by the University of Eswatini obtain a bachelor's degree after four years. Thereafter they have to enrol in a postgraduate certificate in education (PGCE) course that qualifies them as teachers. As the pre-service teachers study for the PGCE they gain more professional voices that equip them with professional pedagogical practices. These practices include introducing teachers to the use of objectives in planning for their lessons. Furthermore, they are taught assessment practices, especially summative assessment which is more prevalent in Eswatini. The best teacher is determined by good grades produced by learners in the subject in the final examinations. These professional voices demand that geography teachers adhere to them for their learners to pass geography well in end of year high-stakes examinations. Moreover, when the teachers get to the field to teach geography, they are given specific instructional material to enact as they prepare learners for examinations in the form of prescribed books.

The factual instructions and materials give teachers a professional voice. When teachers practise in different schools where they are posted, they become members of subject associations. They then communicate with colleagues, who introduce them to social voices; this also influences them in practice. The social voices are also generated from their interaction as members of the geography department in their respective schools. Some senior teachers give societal advice that helps new teachers in enacting geography lessons. Teachers begin to understand outcomes that drive the

curriculum: they use societal knowledge which can be sourced from members of the school community. Teachers use software resources to teach geography. From the software resources learners obtain various kinds of knowledge on climate change which is often not included in school knowledge.

On the teaching course individual teachers begin to develop unique individual strategies in enacting the geography curriculum. These individual approaches give individual teachers personal voices (Makumane & Khoza, 2020). There is an interplay between the three voices (personal, professional and societal voices) on curriculum enactment. In this interplay the personal voice should be prominent such that the individual teacher's needs take supremacy for the curriculum to be well enacted as per the expectations of curriculum planners.

Teachers' voices, whether professional, societal or personal, contribute enormously to the actions they take when enacting lessons on climate change (Khoza, 2015; Schiro, 2012). According to Makumane and Khoza (2020), teachers' voices affect and influence everyday practices; and they may either hinder or promote the attainment of curriculum goals. Furthermore, Mpungose (2018), Dlamini (2018) and Mabuza (2018) aver that personal voices are produced from either professional or societal voices, or are produced by both the professional and societal voices. An individual teacher's personal voice assists in managing the curriculum enactment process in a fitting manner.

4.7 The Chemistry between Currere and Teachers' Voices.

The understanding of teachers' voices in curricular spaces is possible through the use of currere. The strength of currere as a theory of exploring teachers' voices is that currere makes it possible to foreground the interrelationship between educational life histories of teachers and practice. Furthermore, Kanu and Glor (2006) note that currere provides opportunities for teachers to theorise particular voices in one's educational history so as to dialogue with the voices in order to examine potential for positive change. The use of currere creates a ground on which teachers' voices as teaching has of late become a complex activity. Kanu and Glor (2006) acknowledge the complexity of pinning down teachers' voices as the teachers are influenced by numerous voices that have a bearing on their practice. The complexity is worsened by teachers' voices having been sidelined in curriculum spaces (Radu, 2011).

The four reflective phases of currere begin with the regressive moment. The regressive phase appears when teachers' professional lived practices, experiences and understandings of their past

are in action (Kanu & Glor, 2006; Khoza, 2019; Pinar, 2013). These regressively generated experiences produce specific professional voices that become crucial sources of data that depict the personal voices of geography teachers. Reflecting on the past voices through the teacher's conscious minds probing their past lived educational experiences, and voices heard from the past through use of subconscious minds to transform the mindset that in turn produces specific professional voices (Mabuza & Khoza, 2020; Makumane & Khoza, 2020).

The conscious mind refers to the part of the brain that permits reasoning and thinking. The subconscious mind, on the other hand, refers to the part of the brain that stores almost all actions and experiences of human beings. These stored experiences and actions are used when and if required by the teacher's task at any specific moment. Lastly, the unconscious mind refers to the part of the brain which controls all bodily systems such as the nervous system, respiratory system, digestion system, and other systems that support human life.

According to Biyela and Khoza (2019) and Mabuza (2018), the reflection process uses the conscious mind to interrogate the professional voices' experiences, and actions of the past (regressing). Mabuza and Khoza (2020) note that the regression moment which is on professional voices takes place in order to produce actions for the future. The regressive moment entails that geography teachers consciously reflect on their professional habits (strict rules, laid-down details and facts that are professional) formed in their subconscious minds. The regressive moment is underpinned by the prescribed content knowledge taught to learners, teaching objectives that guide teaching of geography, teacher-centred activities in geography lessons, the role of being an instructor of geography, together with formative assessment as discussed in the second chapter of this study. These constructs influence the habits and voices of geography teachers as they reflect on their practice to give a unique professional voice based on the constructs.

The regressive moment which gives teachers the professional voice is the first and foundational voice which geography teachers are exposed to. The foremost contact teachers have with curriculum issues either as consumers or enactors of the curricular is strictly through the professional voice. This is because from the time the teachers themselves were learners they have experienced learning in environments filled with habits of professional voices. The teachers fed learners subject content that was from school knowledge. They were taught by teachers who were guided by specific objectives with the teacher being an instructor dependent on summative assessment.

The regressive moment fosters teachers as reflective practitioners. The teacher ponders on the past, critically inspecting own practices (Mabuza, 2018). A teacher who is strongly aligned with professional voices may develop reflective practices born of the regressive moment. Bolton (2010) and Bain (2018) together support the idea of a teacher who is a reflective practitioner using regressive professional factual details and information to drive personal practice and actions. Mabuza (2018) warns that the reflective practice should be a routine practice for teachers to avoid a situation of being ineffective and stale. When teachers ponder the teaching of climate change, they obtain a professional voice.

According to Khoza (2019), when teachers obtain their professional voice, they give the geography learners accurate and precise climate change knowledge. This results in the development of informative and upright climate change habits. A qualitative study that employed the action-research design was conducted by Mpungose (2018). The study on teachers' reflections recognised that effective teaching occurs when teachers reflect on their past (regress), to properly gain their professional voices. It is critical for teachers to consider the professional voices when enacting climate change. However, Sokhulu (2020) warns of the danger of overreliance of teachers on professional voices as this limits learners to skills needed only for daily living. The 2020 Examinations Council of Eswatini EGCSE geography syllabus stipulates that learners of geography should be given an opportunity to develop essential skills when they consume the curriculum.

The attaining of social skills such as technological skills, the skill of working with others, as well as gaining insight into geographical issues that affect human beings at both macro and micro levels implies that teachers must be progressive. Being progressive, according to Pinar (2012) suggests that teachers demonstrate certain skills that influence their learners' social lives. Furthermore, Khoza (2016a) posits that the progressive moment is characterised by the human imagination of the societal possible future. The progressive moment imagines what is not happening at the present moment. The focus of the progressive mindset is on what should be happening in the society in the predicted future. The progressive moment opens up to imagined future trends in the society, and the geography teacher has to add a societal voice that addresses the demands of the envisaged future.

Radu (2011) upholds that the progressive moment addresses social voices that are projected for climate change learning. Radu (2011) sees the progressive phase as a point at which the

teacher reflects on the social role education plays for a learner. It is the moment when a teacher connects learners to social experiences in the world. Because of the philosophy of progressivity, the teacher has to reflect based on what John Dewey assumed – learning should impact the social life of learners and the content to be learnt should be obtained from the immediate society. Teachers should reflect on the future society and that reflection will affect their social voices when teaching climate change.

In the progressive moment, teachers reflect on what they value as important skills learners require to fit in social spaces. Social voices in Chapter Three discussed constructs such as the use of everyday knowledge and indigenous knowledge. The societal voices as they progress in reflecting realise that learners need to be aware of valuable knowledge that is obtainable from their immediate societies instead of only thinking of school knowledge. This realisation helps learners appreciate their environment and their neighbourhood as these become sources of information for the learners.

The field trips are spaces that can be used as learning sites for learners in their society. This also shows the progressive thinking of teachers speaking and relying on societal voices. The learner-centred activities suggested by societal voices prepare and equip learners to acquire skills of working with others which become crucial in the workplace. The use of software resources also adds to the social skills that learners need to acquire as they learn geography. The progressive moment therefore addresses the societal voices in teaching climate change.

As teachers work together with learners, Khoza and Mpungose (2018), Lasky (2005) and Rodgers and Scott (2008) observe that some kind of an environment is formed which sees teachers and learners developing specific unique individualities for them to operate under. The teacher and learner assume new identities and roles. In personal voices the self-identity and the role individuals play is critical. For Rodgers and Scott (2008) the teacher's identity of self in curriculum circles is an academic representation for each teacher's actions in practice. Individuals in learning use the currere analytical moment to identify their personal voices.

The analytical moment is the time according to Khoza (2016b), when teachers interrogate their future in reflecting on their past, the past about their future, and their present in conjunction with their past and future experiences. Eisner (1998) describes the analytical moment as the time when individual's voices are influenced by the past as they interact with the present while reflecting about the future. The teacher can then interrogate the future as influenced by the past in the present moment (Pinar, 2012).

According to Kao (2014), a teacher in the analytical moment will question individual decisions, choosing a personal decision which will give a personal/identity or voice. The analytical moment is personal as it sees one interrogating one's self to deliver own unique identity. The identity of a teacher is crucial in curriculum enactment (Walkington, 2005). For Beauchamp and Thomas (2009), it is best to situate the identity of teachers at the core of the teaching process. This is because the teacher's self-identity specifies a teacher's beliefs about teaching and these beliefs are expressed as a voice of the teacher. A teacher in personal voices spaces assumes a role that is personal while also promoting self-identity.

Kao (2014) notes that an analytical teacher will portray specific characteristics, one of which is being a researcher. According to Mabuza and Khoza (2020), a researcher describes a teacher as one who enables learner inquiry whereby individual learners are afforded the opportunity to work independently in climate change lessons. In such a setting, each learner contributes to own learning. For Samuel and Van Wyk (2008) a geography teacher who is a researcher is a lifelong learner. A lifelong learner is one who contributes to self-development. The researcher does that with the intention of cultivating quality in personal practice.

Scholars Fraser, Kennedy, Reid, and Mckinney (2007), together with Akude (2010), uphold that a teacher who is a researcher always endeavours to improve in every way. The academic and pedagogical improvement gives the teacher a voice in curriculum issues. Likewise, Shoba (2018) admits that a teacher as a researcher improves in practice, discovering new knowledge continually, therefore being informed on latest developments in that enacted curriculum. The improvement can be through continuously engaging in research on the area of specialisation and in topical issues such as climate change. One can also be actively involved in professional development activities such as in workshops and subject association trainings. The lifelong learner through the various exposures becomes capable of overcoming any challenge with the curriculum. The researcher also acts as a problem solver. In dealing with climate change teachers assume the role of being researchers/problem-solvers and lifelong learners.

The geography teacher who is a researcher develops numerous skills of tackling learners' questions and challenges when teaching climate change (problem-solver). Khoza (2019a) notes that a researcher uses both the conscious and subconscious mind to achieve everything planned for the learners in class. A researcher also functions as a creative problem-solver in continuing in practice. If there are weaknesses ways to improve and identify strengths are employed to continuously improve practice (Makumane, 2018). For Shoba (2018), being a researcher entails a

geography teacher being able to explore aspects of personal teaching. Exploring requires questioning practice behaviours and decisions as well as a keen interest in learning more about a subject area. During teaching and learning, a researcher mostly uses formative assessment with the learners.

The analytical moment of currere requires the teacher to present a personal voice. Freire (1994) notes that the personal voice is critical in curriculum matters as it suggests liberation and equality in education issues. The equality leads to a democratic educational contour in which curriculum planners operate with similar understandings as curriculum enactors. After the analysis stage the teacher will then synthesise what is gained from both the professional and societal voices which becomes the last moment of currere. In the synthetical step, the teacher interrogates the current lived and practice experiences (analytical) which reflect both the previous/regressive and progressive (societal) moments. These three moments combined produce one unique personal meaningful voice for a teacher (Mpungose & Khoza, 2020).

Being synthetic means being able to combine different ideas through logical thinking or reasoning (Kanu & Glor, 2006; Grumet, 1988; Pinar, 1976). A teacher in the synthetic moment is able to construct and voice personal meaning on climate change issues. The ability and strength to construct the individual meaning is generated from the reflection based on professional and societal voices. The synthetical phase assembles all voices in one space as the teacher re-enters the current moment to interrogate what it means (Pinar et al., 1995). In the synthetic moment a teacher uses information of the present lived moment, listens to and reflects on the inner voice which generates a unique personal voice displayed during curriculum enactment (Khoza and Biyela, 2020; Mabuza & Khoza,2020). The inner personal synthetic voice is that which should drive the teacher's habits and practice.

Pinar (2012) emphasises that individual teachers must adopt unique practices that show that they are free from being driven by the professional and/or societal voices only. They should become aware of personal voices and commit their practice to what they individually understand. According to Kanu and Glor (1996), the detachment on either professional or societal voices can be made possible only when an individual understands the importance of the personal voice. The geography curriculum and the teaching of climate change do not give the teacher an opportunity to have such a unique voice. McWilliams (1995) notes that teachers' voices are absent in curriculum spaces. The teachers' voices are trapped in old metaphors that tie teaching to either

professional voices or societal voices, while the personal voice is required in the teaching of climate.

Grummet (1988), together with Kanu and Glor (1986), observe that if teachers' voices are well represented in curriculum spaces, teachers could contribute transformatively when enacting the curriculum. Pinar (1995) notes that when teachers feel empowered in curriculum spaces, they can contribute significantly in improving the teaching of climate change. Moreover, the teachers' voice in curriculum spaces can make teachers change from being mere instruments for others enabling them to comprehend the magnitude of their voices on curriculum issues. This enables the individual to have meaningful participation in any community of practice.

The chief function of the voice is that it becomes useful in implementing changes in the curriculum in response to individual teacher's needs. The scholars reviewed above point towards the synthetic moment which produces the personal voices. When teachers enact the curriculum, they source teaching habits from the synthetic moment where the inner voice is generated. The successful enactment of climate change requires clear and concise direction on which voice a teacher should adopt to enact the curriculum. The theory of teachers' voices proposed by this study supports that pragmatic curricula like the EGCSE geography should be driven by the personal voice. The theory of teachers' voices advocates that teachers should be able to balance the professional and societal voices and gain a personal voice.

4.8 The Theory of Teachers' Voices

The theory of teachers' voices draws strength and originates from the currere curriculum theory. Currere postulates moments or steps that require teachers' reflections. Pinar (2012), Khoza (2014), and Khoza (2016b) state that teachers regress as they reflect-on their past professional voices, and progress as they reflect-for as they interrogate their societal voices, and reflect-in as they interrogate their present personal voices. It is argued that teachers utilise knowledge from their regression moment (professional voices) and progressive moment (societal voices) to analyse their position in the curriculum. The analysis occurs involving their conscious and subconscious minds which give to birth the synthetic moment where the personal voice of a teacher is produced. Figure 4.4 illustrates this theory.

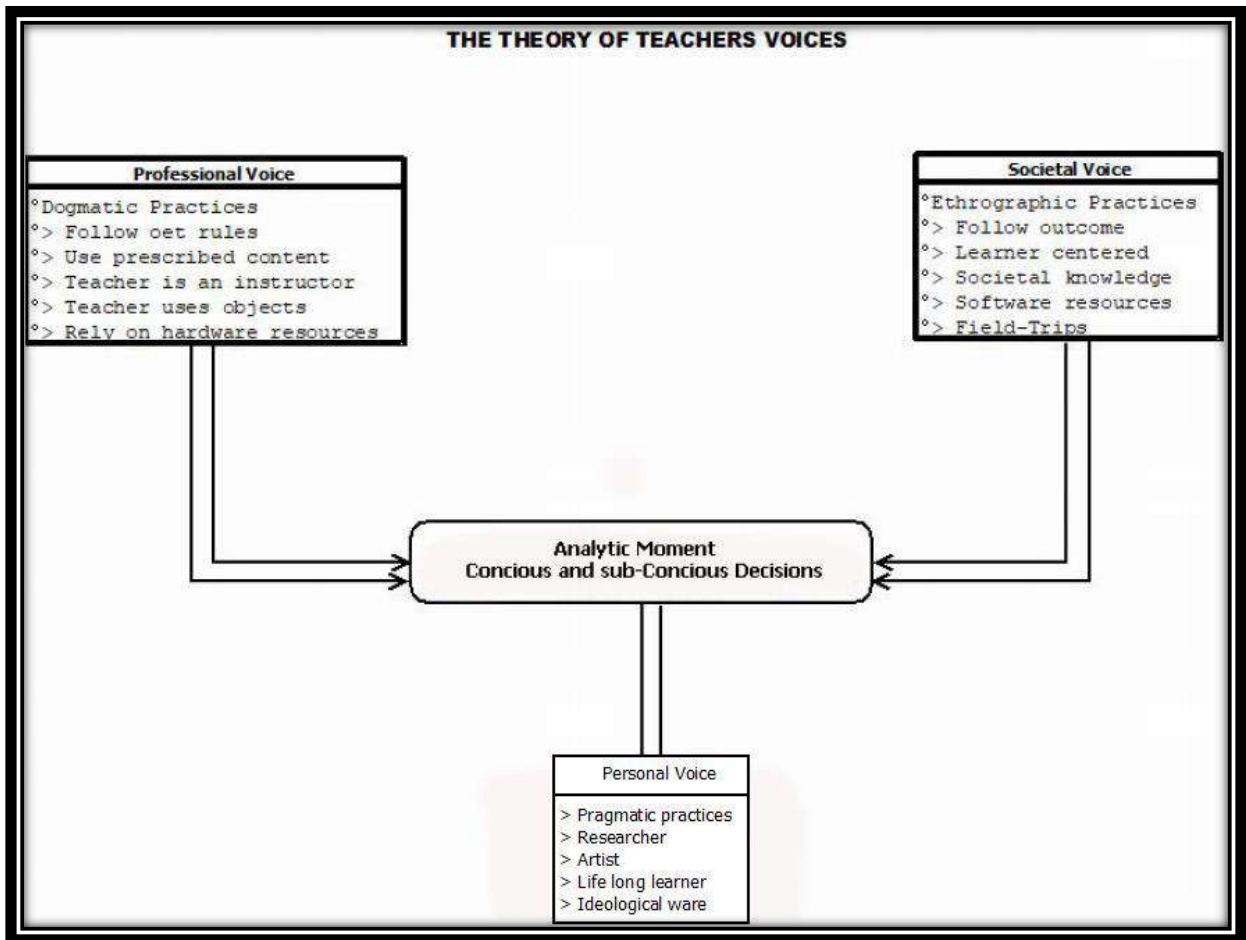


Figure 4.4: *Theory of teachers' voices*

The strength of the theory of teachers' voices lies on its ability to show that in the moments of currere the teacher draws data that becomes useful in the conception of the personal voice. Moreover, the theory is able to tell the practices that are expected in each moment or voice. In the professional voices' space (regressive moment), for example, the teachers' practices are dogmatic. According to Kremer-Hayon, Moore and Novat (1986) dogmatic practices are associated with professional voices in the sense that the teacher is bound to follow preconceived objectives, prescribed content knowledge sourced from prescribed hardware resources which are usually books. These dogmatic practices are structured.

The professional voice teacher will also be an instructor in the classroom. These curriculum concepts that describe a teacher in professional voices are deliberated in detail in Chapter Two of this study. However, the theory suggests that an effective teacher enacting a pragmatic curriculum

should take some positives from the professional voice practices. The positives that can be obtained from the professional spaces assume that the teacher will have non-dogmatic practices. The teacher will be unstructured on the basis of divergently perceived practices that attach more importance to the individual needs of teachers and learners (Kremer-Hayon et al., 1986). Teachers' personal voices have to be sourced from professional voices.

A qualitative case study by Sokhulu (2020) supports that teachers should embrace good practices from the professional voices to produce unique personal voices that address individual needs. Furthermore, Khoza (2019) states that in the regression moment the prescribed content knowledge the teachers use enables the teachers to give the geography learners precise climate change knowledge. Biyela and Khoza (2020), Makumane (2020) and Sokhulu (2020) also concede that from the professional voice a teacher can grasp voices to create unique personal voices. The study suggests that a teacher in the professional voice should assume the role of a reflective practitioner. As discussed earlier in this chapter the reflective teacher reflects on past experiences to inform the contemporary and forthcoming practices.

In the progressive moment, the societal voices operate using ethnographic practices. Generally, ethnography is connected to the society or social environment. Ethnographic practices are related to the knowing or generating of knowledge from the standpoint of social relations. The societal voices, for example, use social formulated knowledge which has been described as indigenous knowledge in Chapter Three of this study. The teacher who adopts a facilitator role driven by outcomes depicts societal standards. The societal voices are inclined to what is happening in the society. An ethnographic case study by Angers and Machtmes (2005) discovered that curriculum issues consider what happens in the society. In their case study Angers and Machtmes utilised an example of using software resources (technology) as one aspect that teachers cannot escape and is used in teaching and learning environments. The software resources have been discussed in Chapter Three at length.

Furthermore, the progressive moment in the societal voices is characterised by imagining a possible future. A teacher reflects and thinks ahead as an innovator or artist. Artistry talks to originality, planning ahead, creativity as well as the art of handling and delivering relevant subject matter appropriately. Thorton (2015) notes that artistry is common among designers, painters, musicians, sculptors and dancers. However, teachers can be artists too; teaching is an art that demands proper planning and envisioning of the future of the society. Furthermore, Thorton (2015)

sees an artist as an innovator with creative thinking. A teacher in the personal voice will be able to plan and deliver the lesson in a way that is comfortable.

In the analytical moment the theory asserts that an individual teacher will utilise the conscious and subconscious mind to select a personal voice from both the professional and societal voices. Khoza (2019) conducted a case study on particular lecturers' reflections on the application of the curriculum spider web during their teaching and supervising of Master of Education students. The study used reflective journals and semi-structured interviews to generate data, establishing that the personal voice is a product of the contestation of the societal and professional voices (regressive and progressive moments). Similarly, Nkohl (2017) noted that the personal voice came as a new product produced by the professional and societal voices. The personal voice thus emerges to resolve the strain that exists between the two voices (Khoza, 2021).

Khoza (2019)'s study further established that, even though tensions exist between the societal voices and the professional voices, the personal voice brings harmony between the two and formulates a new voice that is personal. The personal voice enables every individual teacher to recognise and further comprehend their own strong points and/or their identity (Freire, 1994; Hoadley, 2017; Khoza, 2021; Khoza & Mpungose, 2018). This understanding is shared by Khoza (2016) that the personal voice that the teacher ultimately produces positions the individual teacher at the heart of personal practice. The synthetic stage appears when the teacher displays pragmatic practices, setting an environment in which geography teachers create their unique and identities (Khoza, 2021; Khoza & Mpungose, 2018; Lasky, 2005; Rodgers & Scott, 2008).

Identity is well-defined as the theoretical representation for self in many given context (Rodgers & Scott, 2008, p. 733). In teachers' spaces, the conception of identity is the defining of each teacher's main principles on teaching and learning (Walkington, 2005). For Beauchamp and Thomas (2009), the teacher's identity displayed in pragmatic practices is crucial to the teaching profession. Operating pragmatically allows teachers to create their own values and further become thoughtful of their position in society. Identity of a teacher enables the teacher to be resourceful and further assume a personal voice in the enacted curriculum (Jansen, 2001; Rodgers & Scott, 2008; Walkington, 2005).

A teacher who is aware of a personal voice when enacting the curriculum with pragmatic practices is able to work efficiently with learners and meet their needs (Lasky, 2005;

Walkington, 2005). The usual strand noteworthy in pragmatic practices is that teachers carefully select suitable principles of the professional and societal voices that meet individual needs in a specific time. This leads to the creation of specific roles that depict that a teacher as pragmatic. These roles include the teacher being a researcher, artist, and reflective practitioner who is a lifelong learner that relying on ideological-ware.

As teaching is an activity that should suit every teacher, it is crucial that teachers possess a voice that is sourced from the professional and the societal side to suit their teaching environment as individuals. Thus, the theory of teacher's voices suggests that teachers' draw from the professional and societal voices in order to guide them when enacting the curriculum. The teacher whose practice is personal or pragmatic will exhibit specific practices which are discussed in the constructs that follow.

4.9 Theorising Constructs of Personal Voices

Studies by Zuma (2019), Zuma (2020) and Mabuto (2020) postulate that personal voices result from the combination of professional and societal voices. The distinct feature of personal voices is that they address individual teacher's needs through asking the question "who" is teaching climate change. It asks: who is teaching, that is seeking the individual teacher's identity. According to Khoza (2019) it is vital to establish personal identities of teachers, as the personal identity promotes improved practices in enacting the curriculum. An individual who understands the self promotes self-directed/autonomous learning which results in self-actualisation (Khoza, 2020). Teachers who are self-actualised become artistic and creative as they prepare their climate change lessons.

Furthermore, the self-actualised geography teachers become researchers who are problem-centred, recognising reality and accepting themselves as well as others for who they are (Khoza, 2020). Moreover, teachers in personal voices spaces use formative assessment during teaching and learning as they see themselves as ideological-ware. The practice of teachers in personal voices spaces is pragmatic as postulated by the theory of teachers' voices. Teachers become autonomous in their practice, they are able to critique their practices which produces new actions that show the "who" of enacting the curriculum (Mpungose & Khoza, 2020).

Discourses of the constructs that are associated with personal voices are shown by the identities discussed next.

4.9.1 An artist/creative teacher

Thorton (2015) grants that being an artist in teaching and learning spaces entails that a teacher is original in practice. Being original implies that the geography teacher does not use any teaching strategy, lesson plan or any activity during teaching and learning that is not a personal product. Instead, the teacher as an artist engages the mind (conscious and subconscious) to offer exciting lessons. Being artistic refers to originality which is applicable to the specific learners who consume the climate change curriculum. The concept of artistry is not common in every teaching and learning space. It is mostly seen activities such as music, painting, or sculpture; however, Schon (2017) asserts that it can be linked to teaching: teaching is considered as an art as well.

Biesta, Priestley and Robinson (2015) grant that although the identification of a teacher as an artist has been debated in educational spaces, it has later been unanimously accepted by many educators. Teaching has been arguably described as an art and or science. Teaching presents specific elements that associate it with artistic behaviour. These elements start from conceiving the lesson which is followed by the structuring of the lesson which goes hand in hand with preparation for presentation. During lesson presentation the teacher as an artist will respond to concerns, comments and questions from learners which will be followed by evaluation at the conclusion of a lesson. It is the depth of the teacher's personal voice that determines the extent and level of being artistic. The teacher must own a voice to enact the curriculum as an artist.

There is artistry in teaching. Geography teachers as skilful knowledgeable experts plan ahead how and what to teach (conceive) to produce an original climate change lesson (structuring) that will be enacted to learners. A geography teacher who is an artist is adept at handling climate change lessons. As with artists, the teacher will display specific skills in preparing and presenting lessons that are original. Such a lesson planned by an artist becomes interesting to teacher and learners. A teacher as an artist is an innovator who applies creative thinking to offer original lessons. An artistic teacher will come up with climate change lessons that negotiate learners' understanding and allow the teacher to be autonomous when teaching such lessons. Lureco (2016) advocates the idea of a teacher's practice being artistic in nature as one role that allows learners to enjoy lessons as much as the teacher does.

Scholars Dewey, Pinar, Hooks, as well as Freire, collectively support the idea of a teacher as an artist. These scholars argue that a teacher's personal voice allows for artistic expression. Dewey (1933) proposes that an artist will conceive and present lessons that address real life issues. In the teaching of climate change the geography teacher can even present a lesson that will refer to a local climate change phenomenon. This is the opposite of an instructor's presentation style of professional voices who may not associate knowledge with real-life problems for the learners. For Hooks (1996) and Freire (1994), the artistic teacher practising pragmatically will present an original lesson in which equality between the artist and learners is observed. Pinar (2004) sees an artist who reflects on practice so that the personal voice is heard. A teacher who is an artist is able to have the personal voice heard in enacting the curriculum. The practice of reflectivity and engaging with common surroundings allows for presenting an artistic climate change lesson that benefits learners (Lureco, 2016).

A qualitative intervention study was conducted that involved nine participating teachers which sought to explore the concept of teacher as an artist by Bremmer, Heijnen, and Kersten (2021). It discovered that the participants had mixed opinions about their professional identities, some not seeing themselves as artists. After engaging them in semi-structured interviews, the participants discovered that their practice was artistic. The study concluded that teachers who see themselves as artists gain the potential of doing exceptionally well in practice in performing duties with a personal understanding. The personal voice of teachers is expressed when the teacher practices as an artist. Being artistic infers that a geography teacher teaching climate change enacts the curriculum as ideological-ware which is the next construct that describes personal voices.

4.9.2 The geography teacher who is an ideological-ware (IW)

Generally, a resource in curriculum spaces is understood as everything that enhances and promotes learning. Khoza (2012, 2015b) describes an IW resource as an individual/person or any other tool/material that is capable of communicating learning. Scholars Khoza (2015b), Shoba (2018), Ndlovu (2017), Amory (2010), and Mpungose (2018) posit that the ideological-ware (IW) resource is the one that drives all educational activities including enacting the curriculum (pedagogy). The activities that the IW resource becomes responsible for include teaching approaches a teacher chooses to utilise, personal beliefs, as well as teaching and learning theories a teacher applies in enacting the curriculum. The IW denotes a personal voice. Khoza (2015), Mabuza (2018) and Mpungose (2018) concur that the IW resource refers to personal voices.

Khoza (2015c) notes that the notion of the IW stems from the existence of a specific ideology behind any curriculum enactment process which becomes the main driver of any curriculum. The IW functions by both hardware and software resources (Mabuza, 2018). Personal voices thus take from both professional voices (hardware resources) and societal voices (software resources) to formulate a personal voice (ideological-ware) that meets the need of individual teachers. Although Khoza's (2015c) study focused mainly on the field of educational technology, the idea of IW discussed is relevant in this study. Naidoo (2017) asserts that IW is composed of the teacher's personal voice, denoting the teachers' experiences (regressive moments) and how the teacher applies personal voice in the curriculum. Furthermore, Yi and Davis (2003) also concur that the IW represents personal-acquired skills and competences which are necessary in the practice of curriculum enactment. The IW resource designates personal voices of geography teachers who when teaching climate change will use their cognitively driven personal skills to meet curriculum expectations.

The vital role played by IW resources (personal voices) in curriculum enactment is indicated in a study conducted by Khoza (2018) where teachers' experiences of utilising tools in maths teaching (CAPS) were explored. The study had six participants who were maths teachers enrolled as part-time students in one South African university. Data generation for this qualitative study was through one-on-one semi-structured interviews, reflective activities and journals. The participating teachers were nominated using purposive and convenient sampling. The study established that IW resources (personal voices) are of paramount importance in enacting the CAPS curriculum. Personal teachers' voices are imperative in any curriculum such as the EGCSE geography curriculum of Eswatini.

Khoza (2012) and Fomunyan (2017) believe that the IW resource is crucial in stimulating the enactment of a curriculum. In principle, teachers are to provide challenging, interesting, inspiring as well as motivational climate change lessons to geography learners (Berkvens et al., 2014b). This can be achieved by an IW resource that promotes better teacher performance which in turn positively affects learner's success in learning a subject like geography. If teachers are aware and understand their personal voice their understanding of their task becomes easy. Teachers become good IW resources if they are able to adopt the principle of teachers being researchers.

4.9.3 The researcher role of a geography teacher

The role a teacher plays in teaching and learning reveals the identity or the personal voice of that teacher. For Khoza and Mpungose (2018), Lasky (2005) together with Rodgers and Scott (2008) the identity of a teacher refers to the unique personal voices that teachers possess in curriculum spaces. Unlike the professional and societal voices' space, the identity/role of the teacher is of principal importance in personal voices spaces. This is because the personal voices as shown in the discussion of IW resources drives the curriculum enactment process and caters for the needs of teachers. It is therefore imperative that the geography teacher enacting climate change be aware of the role played in teaching and learning. Khoza (2019) argues that, in the personal voices, the identity of a teacher is given great attention.

The framing of teachers' identities/roles comes with the advantage of creating reflective teachers (through currere) which helps the teachers to impart skills, knowledge and values/attitudes needed for local, countrywide, and global activities (Khoza, 2019.p.2). This allows for roles/identities which develop unique personal voices in teaching and learning (Biesta, 2015). Rodgers and Scott (2008) state that the identity of teachers in curriculum spaces pronounces the practical symbol of every single teacher. The matter of the teacher's identity/role is strictly personal as it specifies individual teacher's beliefs about their practice. Additionally, Walkington (2005), Beauchamp and Thomas (2009) theorise that the teacher's role/identity is positioned at the core of the teaching practice.

The teacher's identity/role enables geography teachers to construct and freely share improved and new climate change teaching ideas as they now comprehend their voice in the curriculum. In summing up the essentiality of personal voices in curriculum spaces, (Jansen, 2019; Rodgers & Scott, 2008; Walkington, 2005) advance that the teacher's identity offers teachers the ability of being creative as they have a voice in curriculum matters. Subsequently, the preferred role that a teacher can assume in order to have a meaningful personal voice is that of being a researcher. According to Austin, Orcutt and Rosso (2001), a teacher who is a researcher is one who uses inquiry to make sense of own practice. The teacher who identifies self as a researcher constantly learns and discovers new climate change knowledge.

Furthermore, Shoba (2018) and Nkhohla (2017) point out that a teacher who is a researcher remains *au fait* on latest developments in climate change issues. Syrjala (1996) posits that the idea of the teacher as a researcher is commonly linked to the work of the English curriculum theorist Lawrence Stenhouse. Stenhouse encouraged teachers to cultivate a self-reflective mindset (*currere*) as researchers and practitioners. By being self-reflective, teachers are able to examine their personal pedagogical habits both critically and systematically with the aim of improving. Accordingly, the researcher will consult the professional voices (school content) and the societal IK to present a well-informed knowledge that results from the personal voices' researcher role. This demonstrates some kind of emancipation as the teacher discovers a voice unrestricted by oppression from professional and/or societal voices (Freira, 1994).

The researcher teacher in practice is innovative, creative, and creates a learning milieu that permits learners to become lifelong learners (teacher researcher). Together with the learners, the researcher flourishes in a practice which develops curious minds of both teacher and student (Nkohla, 2017; Shoba, 2018). Possessing an inquisitive mindset suggests that teachers reflect in practice (Mpungose, 2018). As the teachers reflect (*currere*), the teachers are able to identify their strengths and at the same time to improve their areas of weaknesses (Makumane, 2018). The reflective position the researcher teacher assumes in the personal voices spaces fosters improved habits in the practice. The researcher teacher in personal voices spaces ensures that the quality of education delivered is valuable (Samuel, 2009).

Khoza (2017b: 2019a) avers that the improved quality in actions in teacher's practice habits is a result of the researcher teacher obtaining a personal voice from the reflections through the *currere* phases. As a result, the teacher in the personal voice space employs various techniques to address geography subject needs and the needs of the learners. The researcher achieves this through the engaging in the unconscious, subconscious or/and conscious mind which enables the teacher to perform his/her duties effectually. Freire (1994) sees the level where the teacher researcher is able to generate own knowledge as transformational, in the sense that even the learners benefit immensely from the researcher's practice.

The researcher teacher becomes capable of supporting learners to a level where they become more aware of their reality (Hall, 2009; Kincheloe, 2012; Van Eeden et al., 2018). Furthermore, Freire (1994) supports the equality between the teacher and learners in personal voices and sees it as a healthy learning relationship that is free from any form of oppression. Syrjala (1996) realised that

the need for teachers to change their role in educational pedagogies and practices compels an individual to be engaged in lifelong learning: thus becoming a relevant teacher in curriculum enactment. Even the kind of assessment utilised in personal voices by researchers will be formative in nature.

4.9.4 Formative assessment in personal voices spaces

In the personal voices space where pragmatic practice is the norm, teachers begin their teaching by formative assessment as it is assumed to be assessment for learning (Marsh, 2009). According to Bennett (2011), it is valuable to start climate change lessons with formatively assessing learners, this being a process useful to both teachers and learners during instruction. Formative assessment is beneficial in providing feedback and feed-forward which helps the teacher to modify planned teaching and learning activities (Van Eeden et al., 2018). The feedback obtained from the assessment becomes useful for learning as it helps to improve learners' achievement of intended instructional outcomes for a specific lesson.

Moreover, formative assessment in teaching and learning spaces provides correctives at different stages in the teaching-learning process which benefits both the teacher and learners by gauging the extent of understanding as the lesson progresses. This demonstrates that formative assessment promotes interaction between classroom learning and assessment (Black & William, 2009). The feed-forward aspect of formative assessment implies a strategy that offers more of a developmental impact to the learning activities (Van Eeden et al., 2018). Feed-forward guides the teacher towards ways that can improve climate change teaching in future. In this way formative assessment through feed-forward offers opportunities to learn strategies of improved practice.

Bennet (2011) proclaims that assessment for learning is diagnostic in nature. Formative assessment is the direct opposite of summative assessment that is popular with professional voices. Summative assessment provides figures at the end to judge the overall assessment of an educational programme or course. The diagnostic nature of formative assessment facilitates programme improvement in the duration of a programme or course (Boston, 2002). This illustrates that assessment for learning supports the learning process as it is able to suggest whether content or pedagogy needs to be modified through introducing beneficial instruction. These instructional modifications such as re-teaching, or engaging other teaching approaches, or giving learners more chances for practice yield improved learner success. Boston (2002)

grants that formative assessment gives very useful information that is useful in adapting teaching and learning towards meeting teachers and learners' personal needs.

Formative evaluation is not just a rating or ranking exercise to being a reviewing as well as self-reflecting exercise that impacts each learner's understanding of a lesson as well as the personal voice of a teacher (Celia & Elize, 2014; Khoza, 2019). Consequently, formative assessment is the popular mode of assessment in personal voices spaces, addressing experiences and needs of individual teachers and learners. Certainly, formative assessment has a positive effect on both teachers and learners. Various scholars like Dlamini (2018), Khoza (2016a, 2017b, 2018), , Mpungose (2018a, 2019b), as well as Shoba (2018) affirm that formative assessment is of importance to teaching and learning. Black and Wiliam (1998a) conducted an extensive review of 250 journal articles and chapters of books to ascertain whether formative evaluation resulting to positive performance in learning. The study's conclusion was that indeed formative assessment produces significant learning advantages for learners.

Accordingly, Marsh (2009) noted that formative assessment inspires and motivates learners as it places more emphasis on improvement and accomplishment than on failure. Moreover, Khoza (2016) notes that formative assessment makes a teacher ponder on what is existing rather than what is omitted. This indicates the positive impacts of formative assessment in personal voices spaces that display pragmatic practices. The pragmatic practice also tolerates the use of blended learning for climate change teaching.

4.9.5 Blended learning and personal voices

A number of scholars have varied definitions of blended learning. Firstly, blended learning is described as the type of learning milieu formed from the negotiation between conservative face-to-face sessions (professional voices) and online learning (societal voices) leading in the direction of a new approach to teaching and learning (Heinze & Procter, 2004: Rodgers, 2001). For Kazu and Demirkol (2014), Ngubane-Mokiwa and Khoza (2021), blended learning refers to the merging of the two well-known education models, which are the old-style face-to-face learning as well as distance learning. Lastly, Florian and Zimmerman (2015) view blended learning as a pedagogical approach that combines both face-to-face learning and online learning.

In all the definitions what is vivid is that blended learning is a combination of professional learning classroom spaces (professional voices) and the socialisation opportunities (societal voices) brought about technologically. This combination makes blended learning personal as it allows an individual teacher to give individual attention and support if and when they need it to learners (Florian & Zimmerman, 2015). Khoza and Biyela (2019) echo this assertion as they realise that blended learning serves personal needs of teachers. Moreover, Khoza (2020) grants that blended learning results in personal knowledge-building. The knowledge-building, Khoza (2021) clarifies is the kind of teaching and learning practice which assists teachers to produce particular personal values useful in expressing personal voices. In personal voices spaces blended learning is one of the pragmatic practices used to enact the curriculum.

According to Okebukola, Suwadu, Oladejo, Nyandwi, Ademola, Okorie and Awaah, (2020), in most if not all fifty-four African countries blended learning has not been a common mode for secondary school curricular delivery. The delivery of lessons has been face to face for a long time. March 2020 however, marked a turning point in this long history of relying on face-to-face sessions. Without any forewarning, the coronavirus disease hit the African continent just as it did the entire world. Because of coronavirus, African countries, including Eswatini, ordered the instantaneous closing of schools. Uncertain of the time when COVID-19 would disappear, governments encouraged schools to occupy their learners with other forms of lessons delivery. The virtual delivery mode was seen as the best choice. Sokhulu (2020) notes that governments saw embracing of digital technology as one of the ways to reach learners who were confined their respective places of residence in lockdown. Khoza (2020) claims that teachers were forced by COVID-19 lockdowns to use blended methods in teaching learners.

Khoza (2020) observes that the rolling out of blended learning has not been an easy task for most teachers in developing countries. For many reasons, most teachers became anxious, frustrated and angry as they had to go online for teaching. Most of them were also resistant because of cyberphobia. The failure of teachers to embrace blended learning demonstrated that the teachers lacked personal knowledge-building in their practice (Mabuto, 2019; Zuma, 2020). The teachers' personal knowledge building had some shortcomings. If the teachers' personal building needs had been met, they would have reached a self-actualised stage. Hoffman (1988) points out that those self-actualised teachers would not have a challenge to embrace blended learning as they are highly creative and problem-centred. The teachers would have not been reluctant and angry to deliver lessons online.

Okebukola et al. (2020) argue that, despite the teachers themselves having a challenge in implementing blended learning in Africa, there are other challenges out of the teachers' control. These deficiencies, which are also applicable to Eswatini include, poor internet service, an unreliable power supply, as well as severe insufficiencies in infrastructure for many teachers and learners. In a qualitative study conducted in five African countries (Burundi, Ghana, Morocco, Nigeria, and Senegal) during the COVID-19 lockdown in 2020 on chemistry teaching, the pragmatic practice of the use of blended learning was greatly challenged. Such affected the quality of chemistry teaching. Eswatini has conducted a study on blended learning and the teaching of geography and specifically climate change. It can be argued that the observation by the scholars in the African countries cited in the study can apply also to Eswatini.

However, Yustina, Syafi and Vebriant (2020) present a different story for an Indonesian experience. A quasi-experimental study involved seventy-six biology teachers who piloted blended learning at the beginning of lockdown. It was discovered that teachers' creative thinking had increased as they tried several ways of implementing blended learning. The teachers were able to operate well in their personal voices space, even though such could be because of a number of other factors like the availability of infrastructure. Even in Eswatini geography teachers can apply blended learning in their pragmatic practices in personal voices space. Siew-Eng and Muuk (2015) narrate another success story on blended learning in Malaysia. In a study that utilised the qualitative research approach to search for reasons why English teachers use blended learning, most of the eighty-seven teachers who were participants pointed out that they enjoyed blended learning as they were able to personally reach their learners.

4.10 Chapter Conclusion

The chapter looked at currere as a theory guiding this study which is the theory of teachers' voices. Furthermore, the chapter presented some constructs which drive the personal voices: teacher as an artist, the ideological-ware, teacher as a researcher, formative assessment, as well as blended learning. Essentially, this chapter revealed that personal voices utilise pragmatic practices as they bring a balance between professional voices and societal voices. The next chapter explores the paradigm that guides this study, together with data generation and data-generation methods helpful in responding to the study's questions.

CHAPTER FIVE

UNEARTHING METHODOLOGY TO EXPLORE TEACHERS' VOICES

5.1 Introduction

The preceding chapter discussed the constructs of personal voices together with the theory of teachers' voices presented by this study. This current chapter discusses the design and methodologies which ground this research work. The pragmatic paradigm has been selected as a basis for this study. The chapter continues to discuss the educational design research (EDR) which has been employed in this study. In addition, the chapter discusses sampling methods that were used, together with the data-generation tools and methods of data analysis employed. The reflective activity (questionnaire), semi-structured interviews, observations, focus-group discussions and artefacts inquiry have been used as data-generation tools. To conclude the chapter, trustworthiness principles are discussed.

5.2 The Study's Paradigm

5.2.1 A generic understanding of a research paradigm

Research work expects that every study locates in a selected paradigm. The term "paradigm" was introduced by Thomas Kuhn to describe common generalisations, values, as well as beliefs of a group of specialists regarding the nature of knowledge and reality (Brad,2011). Since then, scholars have offered different but closely related meanings of the term paradigm. For Bodgan and Biklen (1997), paradigm denotes the collection of rationally related assumptions, concepts and or propositions that position the researcher's thoughts in research studies. The term paradigm refers to philosophical assumptions which can be described as the fundamental set of beliefs which guide a researcher's world view (Maree, 2017; Lincoln et al., 2011).

The terms theoretical lens and world view have been adopted in literature as synonyms for paradigm which describe the way of thinking as well as creating sense in addressing the intricacies of the world. A paradigm refers to a set of beliefs and practices that guide a field of study which can be used to summarise the beliefs of researchers (Creswel et al., 2011; Lincoln et al., 2011; Patton, 2002). For Kivunja and Kuyini (2017), the term paradigm refers to the researcher's world view. In simpler terms, by world view scholars refer to the perspectives and set of common beliefs on how data will be interpreted (Creswell, 2014; Maree, 2017; Okeke &

Van Wyk, 2016). Mac Naughton, Rolfe and Siraj-Blatchford (2001) note that the definitions of a paradigm take account of three vital components: a conviction about the nature of knowledge, the methodologies selected, and the measures of validity.

Mackenzie and Knipe (2006) proclaim that the choice of paradigm establishes the intent, motivation and expectations for the researcher. Without recommending a paradigm as the first step, there is no basis for subsequent choices regarding methodology, methods, as well as the research design. Furthermore, Knoblauch (2018) postulates that paradigms are practical and conceptual tools utilised to disentangle particular research glitches. A paradigm thus takes the function of heuristics in research (Kaushik & Walsh, 2019). Paradigms are a backbone of any research study. The significance of a paradigm in a study is that it informs how a study is to be carried out, and further recommends the way findings ought to be construed (Cresswell, 2021; Kivunja & Kuyini, 2017).

There are several world views or paradigms that researchers select to use in their studies. The common ones in educational/social research are: positivism, post-positivism, interpretivist, and critical paradigm. All these paradigms are philosophical in nature. All paradigms have some common fundamental resemblances. According to Bertram and Christiansen (2020), these shared basic elements of paradigms address the following: axiology (values) which is concerned about beliefs and the role of morals as well as values in research; ontology, which explains the nature of reality and is concerned about beliefs and assumptions on the nature of reality or social world. There are two common ontological positions. The first ontological position is that there is a single objective of truth that independently exists; and the other position upholds that reality is neither singular nor objective – reality is simply a product of individuals' consciousness (Bertram and Christiansen, 2020).

The other philosophical element is epistemology (how we know what we know) which concerns conventions about how truth in the world is known and the way by which knowledge is gained, together with the relationship between the knower and the known. There are two epistemological angles. There is one side of the empiricist epistemology which perceives that all knowledge comes from human senses. Human beings know what they hear, see, touch, smell or taste. The subjectivist epistemology on the one hand, views knowledge as an entirely constructed internally. The last philosophical element associated with paradigms is methodology (the research process) which considers the best ways of obtaining knowledge of the world (Creswell 2014; Kivunja & Kuyini, 2017; Lincoln et al., 2011). On the other hand,

it is essential to note that each paradigm has diverse perspectives on each of these vital elements.

Teddlie and Tashakkori (2003), however, have proposed a fourth paradigm that derives its components from the other paradigms (post-positivism, positivist, interpretivist and critical paradigms), and that is the pragmatic paradigm, which this study employs.

5.2.2 The pragmatic/pragmatism paradigm

As this is a research paradigm, pragmatism is grounded on the view that researchers must employ theoretical as well as methodological approaches suitable for a specific research problem that is being explored. Tashakkori and Creswell (2007) describe the pragmatic paradigm as one that stresses the interrelationship between philosophical aspects on the real nature of how we know, and the methodological concerns that are useful in generating knowledge. This brings about the main distinguishing character of pragmatism, that of embracing plurality of data-generation methods (Biesta, 2010; Kaushik & Walsh, 2019).

Pragmatism completely rejects that investigations can uncover the truth exclusively by one scientific method (Creswell & Creswell, 2017). According to Kivunja and Kuyini (2017) the pragmatic paradigm is able to combine the qualitative and quantitative methodological approaches. Such generates adequate data, as the mixed methods allow the use of a variety of data-collection instruments. In this study, the pragmatic paradigm has helped to achieve the deeper meanings of teachers' voices. Kaushik and Walsh (2019) maintain that the greatest philosophical assumption of pragmatism is not specific to particular world views but to the real participants' experiences.

Biesta (2010) and Creswell et al. (2011) point out that pragmatism as a research paradigm positions itself towards solving practical problems occurring in real-world settings. The contestation in teachers' voices in the geography curriculum of Eswatini was rightly explored by the pragmatic paradigm as suitable for addressing the real problem in curriculum enactment. Moreover, the major reinforcement of the pragmatist philosophy is that reality and knowledge are grounded on habits and beliefs that are socially constructed (Tashakkori & Teddlie, 2008). Pragmatism is able to navigate the socially constructed truths. The voices of geography teachers in this study as pragmatic knowledge are based on one's experience.

The epistemology of pragmatism, in the view of Cohen et al. (2018), Lincoln and Guba (1994), Krauss (2005) and Scotland (2012) concerns the forms and nature of knowledge. On generic views, epistemology for any paradigm elucidates how in that particular paradigm we come to know reality. The epistemological position of pragmatism suggests that either objective or subjective meanings provide knowledge for a research study, focusing on practical application to issues (Ihuah & Eaton, 2013). This tallies well with this study as it explored teachers' voices who teach climate change. Ontology, according to Krauss (2005) and Scotland (2012), consists of the philosophy of reality, which suggests that ontology concerns itself with the nature of reality. For the pragmatic paradigm the researcher is external. The interpretations of the participants inform reality as the participants own voices from their real-world practice (Ihuah & Eaton 2013). This ontological position of the pragmatic paradigm has been an advantage for this study, the teachers' voices informing reality.

Methodology in research is described by Lincoln and Guba (2005), Krauss (2005), Merriam (1998) and Scotland (2012) as the strategy or plan of choosing research tools. Methodology discovers how, what, why, when, and from where data for a study is generated, and how it will be analysed. The methods referred to here are particular specific procedures as well as measures a researcher uses to collect and analyse data. Under the pragmatic paradigm, the methodology is flexible as it permits the employment of mixed or multiple methods. In this study, I used reflective questionnaires, one-on-one semi-structured interviews, observations, artefacts inquiry, as well as focus-group discussions.

Axiology communicates ethical concerns that need to be well thought out during the planning stage prior to conducting a study (Kivunja & Kuyini, 2017). Axiology considers the philosophical approach to reaching the right decisions through assessing, defining, and understanding concepts of correct and incorrect behaviour relating to a study; thus axiology questions the nature of ethics or ethical behaviour in a study. Consequently, Ihuah and Eaton (2013) posit that values play a significant role in interpreting results through subjective and objective reasoning under the pragmatic paradigm.

However, the pragmatic paradigm has some critics. Maarouf (2019) states that many researchers disapprove of pragmatism for its mixed research methods approach. Pragmatism is condemned from this procedural point of view for its failure to define what works well and what does not in terms of research methods used. However, the pragmatic researcher's freedom to determine the correct research method of generating data for a study becomes its strength.

The researcher gains the advantages of the variety of methods while avoiding their mistakes (Maarouf, 2019).

Additionally, Teddlie and Tashakkori (2003) note that now a general consensus in favour of the pragmatic stance of utilising mixed methods in studies has been established. The support for pragmatism is grounded on that the mixed methods allow researchers to access the core in seeking knowledge. Cresswell (2009), Teddlie and Tashakkori (2003) state that the pragmatic paradigm allows a researcher to be both subjective and objective in analysing the points of views of participants. The utilisation of the mixed methods helps to reach practical solutions.

Moreover, the pragmatic paradigm has been criticised from its axiological point of view (Biddle & Schafft, 2014). The critics have contended that pragmatic scholars overlook the importance of values that guide studies. They submit that describing pragmatism as “what works?” raises another concern as to “what works for whom and to what degree?” On this concern of what works, Denzin (2012) fears that such threatens the validity of the study’s findings. Nonetheless, this argument has been defeated by pragmatists as one conceivable simple response for the concern “what works for whom?” could be any researcher based on the decided purpose of the study.

Paradigms like positivism place emphasis on objective facts attained by examining empirical evidence and the testing of hypothesis, and constructivism, which views knowledge as relative; the truth too complicated to find. Pragmatism accepts that the process of attaining facts is a continuum instead of being two differing poles of either subjectivity or objectivity (Goles & Hirschheim, 2000). This situates pragmatism at the centre of the paradigm field as far as the mode of inquiry is concerned. This is because pragmatism defies the two extreme paradigms and suggests a more flexible and reflexive approach as a research design.

In accepting this standpoint, the pragmatist researcher gains the ability to choose a research design and modes of data generation methods most appropriate to address the research questions. This stance tallies well with the educational design which the study has employed. The EDR and currere pragmatism is normally associated with a form of rationalisation that travels back and forth between presumption and initiation reflection. This way the researcher is actively entangled in generating data. The discussion of the educational design research (EDR) follows.

5.3 The Educational Design Research (EDR)

This study has employed the educational design as guide. According to McKenney and Reeves (2014) the educational design research can be distinguished from other designs or forms of inquiry in that it addresses two dual fundamental issues in research. Firstly, this design attends to an educational problem in using knowledge; and secondly, as knowledge is put to use, new knowledge is generated. Additionally, Nieveen, McKenney and van den Akker (2006), theorise that the educational design is suitable in developing research-based explanations to compound challenges on instructional practices, especially in curriculum-related concerns.

Moreover, Berkvens (2009) notes that the EDR embraces the formation of mediations which aim at refining educational practices on the ground. This design aims to generate new knowledge and has the ability to improve educational practice through suggesting possible approaches to solving educational problems. The EDR works systematically and simultaneously towards meeting the dual goals; this is considered its most defining feature (van den Akker et al., 2006).

McKenney and Reeves (2014), van den Akker et al. (2006) together approve that EDR can be characterised as pragmatic, grounded, interventionist, iterative, collaborative, and cyclical. EDR is pragmatic in the sense that it creates personal practical and functional knowledge, together with valuable explanations to problems existing in educational spaces. The paradigm explores personal voices of geography teachers teaching climate change in Eswatini. It seeks to discover practical knowledge that would assist in understanding the voice of teachers in the curricular. The study suggests a useful practical contribution to individual geography teachers' comprehension and knowledge of their voices in the curriculum; also, how that specific knowledge describes their personal individual identities as enactors of climate change.

Moreover, the paradigm for this study is also pragmatic which suits well with the pragmatic characteristics of the EDR. The grounded aspect of EDR uses theory together with empirical findings to guide the study. The theory of voices of teachers is utilised in this study to encompass the grounded aspect of EDR. Concepts or themes from the theory have been used in formulating the questions in the data-generation tools that this study has used. The interventionist feature of EDR suggests changes in particular educational contexts. This study searched for the voices of geography teachers on the teaching climate change, and will offer suggestions after the data generation process.

In addition, EDR is iterative as it evolves in multiple cycles during the course of the study. This displays its collaborative feature as it requires the participants to collaborate with the researcher during data collection. The cyclic nature offered the participating teachers an opportunity to reflect logically on voices in climate change teaching. Teachers had to understand them in order to execute necessary changes in practice. Being involved in the phases equips the teachers to contribute to their personal understanding and knowledge on practice. It is assumed that an improved personal understanding and knowledge would ultimately result in educators' improved habits in practice. The phases of EDR made the participants actively involved, making the process meaningful to them. Fig 5.1 illustrates how the EDR has been applied in this study.

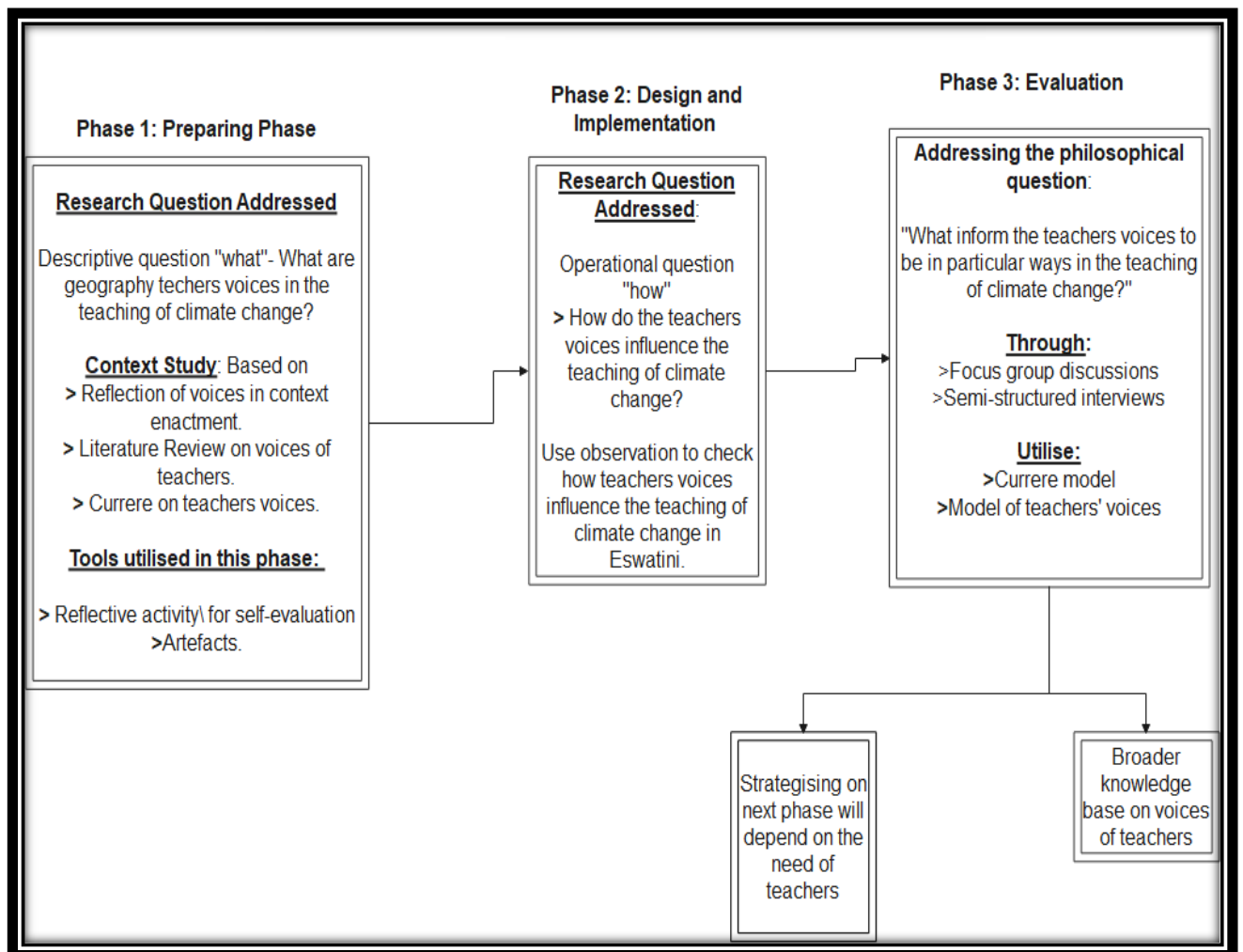


Figure 5.1: *The EDR as applied in the study*

Note this figure has been adapted from Berkvens, J. B. Y. (2009). *Developing effective professional learning in Cambodia*. Enschede: University of Twente. McKenney, S., & Reeves, T. C. (2014). Educational design research. In *Handbook of research on educational communications and technology* (pp. 131-140). Springer, New York, NY. Akker, J. V. D. (1999). Principles and methods of development research. In *Design approaches and tools in education and training* (pp. 1-14). Springer, Dordrecht.

As shown in Figure 5.1, EDR undergoes three phases: Phase One is the preparatory/preparing phase; the second phase is the design and implementation stage; and the third phase is the evaluation phase (Berkvens, 2009; van den Akker, 1999). McKenny and Reeves (2012) give the phases as: Phase One – the phase of analysis and exploration, Phase Two – the design and creation phase; and lastly, the evaluation and reflection phase. The preparatory or the phase analysis and exploration is the time when the problem is identified. In this study a thorough contextual consideration of the voices of teachers on climate change teaching was achieved through the use of a reflective activity, observation, and the use of artefacts inquiry. The teachers, through responding to the reflective activity were conscious of their voices on climate change teaching and discovered the extent of their personal voices in the curriculum. The preparatory phase helped me to fully comprehend and realise the nature of the phenomenon (voices of teachers on climate change teaching).

The preparatory phase was helpful in illuminating the nature of the problem. The analysis that EDR permits in the preparatory phase allowed the teachers to describe the voices on climate change teaching from their lived experiences. Artefact inquiry was also used to ascertain the geography teachers' voices. Teachers were requested to bring any object of their choice that described their individual educational experiences. The artefact that a teacher would bring was used to obtain the subconscious voice of teachers on teaching of climate change. The artefacts would reveal participant's personal voices. This would show how the teachers' voices influence the teaching of climate change.

The outcomes of the preparatory stage informed the next stages, the design and implementation or design and construction phase, where together with the participating teachers, suggestions and interventions were identified in the first phase. Through the use of one-on-one semi-structured interviews, the participants were able to obtain a better understanding of voices in the geography curriculum. Such was a way of addressing the problem at hand. The design and implementation phase offered alternative solutions to the problem identified in the preparatory

phase. As detected by Bijsterbosch (2018)'s study, the design and construction phase afforded an opportunity of intervention; the participants disentangled the problem in the first, second, and last phases.

The evaluation stage followed after the design and implementation level. Once again, together with the geography teachers, the theory of teacher's voices was tested and implemented. Through the use of focus-groups discussions, the participants were able to discuss the applicability of the model in the teaching of climate change. This new model/innovation was tested for meeting the needs of the participant; this constituted the last stage of the EDR. This was done through lesson observations. Teachers displayed how they enact the curriculum now that they understand the voices that inform it.

The characteristics of EDR make it the best design for this study. EDR addresses problems of teachers' voices in curricular spaces (McKenney & Reeves, 2013; Pors, 2014). EDR thus makes a positive contribution to the professional development of the participants by means of the collaborative learning of the researcher and practitioners (Bijsterbosch, 2018; McKenney & Reeves, 2012).

As this study was performed as EDR, I realised that this was in line with its motives (EDR). Van den Akker et al. (2014) advance that this design desires to increase the applicability and significance of research in issues that pertain to educational practices such as voices of teachers in the curriculum. EDR was suitable – the participating teachers were able to individually explore voices in the geography curriculum. The research process therefore became practical, applicable, and significant to the participants. This element of EDR was useful in reducing the criticism levelled against educational research of having a very weak link with practice. EDR intensifies the link of practice and research. Additionally, Van den Akker (1999) concurs that EDR is conducted in the actual setting where the participants are based. It rightly addresses and suggests practical solutions to problems that have been unearthed by its participants. I contacted all the participants for this study, and the data generated is based on the experiences from their actual practice settings.

Van den Akker et al. (2006) lament that some researchers have criticised EDR as having a weak link with practice on the field. However, since EDR is undertaken in real natural settings where the phenomenon takes place, there is an obvious connection in EDR bringing effective as well as workable interventions in practice. Since EDR involves participants that are in the

actual field, there is a high possibility of generating findings that become more widely perceived to be usable and relevant, which increases the chances for improvement in practice.

EDR has been put to use successfully by some other researchers. See the study by Berkvens. (2009) in Cambodia titled, “Developing effective professional learning in Cambodia”, that utilised semi-structured interviews and observations to generate data. The study was successfully carried out. Another study was carried out by Bijsterbosch (2018) titled “Professional development of geography teachers with regard to summative assessment practices in the Netherlands”. To generate data, Bijsterbosch (2018) utilised a combination of quantitative and qualitative methods (panel interviews, content analysis and questionnaires). For McKenney and Reeves (2012) the use of quantitative and qualitative methods in one study holds EDR to the same standards as other research designs. EDR provides transparency for the process which adequately warrants the knowledge claim that it yields.

Moreover, EDR improves educational or curriculum practices like the voices of teachers in curriculum spaces. EDR also is not complicated to apply as there are no laid-down steps that are to be followed. Bell (2004) labels EDR as a “manifold enterprise” which is simple and straightforward to apply – there is no set process laid down for its use. Although EDR can be distinguished by its phases: the orientation phase; the design phase; and the retrospective phases to follow, the researcher independently works scientifically in these stages to the end of the research process.

To date, there is barely any empirical evidence relating to geography teachers’ voices in Eswatini. Employing EDR as a design for this study intended to reduce the paucity of teachers’ voices and bring a clear understanding of teachers’ voices in the geography curriculum. EDR is employed with the aim of improving educational/curriculum practices or processes (Berkvens, 2009). It was imperative to obtain geography teachers’ voices in Eswatini, as their comprehension of the voice plays a significant role in geography students’ learning of climate change. Teachers’ understanding of their voices in the geography curriculum is vital as teachers affect students’ learning. Also, the teachers are greatest contributors towards students’ learning.

This study explored geography teachers’ voices on teaching of climate change. Thus it falls under the developmental and exploratory types of design research. The developmental type of EDR centres on developing ground-breaking interventions that may become relevant for educational practice in contexts (Nieveen, McKenney, & van den Akker, 2006; van den Akker, 2009). The study sought to find the teachers voices in the teaching of climate change. It is also

exploratory in that it explored the teachers' voices which would help develop interventions addressing the tension between teachers' voices in curriculum spaces.

Furthermore, EDR allows the use of quantitative and qualitative methodical approaches, which also suits the pragmatic paradigm that this study has employed (Teddlie & Tashakkori, 2009). Teddlie and Tashakkori (2009) note that when a researcher utilises both quantitative and qualitative methods in a single study, the chances of generating the required data are increased. The data usually generated by applying mixed method as the pragmatic paradigm holds, was able to positively respond to research questions. If mixed methods had not been employed, the data collected could have been compromised. Consequently, the study has used a questionnaire (the reflective activity) which is a quantitative data-collection tool. The other data-collection tools utilised were mainly qualitative.

Maree (2020), Teddlie and Tashakkori (2009) claim that the qualitative methodology attaches meanings rather than statistical forms for data analysis. For Okeke and Van Wyk (2016), the sole purpose of using qualitative tools is to enable better understanding of self, promoting understanding of human situations and their actions, as well as reasons for those actions. Using mostly qualitative tools worked well as it permitted the researcher to interrelate with participants where they were located, in their actual settings (Creswell, 2014). In addition, McMillan and Schumacher (2010) theorise that the qualitative approach best suited for investigations of a particular topic is carried out centred on the communications/voices of participants in actual practice.

Furthermore, Creswell (2021), Maree (2017), McMillan and Schumacher (2010) observe that the qualitative approach depends on facts generated from natural settings. These facts are linguistically stated rather than being statistical, which intensifies data richness. Moreover, the abundant data is generated directly from participants who usually are those who actually experience the phenomenon studied. To generate data a combination of quantitative and qualitative methods was deployed (Baxter & Jack, 2008; Leed & Ormrod, 2015; Rahman, 2017).

Rahman (2017) points out that the qualitative research has advantages as it produces thick descriptions of participants' voices. It permits researchers to gain participants' inner experiences and recognises them in their natural settings. Beyond the advantages of qualitative research, there are noticeable limitations. One of the limitations is that it leaves out contextual sensitivities: it tends to place more attention on experiences and meanings (Silverman, 2016).

However, qualitative researchers do not leave out contextual factors as they often have an idea of what is happening in the field where the participants are found (Leed & Ormrod, 2015; Macmillan & Schumacher, 2010; Rahman, 2017). Moreover, Flick (2015), Silverman (2015) and Yin (2003) argue that the small sample sizes utilised by qualitative researchers is a shortcoming for generalizability of findings. However, Rahman (2017) stresses that there are no educational studies (either quantitative or qualitative) that can be considered generalizable, as there are numerous background factors that can affect the results.

5.4 Sampling of Participating Geography Teachers

For any study, a research problem could include the whole affected population. However, it is always impossible to study the entire population. Instead, researchers tend to select a sample which is a sufficient representation of the total population. A sample is a subset of the entire population that is selected so as to be representative of the larger population. A sample is a smaller part of a numerical population whose characteristics are studied to gain deeper information about the population. Sampling can be defined as a group of people/participants being carefully chosen from a bigger population, to be used in a study. For Bertram and Christiansen (2020), sampling entails deciding on the participants that have to be included in a study. The participants have to be selected from a population.

Generally, population in research denotes the total quantity of anything to be studied. For human beings, population speaks of a group of individuals/persons. Samples may be taken from a population. The process of selecting the sample is known as sampling. Scholars, Hannaway, Govender, Marais and Meier (2019), Creswell (2014), Cohen et al. (2018) and Maree (2017) collectively pronounce that sampling is the process a researcher employs to select a certain portion of the total populace for the purposes of generating data. Sharma (2017) describes sampling as a technique a researcher employs to systematically choose a small number of items representing all items from a defined population, the sample selected serving as a data source. In selecting the sample, participants with the richest data would be obtained so as to fully respond to the research questions (Maree, 2017).

Sampling methods are classified into two: probability and non-probability sampling (Cohen et al., 2018; Creswell, 2020). Probability sampling describes the type of sampling in which each individual in a population possesses equal chances of being nominated to partake in a study

randomly (Acharya, Prakash, Saxena & Nigam, 2013). Non-probability sampling, on the other hand, describes the kind of selection where the probability that a subject is chosen is unknown. The selection is non-random or biased (Etikan, Musa & Alkassim, 2016). The researcher utilises subjective techniques to decide who is to be included in the sample; consequently, all participants are not given equal chances of being included in the sample.

In this study, I have used non-probability sampling for its most common advantages Etikan et al. (2016) state that this method is cheaper and speedier to implement. Subsequently, I used both convenience and purposive sampling.

5.4.1 Convenience and purposive sampling

Convenience sampling is designated by Etikan et al. (2016) as haphazard or accidental sampling. It is the kind of sampling which permits academics to choose participants according to geographical proximity, easy accessibility, and their availability to participate in a study (Cohen et al., 2011; Maree, 2017; Saunders et al., 2012). Participants are selected on the basis of being in the right place at the right time. The participants selected in convenience sampling are those that will be easily reached by the researcher (Bertram & Christiansen, 2020; Maree, 2020; Okeke & van Wyk, 2016). This denotes that convenience sampling is not random. On the other hand, purposive sampling describes the selection of participants by the researcher for a specific purpose. The purposively selected participants are those the researcher believes will be able to represent the entire population well. Purposive sampling proposes that the researcher targets the specific participants with the knowledge that the participants selected will provide data that cannot be generated elsewhere (Bertram & Christiansen, 2020; Cohen et al., 2011; Creswell, 2020; Maree, 2020; Okeke & Van Wyk, 2016).

Consequently, I utilised purposive and convenience sample for this study to select twelve participants. The participating geography teachers were conveniently selected as they were readily available and reachable; and they expressed their willingness to partake in the study. Moreover, the teachers were purposively chosen, in that they were experienced geography teachers who had been enacting the curriculum for more than two years, implying a deep understanding of the voices of teachers. I therefore selected these geography teachers that I would work with conveniently as I took into account their geographical proximity and the availability of the teachers at the time of generating the data. Etikan et al. (2016) uphold that

the advantage of using convenience and purposive sampling is that it makes the data-generation process easier, speedier and more cost-effective.

Convenience and purposive sampling present numerous positives, however, they are not without limitations. The foremost limitations are variability and bias (Acharya et al., 2013). Variability refers to inconsistency or unevenness in selecting participants. This was however, addressed by selecting participants who had one common feature – they all teach the SGCSE geography curriculum which is the critical requirement in this study. Moreover, the purpose of this study is not to generalise its findings. Bias cannot therefore be a limitation as I only selected participants with knowledge of the voices of teachers in climate change teaching. Bertram and Christiansen (2020) observe that studies that are mostly qualitative, as is this one, are not concerned with bias, but rather concerned with in-depth as well as comprehensive explanations and analysis of data. Purposive and convenience sampling have been used by other researchers, realising that it relieved the data generation procedure by redeeming time and money, yet producing rich data on the study's phenomenon (Dlamini, 2018; Mabuza, 2018; Mpungose, 2018; Shoba, 2018).

Sixteen teachers who were selected from four high schools in Eswatini partook in the study. The schools were purposively and conveniently selected by the researcher, each from the four administrative districts of Eswatini. The country is divided into four districts: Hhohho in the northern part of the country, Manzini in the central part, Lubombo in the Eastern part and Shiselweni in the South.



Figure 5.2: Map showing the four administrative/political districts of Eswatini

Note the figure was sourced from Mucina, L., & Rutherford, M. C. (2006). *The vegetation of South Africa, Lesotho and Swaziland*. South African National Biodiversity Institute.

The researcher is based in the Manzini District; the schools that were selected from the other districts were those that were close to the researcher for convenience purposes. From each of the schools, four teachers who teach Form Five geography were requested to be part of the study. In recruiting the participants, firstly I visited them in each of the schools to request them to be participants of this study. My first stop upon arrival in each of the schools was with the heads of departments (HODs) where I requested them to recommend four geography teachers who were teaching Form Five. After the HODs suggested the teachers, we met to brief them about the study and further explain necessary ethical issues to them, taking their cellular phone numbers and email addresses. These online tools were used during the data-generation process.

Each school and each teacher was given a pseudonym according to location. For example, Hhohho teachers appear as H1, H2, and H3. Table 5.2 below gives details of the participants from each of the four schools.

Table 5.3

Participants' Details

Participants	Age	Teaching Experience	Gender	Qualification	Class
H1	39	10 Years	Female	B. A+ P.G.C. E	4 and 5
H2	43	21 Years	Male	B. ED	4 and 5
H3	38	14 Years	Female	B. ED	4 and 5
H4	40	11 Years	Male	B. ED	4 and 5
M1	30	8 Years	Female	B.A + P.G.C. E	4 and 5
M2	52	22 Years	Male	B. ED	4 and 5
M3	42	16 Years	Female	B. A+P.G.C. E	4 and 5
M4	37	12 Years	Male	B. ED	4 and 5
L1	32	7 Years	Female	B. ED	4 and 5
L2	36	9 Years	Male	B. ED	4 and 5

L3	40	11 Years	Female	B. ED	4 and 5
L4	33	7 Years	Male	B.A + P.G.C. E	4 and 5
S1	44	16 Years	Male	B.A + P.G.C. E	4 and 5
S2	42	11 Years	Male	B. ED	4 and 5
S3	34	7 years	Male	B.A +P.G.C. E	4 and 5
S4	40	12 Years	Female	B. ED	4 and 5

The letters H, M, L, S represent the four districts; Hhohho, Manzini, Lubombo, and Shiselweni.

The pseudonyms H1, M2, L3, and S1 represent teachers selected from each of the four schools.

BA: Bachelor of Arts; BEd: Bachelor of Education; PGCE: Postgraduate Certificate in Education.

5.5 Techniques for Data Generation

Data generation is a vital activity of the research process. During data generation, the researcher engages participants to explore and answer the research questions that unpack the phenomenon of a study. According to Ramrathan, Le Grange and Shawa (2017) the effective exploration of a study's phenomenon is entirely based on the techniques of data collection employed. Data generation outlines the use of tools in the production of information or evidence required to react to the needs of a study. The research questions, research context, as well as the objectives of the study usually inform the researcher on the appropriate data-generation method/s to utilise. Numerous scholars, Creswell (2020), Maree (2017), Denzin and

Lincoln (2011), and Yin (2013) agree that data is information/evidence that a researcher generates from the field or from participants with the aim of finding answers to specific research questions. Data denotes the responses given by participants that answer to specific research questions. Accordingly, as they generate the data, researchers utilise specific tools or instruments that suit the research approach, the selected paradigm, and chosen design of a study.

As this study intended to search for geography teachers' voices on the teaching of climate change, five tools for data generation have been employed. Together, these tools were useful to acquire an in-depth understanding of teachers' voices on the geography curriculum. Furthermore, the study had to utilise the five tools in order to promote its credibility through triangulation (Christiansen et al., 2010; Cohen et al., 2013). Additionally, the use of multiple sources for data generation guaranteed trustworthiness and authenticity (dependability, transferability, credibility and conformability) of the generated data (Creswell 2014; Yin 2013). The data-collection tools adopted were: reflective activity (an open-ended questionnaire), semi-structured interviews, classroom observations, focus-group discussions and the use of artefacts. The process of data generation was carried out during challenging times in world history. As the process of data generation was about to start in mid-2020, schools were indefinitely closed in Eswatini due to COVID-19.

5.5.1 Data generation dynamics due to COVID-19

COVID-19 is the name that has been used to label the coronavirus of 2019 (WHO, 2020a). The virus was first discovered in late 2019 in Wuhan city in the Hubei province of China. It was on Tuesday 31 December 2019, when the World Health Organisation (WHO) country office in China received a report about an unknown virus. Consequently, a number of events unfolded. On 30 January 2020, WHO announced the virus spread a public health crisis of global concern (Collivignarelli, Abbà, Bertanza, Pedrazzani, Ricciardi, & Miino, 2020: WHO, 2020a). It became evident that the world has been attacked by an unknown virus. Subsequently, numerous added names were given to the virus such as 2019-nCoV, and severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). In this study, COVID-19 is the name that will be used to describe the virus which led to the pandemic.

The severe attack and the increased number of mortalities that were brought by COVID-19 led to the introduction of new unknown measures in almost all countries in the world (WHO, 2020b). These actions were adopted as means or preventive measures to limit the rapid spread of the virus. As such, national lockdowns were applied in many countries in response to the pandemic. Mishra, Gupta and Shree (2020) describe the lockdown as a state of disaster protocol made by the authorities (heads of states and governments) to confine people to home, which resulted have in mass isolation and stay-at-home confinements across many countries of the world since March 2020.

Lockdowns forced people to remain in one specific location so as to minimise movement. In principle, the lockdowns were mobility restrictions aimed at minimising infections amongst people (Di Domenico, Pullano, Sabbatini, Boëlle & Colizza, 2020). The lockdowns were intended to reduce the situation that threatened saturation of the healthcare system in countries, Eswatini included (WHO, 2020c). These national lockdowns were mainly aimed to curb the dramatic upsurge of admissions and hospitalisation of people to intensive care units (ICU) as many people tested positive for COVID- 19. In line with other countries, Eswatini had to adopt an aggressive lockdown measure to limit the spread of the virus as the health system of the country became overwhelmed. In addition to the lockdowns, there were also other strategies that were initiated to restrain the spread of the virus. These included enforcing social-distancing measures, encouraging the wearing of face masks and training citizens to practise personal hygiene, to count but a few.

The first COVID-19 case in Eswatini was announced on 14 March 2020 (Dlamini, 2020). After this case the country quickly authorised a national lockdown. At the time of the imposed lockdown, the school calendar was in its early days of the first term: all schools were closed. Geography teachers who were participants in the study were also affected as they were locked down in their respective places of abode, schools being closed indefinitely. It was only in July 2020 that the MoET ordered all learners in Form Five to resume face-to-face learning to prepare for external examinations in October the same year. I then began to engage the participants for the data-generation exercise.

I opted to conduct the data-generation process through virtual means because of the threat of the COVID-19 pandemic. Researchers have been forced by the health risks that have been brought about by COVID-19 to seek other ways of conducting research study processes such as data generation (Khoza, 2020). Imlach (2020) rightly indicates that the lockdown brought

about by COVID-19 has altered the way of conducting research. Researchers have to think of how best to generate data under the prevailing conditions of the pandemic.

Jowett (2020) and Imlach (2020) notice that, undeniably, the Covid-19 crisis has affected the way researchers go about generating data and generally conducting their research work. Taking into account the lockdowns and social-distancing measures that have been enforced, a majority of researchers had to suspend the data-generation exercise (Fell, Pagel, Chen, Goldberg, Herberz, Huebner & Hahnel, 2020; Jowett, 2020). This is because educational research studies characteristically count on face-to-face interactions for the generation of data through interviews, focus-group discussions and observations. Nonetheless, I decided to proceed with data generation as there are other means of generating data apart from face-to-face moments.

Consequently, Jowett (2020) notes that there are a myriad ways by which researchers can generate data rather than relying on face-to-face sessions only. Because of the availability of other means for data generation, I did not opt to stop or suspend the data-generation process; instead, I had to re-strategise my approach to data collection so as to honour safety measures in the COVID-19 times. However, I was mindful of the health and well-being of participants and myself. Scholars have warned that the health of participants and researcher/s should take precedence over the research work (Fell et al., 2020; Imlach, 2020).

Additionally, Fell et al. (2020) and Jowett (2020) warn that, while it may be possible to modify the data-generating processes, converting interviews from face-to-face to online interviews, it is vital that researchers must decide whether asking people to partake in research at precarious times will place them under any extra avoidable stress conditions. For this study, it seemed that the teachers were not too stressed to attend the research questions. They had a great deal of free time since they were only concentrated on the Form Fives, the other levels still on lockdown. In July 2020, only the Form Fives were called to school by the MoET in Eswatini. Furthermore, the teachers were requested to choose their individual convenient times for phone-call interviews. Sending responses via virtual means was to be done at each participant's suitable moment.

Furthermore, Fell et al. (2020) caution that, if a researcher thinks of adjusting the modus operandi of data collection, the researcher should ensure that the institution's ethics committee is informed beforehand. Luckily enough for me, when I was applying for ethical clearance, the pandemic had started and the UKZN ethical clearance committee advised me to incorporate the use of online and other methods that would reduce face-to-face contacts for my safety and

the safety of participants. It was stated in the application that video calling (Skype/Zoom) and the use of text-based prompt messaging (WhatsApp) as well as telephones would be used so that the conditions of the restrictions could not affect the process of data generation. Contact with participants would be extremely minimised.

Dodds and Hess (2020) support the idea that researchers should adopt innovative data-generation methods to conduct their studies if such is called for. During the time of COVID-19 and lockdowns, the scholars Dodds and Hess successfully conducted online interviews with a selected group of vulnerable people who were participants in their study. Their study had initially planned to conduct face-to-face interviews, but once COVID-19 had arrived, the researchers opted for online interviews. One of the benefits of using the online interviews was that this type of data generation made participants feel comfortable and safe. Such allowed them to share more intimate concerns which might have not been shared during face-to-face sessions (Dodds & Hess, 2020). The use of online interviews did not affect the way participants responded to research questions.

Secondly, the use of online interviews proved to be engaging and convenient (Dodds & Hess, 2020). The participants demonstrated openness as the interviews were slotted into their free time. I also negotiated for suitable interview times for the participants in this study. Lastly, Dodds' and Hess's online interviews were advantageous. Online communication proved to be the best means of communication for participants during the COVID-19 pandemic. This advantage worked as well in my study as I discovered that the participants were at ease with using online means rather than face-to-face methods.

However, a few limitations were noted in Dodds' and Hess's (2020) study with the use of online data-generation tools. On Zoom and Skype, the participants were failing to position themselves well on the camera thus allowing researchers to read body language/non-verbal communication which is an important aspect of interview sessions. For me this was not a challenge as my participants are teachers who knew they had to position themselves well behind the camera. It must be noted that using online data generation measures is not new in the research field. A few years ago, before lockdowns, scholars Harrell and Bradley (2009) revealed that interviews could be conducted either face-to-face or telephonically, depending on participants' context and the nature of the study.

During the notorious COVID-19 2020 lockdown, some researchers successfully generated data for their studies using online means. Sokhulu (2020) conducted a pragmatic case study on

selected students' experiences in a South African university using digital technologies to address their personal research needs during the COVID-19 lockdown. Sokhulu's study employed questionnaires, semi-structured interviews and focus-group discussions posed to five participants who were master's students, for generating data. The researcher used phone calls for interviews and Zoom for focus-group discussions. The questionnaires were sent via email. Furthermore, a case study conducted by Khoza (2020) sought to find selected academics' knowledge construction for the 4IR. Participants were purposively selected used reflective activities, semi-structured interviews and focus-group discussions to generate data. In generating data, the researcher relied on virtual measures.

Additionally, Khoza (2020) carried out an interpretive quantitative case study during the lockdown which explored academics' knowledge on teaching for knowledge building. Once again, data for this study was generated virtually. The reflective activities were sent through email, whereas the semi-structured interviews were conducted via Skype; the focus-group discussions were conducted through Zoom. A qualitative case study was also carried by Khoza and Mpungose (2020) in two different institutions of higher learning: one in South Africa, and one in the United States of America. The reflective activity and semi-structured interviews which were used to generate were administered online (e-mail, Zoom and WhatsApp).

Since the studies cited above were a success during the lockdown period, I also employed the same online methods to generate data for this study. The discussion of the data-generation process starting with the reflective activity is discussed in the section that follows.

5.5.2 The use of the reflective activity/questionnaire to generate teachers' voices

The reflective activity is an open-ended questionnaire with questions that inspire the conscious and subconscious minds of participants to reflect on a phenomenon being studied (Cohen et al., 2013; Creswell, 2014; Ovens & Tinning, 2009; Ramrathan et al., 2017). The reflective activity prompts participants to think deeply on the phenomenon under study; hence this enhanced the participants in this study to think deeply about specific individual voices on the teaching of climate change. For Valli (1997) and Carmona, Castillo and Millán (2008), the reflective activity is described as a written task which expects participants to respond by

completing a series of questions based on the problem/phenomenon being investigated. The reflective activity expects participants to engage by responding to questions that are based on the phenomenon of a study. Valli (2009) and Ramrathan et al. (2017), note that the reflective activity aims to trigger in-depth exploration of the phenomenon by participants.

The “triggering” occurred as the teachers engaged deeply in a critical dialogue that saw them revisiting their past teaching practices to question what informs their present and future teaching practices. The reflective activity assisted the participants to be regressive, progressive, analytical, and synthetical (undergoing phases of *currere*) on their voices in the geography curriculum. For this study, the reflective activity compelled teachers to ponder deeply on the voices on the geography curriculum: Which voice/s inform/guide the teaching of climate change? According to Brookfield (2017) the reflective activity is best suited for participants to reflect on the voices that drive the curriculum and their actions that then follow in practice. The interrogation of the participants’ voices which the reflective activity challenged participants to engage in helped them realise the voice/s in the curriculum and determine the need for change and improvement in their practice.

Shoba (2018) concurs that when people engage in a reflective activity, they engage in a vital human activity. Their ongoing as well past experiences and actions/habits inform their present and future practices just as expressed by Currere's premise (Glor & Kanu, 2006). Shoba (2018) and Khoza (2015) together with Schon (2017) uphold that, as people reflect, they engage in an internal conversation/dialogue which comes out as their voice. The reflective activity given to the geography teachers was aimed at engaging their internal thought systems (conscious and subconscious mind) to reflect on the voices that drive the teaching of climate change.

The reflective activity gave the participating teachers the opportunity of reflecting on their own voices in the curriculum. Studies Khoza (2013), Khoza and Manik (2016), Khoza and Fomunyan (2020), together with Mpungose (2018), opine that teachers ought to find and understand their individual voices (self-actualisation) before they attempt to address the needs of societal or professional voices. The understanding of teachers’ personal voices empowers them to gain control of the curriculum. Such helps them to enact the curriculum with more understanding based on confidence and clarity.

The reflective activity that was given to the participating teachers was in the form of reflection-for-action, which Khoza (2017) describes as reflection for the purposes of acting on a current problematic situation. The problematic situation in the study was finding the voice that drives

climate change teaching. Consequently, the reflective activity was the foremost and best-suited data-generation tool as it was aimed at analysing and exploring the phenomenon of the study. Accordingly, the first stage of the EDR as design of this study was aimed at identifying the problem. The reflective activity gave the participants contextual comprehension of the studied phenomenon. The reflective activity as a tool gave me the opportunity to gain understanding and insight into the voices that drive the teaching of climate change.

Teachers were made to reflect on the voices in the geography curriculum so as to ascertain voices that drive climate change teaching. The participants were sent by email the reflective activity as shown in Table 5.4, and were requested to return this to me after two weeks. Participants had to complete the questionnaire in their own space and at their own pace without my interference. Responding to the reflective task on their unused time gave the teachers liberty to ponder on the voices in the geography curriculum without me being there. Moreover, the reflective activity was sent by email as a softcopy for flexibility. The teachers were able to inscribe and correct their answers to their satisfaction. As seen in Table 5.4, the questions in the reflective activity are designed and based on curriculum concepts/signals. These were sourced from literature as the professional voice (Chapter Two), societal voice (Chapter Three) and personal voice (Chapter Four) discussed. Additionally, the questions were crafted from the currere and the theory of teachers' voices on which this study is grounded.

Table 5.4

The Reflective Activity

INTERROGATIONS	THOUGHTS ON VOICES FROM PARTICIPANTS
Query 1: Why do you teach climate change to your learners/Why do you have an interest in teaching them climate change? (rationale) For professional or societal or personal reasons?	
Query 2: What guides the teaching of climate change? (objectives, aims, or outcomes)	

Query 3: What sources of content do you use for teaching climate change? (prescribed/school content or everyday knowledge or personal researched content)	
Query 4: Where do you teach climate change? (location/environment) classroom trips or blended learning/everywhere even at home.	
Query 5: What teaching resources do you use to teach climate change? (Hardware, software or ideological-ware resources)	
Query 6: Which activities do you engage learners when teaching climate change? (content-centred, teacher-centred, learner-centred activities)	
Query 7: How do you assess climate change lessons? (Formative, summative, or peer assessment)	
Query 8: What role do you assume when you teach climate change? (instructor role, facilitator, artistic or researcher role)	

As shown in Table 5.4, the reflective activity had eight questions. Question One intended to generate teachers' responses to the teaching of climate change, or the justification for teaching climate change. Their responses had three offers to select from, which represented the three voices that drive the curriculum. A teacher teaching for personal reasons would be aware of his or her voice in the curriculum. However, the societally voiced teacher would be teaching for societal reasons, meaning that the teacher is driven by voices from the society or a specific community. A teacher driven by the professional voice would mention an official requirement to teach climate change. Such a teacher will state the obligation from the MoET to teach the

learners the prescribed way. This would imply that a geography teacher must live up to the role of teaching only, without making personal contribution.

The second question elicited what guides the teacher when teaching climate change. The three propositions given for this question were objectives, aims, or outcomes. Most of the teachers who took part in this study expressed that they are given a geography syllabus to follow each year. Although the syllabus has aims, it is driven by objectives. Assessment objectives as well as general and specific objectives drive the geography curriculum content (ECESWA, 2020). Subsequently, teachers said they were guided by objectives. They are expected to teach what is given for the learners to pass even high-stakes examinations that learners write to complete the SGCSE curriculum. Only two pointed out that in climate change teaching they create outcomes that will be easily understood by learners.

Question Three was focused on the sources of content/knowledge that geography teachers use for teaching climate change. The propositions for this question were: prescribed/school sources/knowledge, content from everyday knowledge, or personal researched content/knowledge. Some teachers relied solely on prescribed text books, which indicates a teacher driven by professional voices. Another participant would indicate the use of material organised from colleagues such as from geography workshops – a teacher driven by societal voices. Teachers that depend on societal content knowledge would also use content knowledge from the media or and the internet sources. A societally driven teacher also appreciates content knowledge from nearby community members or communal knowledge/indigenous knowledge. Teachers who would take advantage and use content from both professional and societal voices to bring together to fit their individual needs would gain a personal voice in the teaching of climate change.

The fourth question was about the location or milieu in which teachers teach climate change. This question aimed to find out where teachers enact climate change lessons. The place used for teaching climate change indicated the voice that drives the teachers' actions or habits in the practice. The teachers who used only the classroom would be driven by professional voices. Those who would invite people from community or go out in field trips to the community were motivated by the societal voices. Teachers who had a voice in the curriculum would be those who would take advantage of both classroom setting and societal voices by making sure learners learn climate change everywhere, even at home. Teachers motivated by personal

voices would use blended learning: a combination of face-to-face and online learning (Florian & Zimmerman, 2015; Kazu & Demirkol, 2014).

Question Five sought to find out the teaching resources used by geography teachers to teach climate change. The professional-voice-inspired teacher would use hardware resources (prescribed text books); and the societal-voice-inspired teacher would utilise online resources. Those who identified a personal voice would use both hardware and software resources to create personalised teaching resources. In Question Six the voices that drive teachers would be realised from the activities teachers engage in with learners as they learn climate change. Once the teacher indicated the activity, or a preference in teaching climate change the voice that drives such teaching habits would be identified.

Question Seven sought to establish the assessment type used in the teaching of climate change. The propositions specified for this question were summative assessment, peer assessment, and formative assessment. The manner a geography teacher uses to assess learners during teaching and learning of climate change informs the voice that drives the teacher. Geography teachers who solely rely on summative assessment would clearly show reliance on professional voices. Those who favour peer assessment are driven by societal voices. Personally driven teachers, as the model of teachers' voices suggests, would take advantage of the two: summative and peer assessment, to create a personalised assessment type.

The last question was based on the role a teacher assumes when teaching climate change. A geography teacher who would always be an instructor during lessons would show reliance on professional voices; and one who facilitates would be societally driven. A teacher who takes from professional and societal practices would assume a new personalised role – that of being artistic and a researcher. Such a teacher would assume personalised actions during teaching and learning that suited own needs and those of the geography learners. The reflective activity proved to be the appropriate data-generation tool for the first phase, the exploratory stage of the EDR that guides this study.

5.5.3. Theorising on the strengths and weaknesses of the reflective activity

Bourdieu and Wacquant (1992) claim that the main strength of the reflective activity, especially when used with EDR in the first phase of understanding the problem, is that it reveals the reality (voice) that exists at the heart of participants. These scholars affirm that the reflective activity unearths the hidden voice buried deep in one's subconscious mind. The reflective activity, as

the first tool which generated teachers' voices on the teaching of climate change would reveal voices of the geography teachers on the geography curriculum. This gave the contextual understanding of the problem based on unearthing the teachers' secret voices that only the reflective activity unveiled.

Moreover, Brookfield (2017), Mpungose and Khoza (2017) observe that using the reflective activity in a study perfectly unpacks its phenomenon. The reflective activity endorses deep examination on the phenomenon by participants who are able then to identify loopholes in their understanding and subsequently realise the problem. Mpungose (2018) affirms that the reflective activity assists in making participants view their strengths and weaknesses as far as the phenomenon is concerned. The teachers in this study were able to deeply understand voices in the curriculum after being exposed to the reflective activity, which implies that the reflective activity was able to explore the phenomenon of this study for the participating teachers.

However, Brookfield (2017) and Cohen et al. (2013) bemoan that, like all other data-generation tools, the utilisation of the reflective activity has some weaknesses. One of the challenges, as observed by Cohen et al. (2013), is that participants may not all understand the questions in the reflective activity. In this study, most of the participants did not understand the curriculum terminology used to phrase the questions. The first question which demanded them to state why they teach climate change, for example, was difficult for most of them – they thought it was because they are employed as geography teachers. Their main problematic area though was on the three propositions: professional, societal, and personal voices. They failed to understand what they meant or represent.

To address this challenge, I gave the participants my contact number (phone number) as they had to send the reflective activity by email. A majority of them called me for clarity which I gave. Some participants thought filling the reflective activity was time-consuming. In overcoming this encounter, I requested them to just choose one proposition as each question had three choices, so that they did not waste time. Another glitch in the reflective activity was that some teachers felt uncomfortable that the reflection was on assessing their own practice. It seemed as though I was divulging their weaknesses as curriculum enactors. In addressing this concern, I reminded the teachers about ethical considerations in carrying out a study (confidentiality and anonymity, to be discussed later in this chapter) which assured them that the study was not meant to expose them in any way, and would never be used against them.

Moreover, I requested the participating teachers to be very honest when responding to the reflective activity as its aim was to unpack their authentic voices on the teaching of climate change. The participants all responded to the activity and after the agreed time, they all emailed me their reflective activity. The other tool that was useful in Phase One of EDR and in generating voices of teachers was the use of artefacts inquiry.

5.5.4. The use of artefacts to generate individual teacher's voices

Scholars, Butler-Kisber and Poldma (2010), Friedman (2007) and Silverman (2016) declare that artefacts are man-made objects, such as machines, symbols, industrial processes, and social objects that are to be used for a particular purpose. Artefacts can be drawn or crafted by human beings for a certain purpose. Moreover, pictures, drawings, equipment, books, desks, and any other objects can be classified as artefacts. Silverman (2016) notes that the major objective of using an artefact or artefacts in a study is to seek to produce individual's unique ideas, feelings, voices, and emotions. Artefacts are able to extract individuals' lived experiences from conscious and subconscious minds. Smith (2013) observes that artefacts are a kind of objects that represent voices of mankind and knowledge in the sense that the artefact identified by an individual have a certain unique meaning for them personally.

Turkle (2007) declares that artefacts as objects have the ability to connect individuals to their lived world experiences through reflections in their subconscious minds. The object that an individual selects as an artefact inquiry has some bond or attachment to own practice autobiographical experiences. Rodgers and Scott (2008) observe that objects or artefacts have the potential to evoke autobiographical narratives of one's journey in any given area. Artefacts had the potential to prompt the autobiographical (currere) journeys of the participating geography teachers. Through the artefact inquiry/retrieval, the participating teachers gained the ability to reflect on their lived educational experiences on teaching climate change, so as to ascertain their individual voices (Clandinin, 2013; Pithouse-Morgan & van Laren, 2012).

The participating teachers were requested to select artefacts of their choice. I explained to them that the chosen artefact should be one that would aid them to ponder about their past which would evoke forgotten events or memories (Turkle, 2007). The forgotten events were essential in this study as I was aimed at taking an autobiographical journey (currere) with the teachers, so as to determine their voice in the teaching of climate change. The artefacts were utilised as

tools to bring to mind the voices of the teachers in the geography curriculum (Biesta, 2010; Turkle, 2007).

The artefacts were selected as a data-generation tool for this study because of their ability to stimulate one's understanding on experiences of the past, present and future (currere) to raise one's subconscious reality. As argued by Cohen et al. (2018), through subconscious reflections on the previous, current, and imminent, when used in a study artefacts are able to generate individual voices in a way that no other data-generation tool can. Butler-Kisber and Polma (2011) concur with Cohen that artefacts inspire individuals to think out of the box about the phenomenon in a study. The artefacts are able to instigate a voice from each participating teacher on the teaching of climate change. This situates artefacts as change agents in that they may engage an individual teacher to think deeply on a phenomenon with the possibility of changing.

Moreover, Cohen et al. (2018) observe that artefacts are personal in that they represent one's individual voice, and may symbolise different meanings in different people. According to Friedman (2007), the peculiar nature of artefacts requires a researcher to avoid misinterpretation of any artefact to reduce ambiguity. This points to that each participant should be at liberty to describe how a chosen artefact presents a voice. The main prompt question used to generate the teachers' voices using the artefact was, "How does the artefact represent you as a climate change teacher?" The teacher would then narrate the meaning of the object that would expose the voice the participant has on climate change teaching.

I requested participants to take a photo or to inform me of the choice of artefacts and then write a message or call to explain the meaning attached to the artefact. The object was used to probe its significance in teaching of climate change and how it related to their professional, social and personal lives. The participants brought forward different objects as their artefacts such as a key, laptop, cellphone, textbooks, and test scripts, to name but a few. However, artefact inquiry was unpopular with a majority of participants as they had difficulty of understanding what is expected from them. I called those to explain and clarify what is expected from them. Thereafter, most of them gave me the artefact, although some mentioned their former geography teachers as their artefacts. I explained to them that an artefact should be a man-made object. The teachers were able to bring the objects which were used to describe their voices. The artefacts and reflective activity were used to probe the "what" question. To investigate

how geography teachers' voices influence climate change teaching, observations were employed as the third data-generation method.

5.5.5 The use of observations to generate teachers' voices

Another method that was used to produce data for this study was doing classroom observations. According to a number of scholars, Bertram and Christensen (2020), Creswell (2017), J.H. McMillan and Schumacher (2010) and de Vos et al. (2017), classroom observation entails gathering data through the use of the sense of sight. Observation demands that the observer/researcher gather data through only watching rather than enquiring. The researcher observes physical settings, as well as events and activities that take place during teaching and learning. Creswell (2014) and Maree (2017) both aver that observation is one data-generation tool that offers a researcher direct access to the real-world settings of participants. This view is supported by Strydom (2014b) who sees observations as an essential data generating tool as it allows researchers to gain access to participants' practice habits.

This assertion suggests that observations expose researchers to a close representation of what transpires in the real-world setting. Observation answers the second operational question, "how?" Moreover, the observations also added to data for the first descriptive and third philosophical questions. Through observing real climate change enactment, I intended to see the content sources used by the geography teachers, the activities they engage learners in, tools they use for teaching, roles they assume during teaching and learning, assessment type used, and where the teaching and learning of climate change takes place. Observations offer insight into the reality that takes place in the real social setting (Bertram & Christiansen, 2020; Creswell, 2014). For this study, observing the geography teachers was the only appropriate tool which was useful in capturing how teachers' voices are revealed during the teaching and learning of climate change.

Hunsander and Thompson (2014), McMillan and Schumacher (2010), also support the claim that observations expose researchers more or less, to a representation of what takes place in a real classroom situation that would otherwise not be manifested in the use of other methodological tools such as interviews. As I sought practices that depicted teachers' understanding of the significance of their voices in the geography curriculum, the observations were the only ideal tool to employ. Moreover, for Maree (2017) and Cohen et al. (2018)

observation as a data-generation tool is transformative in nature. On that premise, I utilised observations in the design and implementation stage or construction and design stage of the EDR so that the participants would show how they understand the voices on the teaching of climate change. Since observations are transformative, I utilised them with the aim of transforming the teacher's understanding on the importance of their personal voices in the geography curriculum.

There are however, some challenges of utilising observations as a data-generation instrument. Robson (2007) laments that observations allow an individual observer to maintain a comprehension of what transpired during learning, which might clash with trustworthiness of the study. Furthermore, Robson (2007) claims that an observer can only concentrate on an imperfect or flawed practice while teaching and learning takes place. This aspect was addressed in this study through the use of an observation schedule in which I had set out to observe each lesson and record it. Moreover, since the observations were carried out during COVID-19 times, I decided to do them through the use of virtual means. I requested the teachers record two forty-minute sessions for me on their cellphones, sending these to me. All twelve participants cooperated well with me in this regard. Although sound in some recordings was poor, I managed to make use of the data generated.

Additionally, several authors have a concern about the natural settings issue for observations (Cohen et al., 2018; Hunsander & Thompson, 2014; Robson, 2007). The main contention is the likelihood that the observer might cause the observed to be nervous which might compromise the natural reality that is assumed. Strydom (2014b) also avers that observer's presence alters the natural setting, rendering it no longer authentic. According to Robson (2007), the mere presence of an observer might cause the observed to "act" which distorts the real-world setting aimed at. These affirmations above from various scholars suggest that observations may sometimes be misleading. The invasion of a researcher to observe may negatively affect the natural setting representation.

These shortcomings were not a challenge in this study as I did not sit to observe the teaching and learning taking place in person. I requested teachers to record; and to pass on recorded sessions. The natural setting was not disturbed and thus the data accurately represents the reality. Observations were my only data-generation method that gave a true reflection of what

really takes place during climate change lessons. The other tool I used to generate data was the semi-structured interview.

5.5.6 The use of semi-structured interviews to obtain teachers' voices

For Bertram and Christiansen (2020), an interview is a dialogue between a researcher and a participant. The conversation which the two engage in is, however, unlike common everyday conversations in that it takes the form of a structured conversation whereby the researcher sets the “agenda” and leads the conversation through asking questions to the respondent. Longhurst (2003) views the semi-structured interview as a verbal conversation in which an individual, the interviewer, endeavours to prompt data or facts from another person, the interviewee (participant), by posing a set of specific questions with the aim of reacting to research questions.

This is supported by Brown and Danaher (2019) together with DeJonckheere and Vaughn (2019) who claim that semi-structured interviews are characterised by the interviewer preparing a set of predetermined questions. An interview is a focused discussion. The researcher approaches the interview with the aim of generating particular information from the participant. These data are generated through answering the specific questions the researcher prepares for the respondent.

Additionally, Maree (2017) states that the two-way conversation (interview) is conducted to gather data which gives voices (beliefs, views, ideas) as well as behaviours of participants. Interviews are undertaken to allow the researcher to see reality through the eyes of the respondent (Creswell, 2014; Cohen et al., 2011; Glesne, 2014; Okeke and Van Wyk, 2016). I opted to use interviews to generate data for this study as I was eager to enter the world of the geography teachers to elicit awareness of voices that drive the geography curriculum. My aim was to appreciate the respondents' understanding of voices in their social setting (enacting of climate change lessons).

Scholars have identified that there are three different kinds or sets of interviews: semi-structured, unstructured/open-ended interview, and structured interviews (Crano & Brewer, 2014; Leed & Ormrod, 2015; Lichtman, 2012; Lincoln & Guba, 1994; Maree, 2017). The structured interviews designate the type of interview in which the interviewer controls the

interview by posing straightforward and standardised questions to the participants, without any flexibility. Moreover, there is very little probing allowed in structured interviews.

The unstructured interview, on the other hand, upholds that the interviewer introduces the main research question for a study; and the participants are free to respond as they wish. The participants drive this kind of interview with emphasis mainly on the participants' perceptions on the phenomenon studied (Bertram & Christiansen, 2020; Creswell, 2012; Maree, 2017). I did not opt for these mentioned types of interviews (structured and unstructured) because of their limitations. They allow little room for further probing; respondents respond in their own way which may sway a study from the phenomenon studied. I decided to utilise the semi-structured interviews.

Semi-structured interviews use open enquiries that are arranged by researcher to lead the conversation. This kind of interview allows the researcher to ask follow-up questions for further clarification and probing. When conducting semi-structured interviews, the researcher must identify emerging data that needs to be explored further if it is related to the phenomenon of the study (Bertram & Christiansen, 2020; Cohen et al., 2014; Maree, 2020). During the dialogue, the interviewer must attempt to seek further clarity from the participants to fully explore the needs of the study. Semi-structured interviews permit the dialogue to be open to comments and follow-up questions which are referred to as probes, from both the researcher and the participant in pursuit of clarity. Semi-structured interviews were suitable in being flexible.

Adachi, Tai and Dawson (2018) and de Vos et al. (2017) see this non-standardised and flexible format of semi-structured interviews as an advantage: it allows a researcher to rephrase questions as the probing continues. Moreover, the probing extends to follow-ups on remarkable and interesting data that transpires in the course of the interview. The semi-structured interviews I prepared allowed the participating teachers to freely express and expand on their views and opinions about the voices in climate change teaching.

Semi-structured interviews provide voices, through deep insights into the memories (subconscious minds) of participants to obtain an understanding of the world from their viewpoint (Cohen et al., 2007; de Vos et al., 2017). I chose semi-structured interviews in this study to generate geography teachers' voices. The semi-structured interviews offered me a chance to obtain from the geography teachers their current understanding of voices on the teaching of climate change; and further to gain understanding of why voices are as they are in

the curriculum. Semi-structured interviews authorise the researcher to understand the problem investigated in depth. The interaction and conversations in this study occurred over the phone. The researched (participant) and researcher, in the social world, collaborated to generate the data on teachers' voices on the teaching of climate change (de Vos et al., 2017; Maree, 2017; Yin, 2006).

Furthermore, semi-structured interviews are characterised by being structured, orderly, and self-conscious (Brown & Danaher, 2019). This type of interview follows some prearrangement which the researcher prepares beforehand as a guide during the dialogue. During the course of the interview, the interviewer has to follow some order so that each specific question fully attempts to address the needs of the study. The interviewer is expected to listen considerably and thoughtfully as the participant responds to the questions. For DeJonckheere and Vaughn (2019), semi-structured interviews should not be dominated by too much talking from the interviewer; there ought to be more listening. The researcher should be prepared to listen carefully to the responses from participants as they are the sources of data. In this way, the semi-structured interviews would be able to generate more comprehensive and rich data (de Vos et al., 2017).

In this study, the semi-structured interviews became a suitable tool, permitting the researcher to generate open-ended data by probing the participants' feelings, thoughts, as well as beliefs on the teaching of climate change (DeJonckheere & Vaughn, 2019). The semi-structured interviews were able to delve deeply into the subconscious minds of participating geography teachers to generate their voices. All twelve teachers were interviewed by cellphone. Longhurst (2003) declares that semi-structured interviews can be conducted in person or online, and are commonly used in geography and curriculum related studies.

I conducted the interviews during convenient times for each of the participants. I negotiated suitable times with each one of them to avoid unnecessary interference in their private lives or programmes such as academic programmes. Some of the participants were interviewed during school hours, whereas others were interviewed after school hours. It was essential for me to interview the participating teachers at their own convenient times, so that they would not feel pressured to respond to my questions when having other pressing activities to do, and thus not in a comfortable, stress free environment.

I informed the participating teachers that I would record the conversations on the phone. The recording was meant to ensure that all proceedings of the dialogue were correctly captured.

McMillan and Schumacher (2006) and Silverman (2016) advise that it is imperative for researchers to record proceedings of interviews with participants to ensure completeness of the dialogue. Moreover, the recording helped me to be more attentive to the participants' responses as the interview was in progress, and be able to prompt follow-up questions where amplification was desirable.

To guarantee reliability, I used a similar pattern and the same questions for all twelve participants (Cohen et al., 2013; Creswell, 2020; Maree, 2017; Yin, 2012). Before the interview with each participant, I briefly informed them of the contents of the interview we would have. I did this in view of reducing any traces of uneasiness or mystery as well as unknown suspicion that could exist. In this way, the participants were prepared psychologically on what the interview demanded before it was recorded. This allowed me to delve deeper as I interviewed each participant with the aim of understanding the phenomenon, voices of teachers on the teaching of climate change (Denzin & Lincoln, 2011).

Numerous studies avow that semi-structured interviews are a commendable data-generation tool employed by researchers. Semi-structured interviews offer participants an opportunity to explore any phenomenon personally (Christiansen et al., 2010; Cohen et al., 2013; Creswell, 2020; de Vos et al., 2017). I observed this strength in the study as the participating teachers were able to give more details on the voices in the teaching of climate change. The semi-structured interviews were utilised in the design and construction phase of EDR, the design that guides this study. The generation of more details afforded by the semi-structured interviews paved a way for the implementation of possible solutions to address the needs of the teachers raised from the first phase in which the reflective activity, and artefacts, were employed. The probing that took place in the course of the interviews came with various alternative solutions and evaluations to address the issue of the teachers' voices on the teaching of climate change.

However, scholars allege that semi-structured interviews are sometimes considered time-consuming data-generation tools that may have confusing questions (Cohen et al., 2013; Creswell, 2020; Maree, 2020). To curb this shortfall, in this study I allocated a minimum of 30 minutes and a maximum of 45 minutes for each participant to cater for those participants who required more time when conveying their voices. This allocated time was sufficient for me to obtain new perspectives on participants' voices on the teaching of climate change. I also put participants at liberty to ask should there be any unclear questions. Another disadvantage of

semi-structured interviews relates to the difficulty of initiating rapport for the sole purpose of obtaining rich data from the participants (Bertram & Christiansen, 2020; Creswell, 2020; Maree, 2017; Silverman, 2016).

In this study, I tackled this inconvenience by firstly ensuring anonymity to the participating geography teachers to dispel any doubts about their participation. I did this so that they would feel comfortable when expressing their voices. Moreover, I asked open-ended questions that put them at ease. This permitted them to respond in their own words. As alluded to earlier on, the semi-structured interviews were conducted at expedient times for each participant and in their own places of comfort so that they could be totally relaxed.

Cohen et al. (2013), and Maree (2017) aver that semi-structured interviews may be affected by power-related issues presented between researcher and the participants. Furthermore, Bertram and Christiansen (2020) observe that the power issues may cause some reluctance to share voices honestly on the teaching of climate change. The participants might feel inclined to provide responses that they assumed I wanted to hear so as to impress me (Bertram & Christiansen, 2020; Creswell, 2020; Yin, 2013). Such a scenario usually compromises the authenticity of the data generated.

I was aware of the possibilities of power issues that were likely to arise during the interviews. I asked participants to speak honestly about their voices on teaching climate change. Moreover, to curb the issue of power concerns, I guaranteed the participants that the data that they gave me would not be used in any way to judge them. Rather, it could be useful to emancipate and empower them towards effectively realising their voice in the geography curriculum.

As stated earlier on, I conducted the semi-structured interviews for this study telephonically. Vogl (2013) asserts that commonly, semi-structured interviews are administered face to face because of the significance of personal contact during the interview process. Likewise, Cachia and Millward (2011) observe that very few researchers utilise the telephone when conducting semi-structured interviews. However, using the telephone for interviewing is as effective as face-to-face interviews. Findings of a qualitative study carried out in Germany by Vogl (2013) on the telephone versus face-to-face interviews presented very little difference between the two methods of interview.

Consequently, Vogel's study contests the hesitancy to conduct semi-structured telephonic interviews. Telephonic interviews are as effective as face-to-face interviews. In addition, scholars, Carr and Worth (2001), together with Sturges and Hanrahan (2004), agree that face-

to-face interviews and telephone interviews produce data which is more or less comparable in quality to the data attained from face-to-face interviews. This further implies that there are no significant differences between face-to-face and telephone interviews, suggesting that data generated from the telephone interviews is equally valid.

Additionally, Cachia and Millward (2011) correspondingly discovered that the use of telephones is an equally viable option for data generation as are face-to-face interviews. Telephonic interviews, according to Cachia and Milward (2011), have the following advantages: they are initiated by the researcher as are face-to-face interviews; and the conversation follows an agenda-driven format in that the researcher follows the questions that are prepared beforehand. Using the telephone for semi-structured interviews does not negatively impact the data-generation process. For Trier-Bieniek (2012) the telephone interview is more participant-centred, as the interviewee focuses on the telephone conversation that is usually negotiated for the convenience of each participant. Conducting semi-structured interviews through the use of cellphones does not negatively impact the data generation process.

As indicated earlier on in this chapter, I negotiated with all the participants for their most convenient time, in their most comfortable place so as to ease any pressure that could jeopardise the data-generation process. According to Carr and Worth (2001), being interviewed over the phone has the possibility of generating more honest data than face-to-face interviews. In telephone interviews, participants were calm and relaxed, being in their own space and at a convenient time. Moreover, at these times of Covid-19 and its accompanying lockdown protocols, virtual communication has become more common than face-to-face contacts. Such implies that the participants would be comfortable during the interview. Carr and Worth (2001) declare that because of social change and advances in technology, the use of telephone interviews has made it convenient for researchers and the participants to carry out interviews at any given time and everywhere.

Participants in this study were teachers: I discovered that all of them own cellular phones, which made it easy for me to request the use of the cellphones to administer the semi-structured interviews. The use of the cellular phones did not have any economic effect on the participants as I loaded airtime to call them. All twelve participants availed themselves at specific agreed times for the interview. The times of conducting the interviews were different, as per the arrangement with each individual participant: some favoured the day and others were

comfortable to be interviewed after working hours, in the evening. When conducting the semi-structured interviews, it was evident that the participants now understood the questions as they responded well, not needing much more clarity. Their responses brought crucial suggestions towards addressing solutions towards the understanding of teachers' voices on the teaching of climate change. This confirmed that the cellular phone semi-structured interviews were appropriate for this study. The other data-generation tool that I used was focus-group discussions which are discussed next.

5.5.7 The application of focus group to obtain teachers voices

According to Silverman (2016), focus-group discussions have increasingly become one of the most popular research tools in social research. As a data-generation method, focus-group discussions give a study's participants a chance of discussing the phenomenon by allowing unrestricted reactions from each participant. Denscombe (2007) claims that the focus group is a manageable group of selected individuals, commonly ranging between six and twelve participants. These people are brought together by a competent researcher with the intention of exploring their voices, perceptions, feelings, and notions on a phenomenon under study. This study formed a focus group which consisted of twelve teachers; and the discussions were held on Zoom.

Scholars contend that the number of members partaking in a focus group should not be too high (more than fifteen) so that the researcher is able to control group dynamics (Cohen et al. 2018; Maree, 2017). If the focus group is well organised by the researcher, it is capable of generating rich, in-depth data. For Nagle and Williams (2013), focus-group discussions offer deep insights on the voices of participants thus gaining of a deeper understanding of the phenomenon under study. The focus-group discussion comprises persons with specific characteristics who are selected by a researcher to focus on a specific topic (Anderson, 2012). The group of selected individuals use their specific characteristics to deliberate on a phenomenon. Each participant freely expresses a voice and the rest of the group respond to the view presented.

Smithson (2000) posits that a focus-group discussion is an in-depth discussion of a phenomenon by a specific comparatively homogeneous group with the aim of providing data

on a research phenomenon. Krueger and Casey (2014) reason that any focus-group discussion is not merely about gathering participants together to talk – the group usually have a specific purpose to accomplish. During the discussions there is usually some procedure that guides the participants' deliberations. Focus-group discussions provide an environment that is more natural in that just as it happens in real life, the participants during the discussions are able to influence and be influenced by others (Kruger & Casey, 2000). This interaction which resembles real-life experiences allowed participants in this study to air their voices on climate change teaching in Eswatini. The deliberations necessitated by the focus group in this study made the teachers express and become clear about voices in the curriculum.

Focus groups may be beneficial when generating data for a study; however, Gorman and Clayton (2005) cite some challenges with this type of data-generation method. One main challenge with the focus-group discussions method is that some participants may present responses that are fabricated. Some participants may feel obliged to give the researcher “ideal information”. To curb this limitation, I requested that participating teachers engage in the discussion in a professional manner, being truthful in their deliberations. Moreover, Maree (2017), together with Bertram and Christiansen (2020), note that another shortcoming of focus-group discussion is that there could be some vocal participants who may control or dominate discussions, thereby influencing the findings.

This situation was limited in the current study since the focus-group discussions were on Zoom. Each participant would speak one at a time whilst the rest switched off their microphones. In this way all participants had an equal opportunity to present their individual voices. The other challenge was with internet connection, as some participants would have interruptions. However, two 30-minute sessions were successfully held in which the teachers jointly deliberated on the voices in climate change teaching. Participants were directed by similar kinds of questions used in the reflective activity and semi-structured interviews. The next step after the data-generation process was to analyse the data.

5.6 Analysis of Data

Numerous scholars, (Christiansen et al., 2010; Cohen et al., 2013; Creswell & Poth, 2017; Maree, 2017) have attempted to clarify that data analysis performs a number of valuable purposes in a study. Data analysis unpacks the phenomenon of a study, fully describing the concepts to maintain association with the generated data, and to bring a deep understanding of

the raw data generated from the field. The key aspect of data analysis is to make meaning of raw data. Data is generated from participants that hold diverse social realities from their varied social contexts. Thus such realities are to be broken down by the researcher to fully answer the research questions (Bertram & Christiansen, 2020; Creswell, 2014; Maree, 2017).

The data for this study was generated by employing five data-generation methods. Twelve participating teachers who held different views about the voices of teachers on the teaching of climate change were the source of data. Their diverse views demanded that I analyse them to make logic through being considerate of regularities, categories, patterns, and themes, as I responded to the phenomenon and research questions that guide this study (Cohen et al., 2011; De Vos et al., 2017; Creswell, 2014; Okeke & Van Wyk, 2016).

According to Creswell (2014), data analysis is an activity which involves preparing and organising generated data in such a way that the data is reduced to themes. According to Creswell (2014), the themes are produced from the process of coding which results in the data being presented in tables, figures, and/or discussions. This view is supported by Maree (2017), who notes that the primary concern of data analysis is to separate a large chunk of data generated from the file into smaller, meaningful parts. In the same vein, Bertram and Christiansen (2020) observe that data analysis is a technique that brings meaning to the voluminous data that a researcher generates from the field. Considering all that has been said so far about data analysis, it is clear that the analysis activity must be dealt with in an organised manner.

I utilised guided/thematic analysis as an organised mode of making the data meaningful. Both qualitative and quantitative methods were used to generate data in this work. The reflective activity (questionnaire) was a quantitative tool; however, it did not involve any numerical values like common quantitative tools, it was made up of words. The other four tools were qualitative. The process of data analysis in this study was mainly qualitative. This suggests that it was entirely on clarification of words as opposed to numbers (Creswell, 2014; Okeke & Van Wyk, 2016). Guided/thematic analysis was employed in this study to separate, sort, and synthesise the data. This infers that the researcher determines categories before the actual process of data generation takes place (Cohen et al., 2011; Neuman, 2007; Samuel, 2009). Samuel (2009) continues to argue that the researcher may have to modify the preset categories, as interaction with the data takes place during guided analysis process.

Maree (2017) posits that guided analysis necessitates adjustment of the preset categories of data as influenced by new data that comes from the field. Similarly, Khoza (2015a) asserts that the preset themes can be polished, especially when the data generated from the field comes up with more significant categories. Likewise, Glesne (2014) observes that guided analysis allows a researcher to modify pre-determined themes so as to permit other important concepts/categories that transpire from data generated from the field. This calls for the researcher to use deductive and inductive reasoning. The EDR encourages the application of deductive and inductive data analysis in studies where it has been used (Plomp & Nieveen, 2014).

A considerable amount of literature has described deductive analysis as the circumstance in which concepts/categories are predetermined before relating to the generated data. Inductive analysis occurs when the researcher interacts with the actual data generated from the field (Cohen et al., 2011; Creswell, 2014; Glesne, 2014; Maree, 2017; Okeke & Van Wyk, 2016; Samuel, 2009; Yin, 2012). This indicates that deductive analysis occurs prior to the interaction with generated data; and inductive analysis takes place when the researcher uses relevant empirical data generated from the field.

Guided analysis suited this study as five different data generation methods were employed. The data-generation tools made it possible for other themes/concepts/categories from the participants to surface. I might not have previously imagined/anticipated that many of the categories would be added. For example, by the use of semi-structured interviews with their open-ended questions, I was able to deeply probe the participants. I was seeking for clarity in unclear responses on the complexity associated with teachers' voices on the teaching of climate change. The probing allowed the participants to express their voices in such a way that more concepts were unveiled. Furthermore, the use of artefacts allowed for more personal voices to come out, which yielded the emergence of new themes/concepts/categories (Cohen et al., 2011; Glesne, 2014; Neuman, 2007; Okeke & Van Wyk, 2016).

The themes identified and used deductively in this study were raised by the study's phenomenon, which is on teachers' voices. These themes were expressed as per the study's research questions. Themes/categories were also discussed in the review of literature chapters (Chapters Two, Three, and Four) where later the theoretical framework of this study (theory of teachers' voices) was produced. Accordingly, the categories/themes were framed from the three propositional forms that influence the teachers' voices: the professional voices that are

driven by expectation that teachers should follow strict laid-down rules supported by researched facts; societal voices which emanate from social interaction of teachers; and lastly, personal voices that result from the combination of professional and societal voices to come up with a unique individual teacher's personal voice.

Out of the discussion on the three propositions of voices, themes/categories were generated. The way each geography teacher presented each of the concepts defined and also determined the voice assumed on the teaching of climate change. From the propositions and themes/categories that emerged, I was able to answer the research questions. I had to use open coding to make good sense of the deductive/pre-determined and inductive/collected themes. According to Cohen et al. (2011), and Maree (2017), open coding is the process whereby the researcher sorts data to identify patterns. The researcher also continues to categorise the data and assign labels to the text as a way of describing it (Bertram & Christiansen, 2020; Creswell, 2014; Okeke & Van Wyk, 2016). I engaged open coding in order to arrange the generated data in a way that classified it into categories so as to establish themes/patterns. Maree (2017) highlighted the significance of identifying themes and categories as this facilitates data analysis.

Consequently, in this study I used guided analysis to code the participants' responses from the reflective activity, artefacts, semi-structured interviews, and classroom observation and focus-group discussions. McKernan (2013) observes that coding participants' reactions from reflective activity, open-ended semi-structured interviews and focus-group discussions may be laborious, the researcher having to deal with diverse opinions from the participants. However, I did not feel these undesirable effects as I used the preset concepts to guide the responses of the participants. Moreover, the sets of questions I used were similar, so their diverse interpretations were in the line with the concepts that unlocked their voices.

Firstly, I had to transcribe the data from the semi-structured interviews and focus-group discussions which was audio-recorded. Cohen et al. (2011) laments that transcribing large volumes of data consumes too much time for a researcher and sometimes becomes expensive if the researcher employs a transcriber. Maree (2017), conversely, notes that using a scribe for data transcription may sometimes lead to inappropriate analysis of the data. Similarly, Creswell et al. (2007) assure that the researcher is the best person to conduct the transcriptions. This

allows the researcher to become acquainted with the generated data. I decided to transcribe the data in my own free time.

Conducting the transcription myself allowed me to become more acquainted with the data; thus I was able quickly to select the relevant data I needed. This might have not been the case had I engaged a scribe. As I transcribed the data, I highlighted patterns of ideas that were constant through judiciously reading and coding the generated data. I was able to then tie the new concepts/themes and categories to the preset themes, for easy arrangement. This greatly assisted me to recognise data relevant to the study's questions and its phenomenon.

5.7 The Issue of Trustworthiness

In studies that employ the EDR, the main concern of trustworthiness is with reasonableness or fairness of data and the data generation tools used. It also concerns how dependable, justifiable, or acceptable the data and methods used were (Berkvens, 2009; Plomp & Nieveen, 2014). A number of authors have agreed that trustworthiness is all about the manner by which a scholar guarantees that findings of a study are of high quality and that the findings can be trustworthy (Bertram & Christiansen, 2020; Creswell, 2014; De Vos et al., 2017; Maree, 2017; Yin, 2012). As this is an EDR study, the attention is both on its dependability and credibility (Berkvens, 2009; Van den Akker, Gravemeijer, & McKenney, 2006; van den Akker, 2013). This confirms the notion of trustworthiness: that of ensuring that the entire research process is worthy, truthful, and relevant.

In an attempt to describe the vitality of trustworthiness for researchers, Cohen et al. (2011) recognised that the following guarantee trustworthiness; generating thick/rich data from the field, thorough long-term interaction with participants in the field; as well as conducting triangulation used by scholars in research work to foster validity of their studies. Almost every paper that has been written on triangulation affirms that triangulation refers to the researcher in generating data using a multiplicity of data-generation methods. Yin (2003) describes the concept of triangulation as the use of several methods to generate data. I guaranteed triangulation in this study by using five methods to generate data. These were questionnaire/reflective activity, artefacts, semi-structured interviews, observations, as well as focus-group discussions. Berkvens (2009) and van den Akker (2013) identify two main

trustworthiness pointers that apply in studies that employed the EDR. These crucial indicators are credibility and dependability.

5.7.1 Credibility

Cohen et al. (2011), Bertram and Christiansen (2020), together with Silverman (2016) endorse that credibility describes the concerns of the researcher on the degree and level of truthfulness of findings of a study. For Creswell (2014) and Shenton (2004), credibility signifies the degree to which the study's findings and/or its outcomes could be said to be authentic or trustworthy from the viewpoint of the participant/s. Moreover, Shenton (2004) argues that one of the popular ways used to guarantee credibility in research studies is using reliable or dependable tools for data generation. Hence, for this study I employed five data-generation tools applying the same set of questions to all participants to address credibility concerns. Moreover, from the commencement of the data-generation exercise, the participants were encouraged to be truthful in their responses, which also is one way of ensuring credibility (Bertram & Christiansen, 2020; Maree, 2017). Rolfe (2006) advises that researchers may also conduct "member checks" to ensure credibility of studies. Member checking refers to a situation in which participants are given a chance to review their response transcripts. I undertook the member checking for this study to ensure its credibility. Overall, there seems to be some evidence to indicate that the main concern of credibility is on accurate reporting of data collected from the field, which is what I did.

I also ensured credibility by the using literature that expounded voices of teachers and the currere theory together with the theory of teachers' voices to generate findings that were analysed. Berkvens (2009) asserts that a study that uses EDR guarantees its credibility by depending on literature on the phenomenon and the use of theory. In a study titled "Developing effective professional learning in Cambodia", Berkvens delved into literature on professional learning, using the curriculum spider web as a theory to enhance its credibility. Moreover, Berkvens' study used multiple measures to generate data, which is what I did in this study to guarantee credibility.

5.7.2 Dependability

A number of authors have described dependability as a concept that denotes a study's consistency and reliability (Cohen et al., 2011; De Vos et al. (2017); Maree, 2017; Okeke & Van Wyk, 2016). A key aspect of dependability is ensuring that research findings are replicated if the study is conducted with the similar participants in similar contexts. For the purpose of dependability, the entire research process, from problem formulation, coining of research questions, together with objectives up to participants' selection, deciding on tools for data generation and analysis, I carefully recorded all the steps and decisions for the purposes of dependability. My actions were in line with Glesne (2014), who recommends that if a scholar desires to attain steadiness for a study, it is always prudent for the researcher to check whether all vital steps of a study are well documented, detailed, and clear.

Moreover, Bertram and Christiansen (2020) posit that dependability also demands transparency in data collection and analysis. Dependability expects a high-quality level of transparency in the data-generation process as well as the data-analysis stage. A researcher should circumvent circumstances in which data generated may be mistakenly distorted or reportedly biased. To ensure this, I would regularly request that the participants go through what I had documented in the field to ensure that I correctly captured every detail. Accordingly, I would take the recorded data to the participants for them to confirm whether what I had recorded truthfully replicated exactly what they had said.

In addition, Cohen et al. (2011) labels dependability as the issuing of accurate findings from the participants of a study. For that reason, direct quotes from the participants were added to avoid bias and further upsurge legitimacy of the data through providing straight confirmations from the participants. Additionally, I used the same questions in all data-collection tools and to all participants for the purpose of dependability. This was done to reduce any chances of bias that would negatively impact the data-generation exercise. In view of what has been mentioned on dependability, I believe that this study has achieved dependability.

5.8 Ethical Issues

There is a large volume of published work that describes what ethics in research refers to and the significance thereof. The generalizability of much published research on ethics has established that ethics is concerned with actions and behaviour considered correct or incorrect when undertaking studies (Cohen et al., 2011; Creswell, 2014; Maree, 2017; Yin, 2003). Furthermore, Glesne (2014) theorises that ethical issues refer to being sensitive to human rights when conducting research. Ethics places more emphasis on human dignity and respect.

Leed and Ormrod (2015) concur, emphasising that, for studies in which humans are involved, ethics are essential to offer moral guiding principles for researchers who have to carry out their studies in an ethically as well as morally suitable manner. To all intents and purposes, this study took the major values of ethics into account. The following has been offered by Christiansen, Bertram, and Land (2010) and Maree (2017) as pointers to good ethical issues in research: making sure that informed consent is acquired, provision for privacy and obscurity for participants; as well as making sure that participants are free or prevented from any form of harm.

As this study set out to search for selected geography teachers' voices on the teaching of climate in Eswatini, the number one gatekeeper that I approached was the MoET in Eswatini. I pursued the right to conduct research in the four selected schools from the ministry's officials through the communication shown as (Appendix A). The ministry, through the Director of Education, permitted the research. This permission document from the MoET was used in seeking for consent to conduct the study in the four schools I had specified. I communicated through a letter to the principals of the schools seeking for the right to conduct my study in their schools: see (Appendix B). All the principals allowed me to conduct the study in their schools.

In addition, in certifying that the right approval was attained, prior to commencing the study, ethical clearance was sought. This was in response to Creswell (2014)'s call that researchers must fully consider ethical principles before conducting a research project. I wrote this study's research proposal and gave it to my assigned supervisors, who assisted me in guiding the study until proposal defence stage, which went well. After necessary corrections were made to the proposal defence comments, I submitted the study to the UKZN Humanities and Social Sciences Research Ethics committee (UHSREC) for ethical approval.

The UKZN ethics committee granted me the ethical clearance certificate (Appendix D). This documentation is vital. It assures that all safety measures were fully taken to respect the rights of participants in the study. Moreover, to guarantee informed consent from the participants, I approached the sixteen participating teachers and told them about the purpose of the study, its data-generation methodology; and I revealed the part they were expected to play. Appendix C shows the letter I wrote to the participants.

As I explained the role of the participating teachers, I informed them of their right to withdraw from participating in the study at any time and stage they so wished. Cohen et al. (2011) advised researchers to clearly inform participants of their voluntary participation in studies. I therefore made it clear to them that their decision to withdraw would not have any repercussions either to them personally, professionally, or in their schools. I also indicated to them that there would be no monetary gain for their involvement in the study. After I had given the participating teachers the full clarification, they all signed the consent forms, see (Appendix C).

To make sure I provided privacy and secrecy for the participants, I guaranteed that I would uphold the ethical standards of my institution. I would not share any of the information they would give me with anybody. I assured them that the information they would give in this study would not be used for any other purpose, but it would solely be used for this research work. Moreover, I guaranteed that all private resources such as the recorded audios, transcriptions and any other forms of data would be kept safely in a sealed safe at the university and would be destroyed after five years. For privacy, the participants' identities were protected by the use of fictional names assigned to each participant. The participants understood fully the nature of this study, and the research processes, and were fully aware of what they were signing for.

5.9 Limitations

Maree (2017), Okeke and Van Wyk (2016) and Creswell (2014) define limitations in a study as possible challenges that could disturb the carrying out of the research. The common challenges are the issue of time, right of entry to participants, and the location of participants. Scholars recommend that if one carries out a research study, there is need to spell out ways and strategies of how to deal with such concerns (Cohen et al., 2014; Glesne, 2014; Silverman, 2016). For this study, time was a limitation, as the participating teachers indicated busy school schedules. The teachers cited that they had lost much their teaching time to COVID lockdown; and attending to me might inconvenience them. I therefore negotiated with them to use after-

school hours for those times where they would be free for the telephone interviews and reflective activity. For the focus-group discussions, I negotiated for a weekend on which almost all twelve teachers would be free. Another limitation was the issue of network during interviews and for Zoom. These challenges were, however, overcome as the teachers would personally advise the suitable times where network was stable. We used that time to conduct the interviews.

Furthermore, for observations, I requested teachers to record and send me their lessons. Some teachers were uncomfortable with this arrangement as they thought they were being assessed; and further thought that observing their lessons was meant to uncover their faults as they enacted climate change lessons. This fear was intensified by the fact that I am a geography educator, a geography examiner, and member of the geography panel of the country. These responsibilities could have made some teachers participating in the study to provide me with bias facts. Some would have thought they needed to respond in a specific way, whereas I needed to obtain the real voices without any considerations. To solve this, I allowed the partakers to provide me with the data freely. For instance, for the reflective activity, they penned this without my presence and sent it to me via email. I also guaranteed that this work was personal and not in any way connected to assessing their jobs. Moreover, to show that the participants were under no “pressure” to please me, they communicated openly and freely throughout the one-on-one semi-structured interview sessions and in the focus-group discussions.

5.10 Chapter Summary

This chapter presented the research approach as well as the methodological design that has been used in carrying out this study. It discussed the paradigm and theorised sampling and sampling procedures employed in the study. It also set out the data-generation tools used in this research and deliberated on the rationalization for the choice of these data-generation methods used. The chapter also discussed details for data analysis that were employed in this study. In addition, issues of trustworthiness, ethical concerns, as well as the limitations of the study have also been discussed in this chapter. The subsequent chapter discusses data findings to understand what the voices of teachers are on the teaching of climate change.

CHAPTER SIX

ADDRESSING THE DESCRIPTIVE WHAT AND OPERATIONAL HOW QUESTIONS OF THE STUDY

6.1 Introduction

The previous chapter successfully outlined the research approach, design, and methodology that have been selected to discuss the objectives and questions that direct this study. This chapter presents an intense data analysis obtained from the field to respond to the study's research questions. Due to the large amount of data generated, the data analysis chapters have been divided into two: this chapter, Chapter Six and the next chapter, Chapter Seven. Specifically, this present chapter addresses the descriptive and operational research questions;

1. What are geography teachers' voices on the teaching of climate change in Eswatini?
2. How do the teachers' voices influence the teaching of climate change in Eswatini?

The next chapter discusses findings that respond to the philosophical concern, why geography teachers' voices are the way they are on the teaching of climate change. Specifically, this present chapter analyses data that has been generated using three data-generation methods of the five that have been used for the whole study. The five data-generation tools were employed to minimise any forms of bias, and to allow for triangulation. The tools utilised to explore the voices of teachers were the reflective activity (questionnaire) and artefacts inquiry. Observations were used to find out how teachers' voices influence the teaching of climate change. These methods have been presented and fully deliberated upon in the preceding chapter, Chapter Five.

Moreover, this study adopted the EDR to guide it. It has been discussed in Chapter Five that EDR consists of three consecutive phases: Phase One (phase of analysis/exploration), Phase Two (phase of construction and design) and Phase Three (phase of evaluation and construction). Accordingly, this chapter discusses findings that address Phases One and Two that respond to demands of the two research questions mentioned in the preceding paragraphs. Chapter Seven then discusses findings that pertain to the last phase, the phase of evaluation and construction. To resonate with the nature of EDR and what it stands to achieve, the

intentions of the data-analysis process would be to serve two goals: to address the problematic issue on the voices that drive the geography curriculum and to discover new knowledge that can be useful to enlighten the work of others who might be facing challenges of teachers' voices on the enactment of any curricula (McKenny & Reeves, 2014; Plomp & Nieveen, 2014; van den Akker et al., 2006).

This chapter discusses findings that are based on themes that were both deductively and inductively generated to address the demands of the two research questions. Deductively, the themes arose from literature discussed in Chapters Two, Three, and Four which presented teachers' voices as either professionally, societally, or personally driven. There were also emergent themes that were unforeseen that arose during the data-generation process which contributed to addressing the descriptive and operational questions addressed by this chapter. Specific curriculum concepts which were discussed in line with the current curriculum theory, together with the theory of teachers' voices, were used to clearly determine and define the voice/s that a geography teacher assumes.

The themes are discussed in line with curriculum themes utilised as concepts that assisted to clearly ascertain the voices of teachers on the teaching of climate change. The findings of each of the themes are presented comprehensively, using three categories that inform the voice of the teacher/s, which are: the professional voice, the societal voice, and the personal voice. Each theme is presented and discussed based on what the participants responded to in each of the three categories. The themes have been used to determine the nature and purpose of geography teachers in the teaching of climate change: rationalisation, educational drives, content, assessment, pedagogy, tools, designation and setting. The themes and their categories are recapitulated in Table 6.1 below.

Table 6.1

The Themes and Accompanying Categories to determine Teachers' Voices

Theme	Categories
Rationalisation	Knowledge
	Skills/Competencies

	Values
Educational goals	Teacher short-term goals
	Teacher long-term goals
	Learner goals
Content	Prescribed
	Everyday/indigenous knowledge
	Self-developed
Assessment	Formal
	Informal
	Non-Formal
Pedagogy	Teacher-centred
	Content-centred
	Learner-centred
Tools	Technical/mechanised
	Multi-media
	Personally designed media
Designation	Instructor
	Enabler
	Illustrator
Setting	Schoolroom
	Field trips
	Blended

6.2 Discussion of Findings

According to scholars, Creswell and Poth (2017), Creswell (2014) and De Vos et al. (2017), the purpose of deliberating on discussion and findings in a study is done to discover the relationship between the generated data and literature based on the phenomenon. Bertram and Christiansen (2020), Tuckman and Harper (2012) view the discussions and findings section as significant in research. This focuses on the synthesis of a study's literature review and theoretical frameworks used in order establish a relationship between these and the data generated. Accordingly, in this chapter, I discuss findings of each of the themes to respond to the descriptive (what question) and operative (how question) of this study.

6.2.1 Rationalization

For van den Akker (2010), the concept of rationalization is concerned with identifying an individual's major reason(s) for performing an activity or task. In this study, rationalization seeks to establish the reason/s for the participating teachers teaching climate change. Mabuza (2018), Makumane (2018) and Shoba (2018) emphasise that teachers should firstly understand the reasons for teaching their subjects before they express the subject's philosophy. The concept of rationalization is critical to understanding the teaching of any subject. Rationalization guides the teacher in implementing all curriculum enactment practices to meet the needs of the subject.

Accordingly, as it can be seen from Table 6.1, the rationalization of the teaching of climate change was substantiated by three categories: knowledge, skills or competencies, and values. This study is dependent on the supposition that geography teachers are swayed by professional voices to teach climate change for knowledge to learners by social voices, to share and inspire skills and competencies, and by their personal voices, to communicate values to learners (Bernstein, 1999; van den Akker, 2003, 2010).

As mentioned by Khoza (2015a, 2017) and Shoba (2018), the rationale cannot be observed, but it can be solicited when participants take a reflexive position and subconsciously engage in an internal conversation to deduce it. In this work, the reflective journal and artefacts were useful in allowing the partakers to think of their diverse reasons for teaching climate change.

However, it was surprising that teachers were not aware exactly why they teach climate change. It was noticeable in their responses to the reflective activity that the teachers were oblivious of their reason/s for teaching climate change. Khoza (2013) laments that when teachers, as in this study, lack awareness of the rationale for enacting the curriculum, the theory and the teacher's actions are at variance. In the same way, van den Akker (2009) and Samuel (2009) endorse that rationalization should be apparent to teachers since it is the core of any teaching activity. If teachers are not certain of the reason/s for teaching, the teachers may not be aware of voices that drive the curriculum they enact.

Findings explain why geography teachers teach climate change. Astonishingly, very few participants reflected on all three categories at once. Each of the twelve participants would identify themselves with one or two categories based on the evidence from the reflective activity. As it would be seen from the teachers' explanations, they were not aware of the reason/s they teach climate change. Most of them called for clarity on what exactly the first question of the reflective activity demanded. This came in the first stage of EDR, the exploration stage. The failure of teachers to identify the reason/s was a clear indication from the outset that teachers were not conscious of the voices that inform the curriculum. They were not sure why they teach climate change.

Remarkably, some participating teachers emphasised that they teach climate change because of the love they have for geography as a subject. Thus, their reason was passion, showing that they communicated some ethics accompanied by moral standards and/or values. This indicated that they are driven by personal voices resulting in pragmatic practices. Furthermore, these teachers search for climate change information for their learners. The personal voice drove teachers to capitalize on the strengths of the professional and societal voices to produce their own unique personal voices (Khoza & Sokhulu, 2020).

These are the responses from teachers:

H3:

“Even though I am not sure of the reason I teach climate change, at least I am certain of one thing even if you can wake me up at night, I like teaching geography and especially topics that are general such as climate change. As I teach climate change, my wish is for the learners to value and cherish the natural environment we live in, so I attempt to make certain that they get the best from my lessons”.

L2:

“Although it is a difficult question to respond to why I teach climate change, but my simple response to that one would be, I teach it out of the love I have for my job and I enjoy teaching climate change, in actual fact I liked geography from my secondary school days, and I so much wish all learners I teach should fall in love with the subject as well”

L4:

“That is a challenging question, one never attempted to think why I teach climate change, but the quick answer I can give you is that, I love teaching geography. From my secondary school to tertiary geography has been the best subject which has obvious advantages to learners. This subject is general and can be observed daily just like we observe climate changes these days”

M2:

“I teach climate change because I love geography. I do all that I can do to make my learners enjoy my climate change lessons. I make sure even the climate change lessons are interesting to my class by giving them live examples of climate change issues from the internet or paper media”

M3:

“I teach climate change because teaching is nice; I enjoy it when we discuss with my learners some of the tangible effects of climate change, when learners show their practical understanding of climate change, I get happy”

S2:

“I teach it because I love and enjoy teaching my learners climate change. Where there is love there is a way, I don't care what challenges we face as teachers but, I continue making sure my learners are not disadvantaged and learn climate change. I organize teaching material from my friends to help my learners”.

S4:

“I think I teach because I like the subject, if it was not for that I would have long left the profession, as I also love teaching as well, but then I always think if I do not give them the values to appreciate and conserve the environment which is what climate change encourages, who will do it? I therefore, go out to search relevant information to help them”.

The narrations presented above show that the teachers teach because they love the subject. For Freire (1994) the teachers' assurance on loving their job can be described as an important value of 'radical love'. Once teachers practice radical love in their practice, Kincheloe (2012) observes that they would be more dedicated to their work. A teacher who is self-driven develops a personal voice which endues learners with values drawn from the strengths of professional and personal voices (Khoza & Makumane, 2020; Sokhulu, 2020). Moreover, Biesta, Priestley, and Robinson (2015) are among scholars who uphold that teachers who love their work, and show dedication to it, are driven by personal voices. Teachers who are driven by personal voices exhibit teachers' agency.

For Campbell (2012) the agency of teachers shows a high level of love and obligation a teacher has towards practice or the subject, as seen from the accounts of participants in this study. Scholars, Gerber et al. (1984) and Priestley and Humes (2012) maintain that the teacher's agency is a personal voice, the interplay between professional and societal space allowing the teacher to create a personal voice. For this reason, I argue that the agential capacity of a teacher depends on personal voices. This results in pragmatic practices as maintained by the theory of teachers' voices.

Together, Freire (1994) and Khoza (2015b) concede that the personal voice which results in pragmatic practices is vital in curriculum enactment such as climate change teaching. It demands that teachers apply critical thinking in their practice. As the teachers pointed out that they love teaching climate change, and they communicate that love to their learners. The geography syllabus dictates that in teaching climate change, the aim is to inculcate values and attitudes to develop the most desirable attitudes and behaviour towards the environment (ECESWA, 2021). The teacher's personal voice is imperative in the teaching of climate change.

The teachers' narrations that showed personal rationalization resonated with Young (2014), who claims that teachers driven by personal voices reveal that they are liberated. These open-minded teachers emphasise being aware of self and self-actualisation as the main and most decisive reason that drives them in practice. Freire (1994) celebrates teachers that recognise their personal voices in curriculum spaces, arguing that teachers freely enact the curriculum without any pressure. Khoza (2016d) also recognised the significance of personal voices in curriculum spaces. These voices assist teachers to develop their personal identities, enabling

them to meet their individual needs, allowing them to make good sound judgements in their practice. The teachers who showed that they were values-driven can also tackle the curriculum which Pinar (1995) sees as a complicated conversation. The complexity can only be solved by a teacher who develops a personal voice with a specific personal approach to climate change.

The teachers who stated that they teach geography for the love of the subject brought artefacts that displayed their personal voices. Teachers M4, S3, M2, S1, H1 and H3 all submitted their laptops as their artefacts; while, M2, H2, and S3 presented their cellphones. When asked what these items represent to the teachers, (laptops and cell phones), teachers gave the same explanation. All the teachers pointed out that the devices had their personal link to the world, and they use such to search for climate change information for their classes. The objects were of such great value that teachers submitted that they even use them in class as sources of information. They valued the objects and loved them as much as they valued and loved geography and climate change for their learners.

The teachers believed they were liberated and thus were eager to empower learners with climate change values. Teachers presented personal voices which have been missing in most curriculum spaces. However, some teachers cited that they teach climate change to impart some geographical skills and competencies to the learners. The teachers who fell in this category were driven by social voices, driven by the needs of the public/society (Khoza & Biyela, 2020; Mpungose & Khoza, 2020a). According to Makumane and Khoza (2020), Mabuza and Khoza (2019), societal voices aim at driving learners to acquire certain skills so as to address needs of the society. As teachers teach, learners acquire skills. Interestingly, the geography syllabus stipulates certain skills that learners are expected to gain when teachers enact topics like climate change. Some of the skills that are societally inclined are problem-solving skills, skill of critical thinking, and skills of working with others (ECESWA, 2021).

Describing their societal reasoning, the participants had this to say:

M1:

“I teach climate change for my learners to be equipped with necessary skills to face the ever-changing environmental landscape because of human activities that affect the natural environment”. If they pass geography well, they can use the skill of environmental conservation even when they get to their work places; in short they will be well marketable in job markets and can thereafter enjoy a better life”

S3:

“Teaching geography is mainly for helping learners fit in the outside communities and topics like climate change offer them relevant skills and competences of responding to the environment challenges. In fact, if they can master climate change well, they are likely to be even marketable in organisations where they can work as environmental officers”.

L1:

“I teach climate change because it offers learners an opportunity to connect what we teach with reality in their homes. So, by teaching them I am assisting them to even be of help in their communities towards curbing climate change effects. The skills and capabilities we talk about in class shall be of help in their communities”

H4:

“My main reason of teaching climate change is to assist learners gain skills that they can use to assist in their communities as we have a number of places in the country that show effects of climate change, so teaching them may help communities to improve the customs of doing things”.

To resonate with the accounts the teachers raised in the reflective activity, the objects they offered as artefacts were also socially inclined. This suggested that the teachers were driven by social voices in enacting climate change. One of them talked about a t-shirt with the slogan *“geography everywhere”* which he bought from a geography teachers’ association. He said the t-shirt was symbolic to him. Geography teaching is an answer to all world problems. It cannot be confined to one country, but instead it has a global relevance. He said this inspires him as he teaches climate change to equip learners with skills to become globally relevant citizens.

He emphasised *“everywhere”* which denotes that geographic skills are demanded in all societies. Likewise, another participating teacher had a t-shirt from an association of geography students while still training for teaching geography at the University of Eswatini. The t-shirt displayed many slogans, such as *“acquiring of different skills, your environment is our concern, geography an answer to the world problems”*. She explained that to her, geography is for the communities and societies of the world. It should be taught in such a way that the society is not divorced from what the learners do in class.

These findings from these four participants, M1, S3, L1 and H4 indicate that their rationale for teaching climate change was constructed through and by social reasoning. This is seen by the drive to impart social skills to the learners to make them relevant and helpful to their societies and globally. The reasoning is also driven by the fact that learners would gain employment which would guarantee a good life for them. This is similar to the observation by Van Eeden (2018) who argued that geography should not be treated like other theoretical subjects as it is practical. It offers skills that are valuable to an individual learner and the entire community.

Another remarkable social determination that the teachers indicated as a reason for teaching climate change was the desire to have their learners excel in end of year final examinations to progress for training in tertiary institutions. Geography is a subject that offers learners numerous opportunities to further their studies. This indicated that the teachers wished that their learners would get a bright future. For Campbell (2012), Stenhouse (1975), this societal rationalisation compels teachers to accept the positions of being social agents as they perform work to positively alter the lives of learners socially. Social voices compel teachers to become social agents as they prepare to address societal/communal wishes through the teaching of climate change. Moreover, the societal-voice-driven teachers declared that they taught geography because of their societal need to be employed.

On an added note, findings from other participants: M4, S1, L3, and H3 pointed out that the professional voice drove their teaching of climate change. Teachers taught climate change in order for their learners to gain factual climate change knowledge on which the teachers are experts and were well trained for. They specified that they were professional teachers employed by the MoET in Eswatini to teach learners.

M4:

“I teach climate change as I am a trained geography teacher, qualified in my area of study, and as a matter of fact I should teach the learner. I am a geography expert and feel great to teach my learners. I was trained to follow the official books that guide the enactment of the subject, and I do exactly that so that my learners are not disadvantaged”.

S1;

“I am a professional teacher, trained and employed by the Eswatini government to teach geography, and I execute my job to the fullest”.

L3:

“The reason I teach climate change is that I am a qualified geography teacher, who trained for four years for my degree and one year Post Graduate Certificate in Education (PGCE). I know what I teach and I have the syllabus to follow in preparation for the kids to pass their examinations”.

H4:

“My sole reason to teach climate change is that I am a trained teacher. Teaching my job; I have to give my learners all the knowledge they need for them to pass”.

The responses of these participants indicated clearly that they were determined to fulfil their professional or esteem needs (Khoza, & Fomunyam, 2021; Mpungose, 2018). The professional voice is driven by the desire to follow prescribed rules of a specific discipline. The four participants who expressed their stand of being driven by professional voices were all clear that they follow the syllabus to enact climate change, which indicates that they are followers of prearranged and specified professional standards.

To show their professional voice determination, the teachers brought professional objects as their artefacts. Two mentioned geography textbooks which they said were greatly admired as they carry rich geographic content matter. The third teacher brought a test script from a test she wrote in her first year at a tertiary institution. She had scored an “A” in the test which she argued motivated her to always study hard in any given course outline. The fourth teacher had a padlock key as his artefact. He described that the key is crucial as it indicates that he is the sole “key” who is equipped with the professional know-how to technically open the learners’ academic life to meet their needs.

The explanations and artefacts brought forward by the four participants were in line with the professional voices philosophies which follow prescribed principles: recommended content/intended curriculum, preset objectives, hardware resources and summative assessment (Khoza & Biyela, 2020; Khoza & Makumane, 2020; Tyler, 2013). Moreover, the principles of professional voices are usually prescribed and jotted down so that teachers access them and follow as per their dictates. This brands professional voices to be the voices that use structured ways for teaching and learning (Khoza & Biyela, 2020; Tyler, 2013).

The next theme that was used to describe the “what and how” of teachers’ voices on the teaching of climate change was the educational drive which is commonly referred to as educational goals.

6.2.2 Educational goals

A number of scholars have described educational goals as forms of actions that need to be achieved through the curriculum enactment process (Hoadley & Jansen, 2018; Kennedy, 2006; Khoza & Biyela, 2020). Educational goals are vital in teaching, guiding the learning process. Educational goals are essential for both teachers and learners. Khoza (2015c) and Kennedy (2006) assert that the educational goals have to be clearer to the teachers as they detect what and how teachers are expected to accomplish the enacted curriculum. For Hyland and Hyland (2006), educational goals in any curriculum are either short-term, long-term, or learners’ goals.

The teachers’ short-term goals are objectives, teachers’ long-term goals are aims, and the learners’ goals are outcomes. Khoza (2015a, 2015c, 2016) points out that it is essential for educators to know and distinguish these three goals in order to gain a full understanding of the enacted curriculum. Complementary to this, Hoadley and Jansen (2018) bemoan that teachers enact any curriculum without a clear understanding of the three educational goals that drive their practice. Hoadley (2018) laments that if teachers are unaware of the educational goals that drive their practice, the intended curriculum’s enactment may be compromised.

The responses of the participating teachers in this study in their reflective activity showed that they teach climate change without a clear understanding of the educational goals that drive their practice. Explicitly, the participants were not aware of the difference between short-term, long-term, and learner goals. The teachers openly confirmed that they had little or no awareness of the differences between these three categories of educational goals. They only held the idea of objectives; the EGCSE geography syllabus laid down broad and specific objectives for each topic taught by teachers. Hence, the participants pointed out that they were familiar with the objectives as they constantly pen them daily in their preparation books, Surprisingly, they were not cognisant of the aims and outcomes.

Teachers did not question the voice that drives their practice. Teachers simply enact the curriculum without applying full reasoning on the goals they are expected to attain. If the geography teachers impart climate change knowledge without considering the short-term goals/objectives, long-term goals/aims, and learner-goals/outcomes, geography teachers are

not aware of the voices that drive the curriculum. Thus teachers are uninformed of the specific necessary skills they are meant to develop in the learners.

In their reactions to the reflective activities, the teachers presented varied responses which generally indicated that a majority of them were driven by professional voices. Most stated that they were driven by short-term goals. However, unknowingly, some in the responses showed that they also add their own “objectives” and divert a little from the given objectives so as to make the climate change lessons meaningful and more understandable to the learners. Learners can then apply climate change knowledge in their daily lives even upon completing school. These participants were unaware that they were working on long-term goals, which align with a global vision (Khoza, 2016b). The participants said:

M2:

“I follow the objectives which we are given, but I also add my own so to make my climate change lessons to be meaningful to my learners even after completing their high school education”.

S2:

“As I teach climate change, I make sure my learners will apply the knowledge in their societies and in the outside world”.

L4:

“My teaching is driven by the idea that what I teach should not be meant for just passing my learners, but I make sure for topics such as climate change, I teach in such a way that the lesson helps them even after they complete school”.

The responses from the three participants, M2, S2 and L4 denote that the geography teachers formulate their long-term goals (aims) to guide them to effectively achieve the laid down short-term goals. The long-term goals present what teachers personally plan to enact in climate change lessons, teachers being driven by personal voices. Porter and Smithson (2001) maintain that long-term goals present what teachers set for themselves to deliver in class. The long-term goals present teachers’ personal voices as habitual and unique; they present each individual teacher’s understanding of the curriculum founded on the context of the school and learners.

As indicated earlier on, most participants pointed out that they do not struggle with thinking which educational goals drive their teaching of climate change as such is stipulated as

objectives in the geography syllabus. Contrary to aims, objectives are described by Kennedy (2006) and Khoza (2016b) as more specific short-term goals that clearly outline what the teacher intends to do in a given lesson. Objectives portray exact statements of the teacher's actions for each specific lesson enactment session. This is supported by Mpungose and Khoza (2020b) and Hoadley and Jansen (2018), who posit that short-term goals are recommended for teachers because they are useful to fragment climate change content into smaller, convenient parts or chunks.

The short-term goals break down the broad topic on climate change to manageable specific topics that geography teachers hope for learners to achieve in a given lesson. Short-term goals thus rely on professional voices in that they are pre-arranged for teachers to utilise for teaching and learning (Tyler, 2013). As argued by Stenhouse (1975), short-term goals guide teachers to do what is preset for them by professional voices that produce the intended curriculum. Celia and Elize (2014) also affirm that short-term goals coerce teachers to carry out their practice using pre-arranged objectives.

Some teachers are generally happy with the given short-term goals. In the same line of thought, the teachers in this study specified that using the pre-arranged short-term goals assists them to be direct and not to deviate from what they have been assigned to do, so that learners are not delayed in finishing the syllabus and getting ready for their final examination. For these teachers, the short-term goals offer them a perfect structure that guides them in helping learners master the climate change lessons. In their own words the teachers said:

M4:

“We are lucky our syllabus like you know has stipulated that objectives I have to fulfil for my lessons, I don't deviate on those”.

S1:

“My educational goals are given in the syllabus. For each topic there are set general and specific objectives that I follow. I make sure I do not add anything since these objectives help guide my teaching so that I finish the long syllabus on time, there is no need beating about the bush, everything is prescribed for my duty is to follow as given”.

L2:

“There are no other goals to think about in teaching climate change; the objectives have been provided for us. All I do is to follow them; deviating can be dangerous as the examinations for the learners are depended on these objectives”.

L3:

“I can’t invert my own goals; we are given the short-term goals to follow when teaching geography learners”.

H1:

“I am guided by the objectives they give us on the syllabus; I do not even worry of what I should teach because all is provided for me”.

H3:

“That is a simple one, I teach based on the objectives which are clearly stipulated in our syllabus”.

As demonstrated by the teachers’ responses, these participants go by the book as they enact climate change lessons using the preset objectives. These teachers are driven by the professional voices that hold strongly to pre-arranged objectives which teachers should follow to the letter when enacting climate change lessons. It is critical to realise that the pre-arranged objectives deprive teachers of their voice when enacting climate change lessons. Instead, they are driven to meet the needs of the professional voice that directs them to use the preset objectives. These teachers considered the short-term goals of utmost importance for teaching; and the objectives are one of the main principles of the professional-voices-driven curriculum (Celia & Elize, 2014; Khoza & Mpungose, 2020; Khoza & Biyela, 2020; Tyler, 2013).

However, the broad aim in the EGCSE curriculum which agrees with the National Education Policy Statement on Education (2009) states that learners, who are the consumers of the geography curriculum, should be fully equipped to encounter variable needs of their local societies and the global world. The professional voice which drives the teachers to use short-term goals fails even to consider the learners’ needs through encouraging the use of learner-goals/outcomes.

Several scholars have described the learner-goal/outcome as a declaration of what is supposed to be understood, known, and performed at the end of a specific given period (Harden, 2002a; Kennedy, 2006; Khoza, 2015a, 2016b). Described in a different way, a learning outcome is

what demonstrates the specific knowledge a learner acquires when the teachers enact a topic such as climate change. Khoza (2013) and Makumane (2018) observe that learning outcomes permit collaboration during teaching between the teachers and their learners. The assumed collaboration usually creates an interesting and stimulating teaching and learning space for the learner. This affirmation anticipates that the teacher takes into consideration the needs of the learners, which implies that a learner is placed at the centre of the enactment of climate change (Khoza, 2015a; Moon, 2003). Obviously, a teacher whose educational goal is outcomes-driven is under the influence of societal voices, in that the teacher is driven by the learner's opinions and needs (Hoadley & Jansen, 2018; Stenhouse, 2015).

According to Moon (2003), learner goals are observable and measurable which makes them compel effective learning. The learning becomes effective in the sense that the learners' needs are met as the societal voice is upheld. Moreover, a teacher driven by social voices accomplishes outcomes by making sure that learners participate in class. The participation is influenced by learners made aware of the expected outcomes by the end of the topic. This was evident from the following teachers' responses:

M1:

"I always inform them of what I expect them to gain in each climate change lesson, when I tell them the outcome, they participate in class".

S3:

"Although I also use the objectives, but I also make sure that I instruct them to be part and parcel of the lesson as it has benefits for their individual lives".

L1:

"I teach towards meeting their goals, as I cannot just continue to cover objectives even when the learners do not understand and link the lesson with them. I also engage them as we learn".

L4:

"When teaching climate change, I aim at making my learners to understand what each of them will benefit from the lesson, so all should participate as I always ask them questions after every lesson".

Specifically, the learner-goal-driven teachers showed that they mainly wanted to meet the needs of the learners. These teachers were eager to make the climate change lessons useful to the social lives of learners. Their stand was that the learner outcomes they make should benefit the learners. They were eager to make climate change lessons a social benefit to the learners.

The findings on the educational goals that drive the teaching of climate change substantiates what Van Eeden et al. (2018) observed that most geography teachers are not mindful of the general goals that drive their instruction. This situation may well be described as unfortunate in the curriculum landscape as it has a negative consequence on the effective transmission of climate change lessons. Specifically, Shoba (2018) sees it as a great danger in curriculum spaces if teachers are not aware of the goals that drive the curricula they enact. In what she declares as “goals confusion” Shoba (2018) bemoans teachers being unaware of their goals. This means that they teach without ambition, destination orientation, and direction. The confusion Shoba refers to on educational goals that drive teaching was also manifested in the data generated through classroom observations for this study. The teachers could not spell out the goals well to the learners. Some read out the objectives in class and followed those. Others used objectives and added outcomes in their lessons. The teachers were thus not sure of the educational goals and/or voices that drive the enactment of climate change content.

6.2.3 Content

The academic community has explored the meaning of content, and the widely accepted description of content is that it refers to what is to be taught or learned in the form of knowledge (Bernstein, 1999; Hoadley & Jansen, 2013; Khoza, 2015b; Shulman, 1987). Hewitt (2006) supports this notion about content and further perceives content knowledge that encompasses what learners are open to, and have to comprehend during teaching and learning. This submits that content denotes what teachers are prepared to give to learners on a specific topic such as climate change. It is also commonly accepted that teachers generate the content to be shared to learners for the purpose of teaching using different sources.

Shoba (2018) observes that it is imperative for teachers to be aware of the voices that influence the content used. Content strongly influences teaching and learning practices. Consequently, to seek for the content voice that teachers rely on to teach climate change in this study, I asked teachers where they obtained the content they utilise to teach climate change. Three categories

came out as the participants responded to this question: prescribed sources, everyday/indigenous knowledge, and personally developed content.

The participating teachers showed a clear understanding of the question on which content they use to teach climate change. Some however, could not differentiate between everyday/indigenous knowledge and personally developed content. They sought for clarity from me and I assisted in clarifying the two content sources. For prescribed content, all were certain – this was the most popular type of content amongst the participants. The geography EGCSE curriculum is professional. The climate change topic is arranged vertically so that teachers find it simple to use the prescribed textbook to enact the curriculum (Bernstein, 1999).

It should be noted that content prescribed in writing is one of the major principles that drives professional voices (Khoza & Mpungose, 2020; Khoza & Biyela, 2020). Professional voices consider the prescribed content as the major source of knowledge as it has been researched by subject specialists; hence it is considered ideal to be consumed by learners. Moreover, the learners, according to the professional voices' point of view, are expected to master prescribed content as instructed by the teachers. The expectation is that learners who consume the prescribed content should reproduce it during assessment time (Dlamini, 2018; Khoza & Mpungose, 2020; Khoza & Fomunyan, 2021; Le Grange, 2016). Teachers therefore are expected to emphasise the prescribed content by fully explaining it to learners. This often takes the form of drilling the learners with the aim of forcing them to master the content. Professional-voices-driven teachers do not deviate from the prescribed content.

During classroom observation the professional-voice-driven teachers brought their prescribed textbook and the learners were directed to specific page numbers as the lessons progressed, relying totally on the prescribed content. The learners in most of the classroom also had the same prescribed text books. In their reflective activity responses, the teachers also demonstrated total reliance on the prescribed content. They had this to say:

M4:

“I use the recommended textbooks and I can't even make an attempt to sway from it because it is the one, we are given by the school authorities through inspectorate to follow”.

S1:

“We are lucky, we are given the prescribed text to follow which has all the content learners are expected to know on climate change, I follow this book to the latter”.

L2:

“I teach using the prescribed text which gives learners all what I think they want them to learn, I have no problem with where to find climate change content”.

L3:

“There is a prescribed text which learners also have that I use for teaching. This textbook has all what learners are expected to master on climate change”.

H1:

“We are covered on the content part; we have prescribed books which the school buys for the learners as well. Those books have all that they need”.

H3:

“The content I give my learners is sourced from a textbook which the ministry proposes and the school buys it for the learners as well, I use that prescribed book through and through”.

The teachers cited above showed their reliance on prescribed content. They meet the needs of professional voices as learners are made to master the climate change knowledge from the prescribed books only. The prescribed text books lack contemporary issues on climate change. Such might make the content misleading to the learners. Additionally, Young (2013) disapproves of learners being exposed only to prescribed content knowledge. Young calls this knowledge “powerful” and sees it biased and unreasonable for learners to be only fed this “powerful knowledge” as it does not include or appreciate knowledge from the society/everyday knowledge/indigenous knowledge. Scholars who support the societal voices posit that learners exposed to everyday knowledge are able to apply it in their societies; and such helps them become critical thinkers (Celia & Elize, 2014; Hoadley & Jansen, 2018; Stenhouse, 1975; Van Eeden et al., 2018; Young, 2013).

Responses from teachers M1, S3, L1 and L4 showed that their content depended on societal voices. In short, the response of these four participants was:

“Learners when doing climate change should be able to express that which they know about this subject matter. They should share their communal experiences together with what they see and read from different media sources. These learners are adults; they have access to many sources where they obtain climate change content”.

These participants indicated that the content knowledge they use to teach climate change is firstly obtained from the learners as they are part of the society by asking them questions and their views on some of the climate change topics. Khoza (2021) notes that in the 4IR, teachers can rely on everyday knowledge which is obtainable through the use of SMSs. The popular social media sites are Facebook, YouTube, WhatsApp, Instagram, and TikTok. These sites are driven by societal voices as they allow teachers and learners to connect to the larger society where climate change content is generated.

During classroom observation, these teachers were seen engaging the learners through various means to solicit their indigenous knowledge on a climate change topic discussed in class. This action showed that the teachers were driven by societal voices as they requested opinions from the learners. According to Silseth (2017), the learners obtain societal voices from various everyday knowledge types: family first, then from their peers, followed by from the community and lastly from popular culture. Silseth perceives that these cited indigenous/societal knowledge content sources are vital in offering learners climate change knowledge.

Subsequently, learners use the knowledge obtained from these categories to make meaning of new climate change concepts encountered during teaching and learning trajectories across different topics. Khoza and Fomunyam (2020) together with Budden (2016) observe that when teachers use everyday knowledge shared by learners during teaching, this connects learners with their society which improves learner understanding. Makumane (2018) and Mabuza (2018) assert that, as the teacher engages the learners to utilise everyday knowledge, the learners acquire several important societal skills such as observation, debate, and communication skills, which in turn become relevant to the society.

The other participants in responding to the content question pointed out that they use content that is sourced from both professional and societal voices. They select from the two voices their own realistic or personal content (Mabuto, 2019; Khoza, 2020; Zuma, 2020). This type of content is self-developed content. Individual teachers made personal decisions to produce their

unique climate change content with the sole purpose of teaching. Studies by Khoza and Biyela (2020), Mentz and van Zyl (2016) prove that, if teachers use their own self-developed content, they cultivate a practice habit of understanding their personal identity. Once teachers understand their personal identity, self-directed learning is promoted which leads to self-actualisation (Maslow, 1954). Self-actualised teachers develop a habit of being highly creative in lesson delivery and also, they perceive climate change reality with ease.

Moreover, teachers who meet the content needs of climate change with their personal voices become problem-centred. Thus, they gain capabilities of solving problems and challenges that are climate-change related in the society. Personal voices inclined teachers develop their unique habitual pragmatic application of the personal developed content. This was evident during class observation that these personal driven teachers were able to efficiently use content which they understand. The way the teachers engaged learners as they probed for everyday knowledge, and merged it with prescribed content on its own, displayed confidence on the part of the teachers in enacting climate change.

Moreover, some of the personal-voices-driven teachers presented material sourced from the media to merge with learners' indigenous knowledge together with prescribed sourced knowledge to further elucidate their lessons. One teacher in school L brought a local newspaper article on effects of climate change. The teacher discussed the article together with the effects discussed on the prescribed text. This lesson portrayed teaching that is liberal instead of being measly as it happens if teachers are tied down to the use of only prescribed professional voices content.

Moreover, the use of personal developed content seemed to work for both learners and the teachers as learners appeared to be enjoying the personal-voices-driven teachers enacting their lessons. Scholars Van Eeden et al. (2018), Young (2013) and Freire (1994) fully support the use of personalised content by teachers as it helps the learners consume a form of content that has been modified for their context instead of relying on prescribed voices' content which comes with "powerful knowledge". Not only that, but using personalised content also allows learners to have power. Learners generate the content together with the teacher who acts as a guide during the enacting of the personalised content. Young (2013) supports a teaching and learning atmosphere in which both teacher and learner are at "equal" or democratic level. The learners in such a class are free to construct their own personal knowledge as they use their IK, teachers skilfully adding the professional content.

In their own words the teachers had this to say on the reflective questionnaire:

M3:

“I appreciate the prescribe text book we are given to extract knowledge to teach climate change, but I also ask for opinions from the learners so that my content becomes practical and user friendly to me and the class”.

S2:

“Even though I use the prescribed textbook, I also use information from the media as well as colleagues so that I get up-to-date knowledge on climate change. I don't like to use one source as I believe geography is dynamic”.

S4:

“I personally do not enjoy teaching using the prescribed text book only, I therefore use content that I research from other sources and also engage my learners to obtain their view on every climate change topic we enact”.

H2:

“I use content that I obtain from the media, the community and daily observations which I also encourage my learners to do as well instead of depending on one source”.

H3:

“For my lessons I always prepare content that will suit me, one that I understand and also internalise for my class. I go out to search for more information to make my lessons enjoyable and understandable”.

The use of personally developed content by the teachers who revealed personal voices defeated what Fisher and Binns (2016) noted, that mostly geography teachers face challenges in finding content information for teaching topics such as climate change. One can argue that the hardship experienced by teachers is a result of their overreliance on professional voices which direct them to only prescribed sources do not have local examples to help maximise learner understanding through contextualisation. A study by Dlamini (2016) which explored the teaching of climate change in Eswatini echoes the challenges of overreliance of teachers on prescribed content and pointed out that the prescribed sources do not fully address the classroom needs of climate change content. Furthermore, the challenge is worsened by the fact

that most teachers consider themselves as specialists who should only be dependent on prescribed text content knowledge. Teachers fail to engage and take advantage of both the technically sourced and everyday knowledge- sourced content to provide a user-friendly type of content that will be applicable to their unique contexts.

Comprehending personal voices allows teachers to teach better (Khoza & Mpungose, 2020). Teachers should not be comfortable with what has been pre-arranged for them. Instead, teachers should reflect on their needs and those of their learners and then take advantage of the content obtained from both professional and societal voices in teaching topics such as climate change. Together with learners they can share power to construct better and improved knowledge and actions. Silseth (2017) advances that teachers should make use of everyday knowledge. Learners often have information and understanding which is highly relevant especially if blended with professional knowledge. This creates a unique personalised kind of knowledge that has been developed by taking advantage of both societal and professional voices.

6.2.4 Assessment

In curriculum spaces, it has been generally accepted that assessment could be understood and described in different ways. The consensus from a number of scholars has been that assessment refers to the diverse methods that teachers employ to evaluate/measure and keep records of learning progress, educational inclination, specific skills attainment/achievement as well as learning needs for learners (Bennet, 2011; Black & Wiliam, 2009; Dlamini, 2018). Sharing this line of thought Van Eeden et al (2018, p. 467) who refer to assessment as a procedure of collecting data for confirmation on the accomplishment of laid down learning areas. For Snowman, McCowan and Biehler (2009) assessment consists of collecting evidence on skills and knowledge a learner has gained, creating sound judgements on a learner's learning levels. Assessment is a complex process of detailing measurable accomplishments amongst learners on content knowledge, attitudes, skills and beliefs.

In the course of the teaching process, teachers may perhaps use diverse forms of assessment – whether formal, informal, or non-formal. Formal assessment refers to the kind of assessment that is structured in accordance with specific protocols. Formal assessments are used for official purposes as they are mostly officially sanctioned and they are officially recognised (Nurhayati, Handini & Fikri, 2020). This description of formal assessments clearly reveals that they are

driven by professional voices. End-of-year examinations as well as high-stakes examinations are good examples of formal assessment.

Furthermore, formal assessment is the type of assessment administered at the end of a programme or specific time period or grade. Hoadley (2018), Reddy and Le Grange (2017) specify that formal assessment is carried out for progression, selection/grading, and/or for certification purposes. Formal assessment solicits how far learners have achieved what ought to have been acquired at the end of the programme. For that reason it is also described as assessment of learning. Formal assessment is characterised by being structured, which infers that there are logical steps to be followed which summons professional voices. Since formal assessment demands teachers to follow specific steps as per the featured professional voices, Bijsterbosch (2018) affirms that it then enforces rote learning.

The influencing factors that drive the tendency of rote learning, which encourage formal assessment are that formal assessments are conducted by high-stakes examinations bodies; teachers therefore have the motivation to produce good results (Van der Mars, McNamee & Timken, 2018). The EGCSE learners sit for this high-stakes examination which is developed and administered externally (not within the school – it is a national assessment). The EGCSE geography curriculum does not make any reference to any form of assessment which teachers should give to learners. It stipulates the assessment standards for formal assessment determinations.

Informal assessments refer to the type of assessments that are administered by teachers in a relaxed or friendly manner (Schelling & Mason, 2021). This includes the assessment that a teacher can randomly make as teaching and learning progresses, to check for understanding or to solicit personal ideas from learners. Informal assessment is mainly characterised by the learner being more involved in the assessment activities. Although it takes place in a more relaxed manner, it should have the attention centred on the learning purpose (Schelling & Mason, 2021). In most cases, informal assessment involves teacher-to-learner assessment or peers assessing one another or as a group, which suggests that it is societally driven.

In most cases informal assessment involves or applies best in geography by assessing group discussions or assessing skills such as critical thinking, problem solving, and debating skills, to count but a few (Nurhayati, Handini & Fikri, 2020; Schelling & Mason, 2021). Informal assessment is usually not graded, the major aim not being to attach a score but to make an assessment as learning (Dlamini, 2018; Sherpard. 2000). As such, informal assessments come

in many forms such as quizzes and assignments, informal oral questioning, class discussions and presentations; displaying competency is a specific skill.

Lastly, there is non-formal assessment which takes place using some kind of organisational framework prepared by either teacher alone or with the learners. Non-formal assessment is more intentional from the viewpoint of the learner, implying it is more participatory. However, it has some organised structure, unlike informal assessment where there is no structure. This points towards non-formal assessment being driven by personal voices which always aim to establish levels of learners' readiness to learn. An example of practice for non-formal assessment is identified by Khoza (2016a) who observes that most teachers resume their teaching by firstly greeting the learners with the aim of establishing whether they are ready to learn.

When conducting non-formal assessment, the teacher continually ensures that there is questioning, seeking oral feedback from learners as well as checking for understanding. Non-formal assessment does not only seek feedback which is used to produce learners' answers on what they learnt previously. It also seeks feed-forward information which permits the geography teacher to check knowledge level on what has to be covered next (Van Eeden, 2018). This necessitates the important element for non-formal assessment in that dialogue is created amongst the teacher and the learners and between the learners themselves (Black & Wiliam, 2009; Black & Wiliam; 2018; Dlamini, 2018). This indicates that the entire progression of teaching and learning is always punctuated by some form of assessment.

Thus, non-formal assessment is identified as assessment for learning as it occurs throughout the teaching process rather than formal assessment which is conducted at the close of a teaching and learning phase. As the intention of non-formal assessment is not to attach grades or marks, the target is to obtain information to promote learning and further motivate the learners (Hoadley & Jansen, 2018; Schelling & Mason, 2021). In concurring with this view, Dlamini (2018) observes that what is important in non-formal assessment is the feedback which informs whether there would be a need to modify pedagogy to cater to the learning needs of the geography learners. This makes non-formal assessment one of the best instructional tools. It promotes learning rather than being a single event intended for the purpose of assigning a grade.

Teachers employ diverse assessment tools to acquire information about the abilities and achievement of their learners. For Berkvens et al. (2014), Hoadley and Jansen (2018), Khoza (2015c) and van den Akker et al. (2010), assessment plays a critical role in determining whether

the intended curriculum is accomplished. Van der Mars, McNamee and Timken (2018) authenticate that assessment remains crucial in teaching and learning spaces as it seeks to establish learner achievement of outcomes. Assessment drives the process of enacting any curriculum.

In the responses on the reflective activity, all the participants demonstrated knowledge of assessment. In fact, they went further to confirm its essentiality on the teaching of climate change. Even in the classroom observation sessions, all the participants in one way or the other assessed the learners during teaching. Moreover, the three categories of assessment (formal, informal and non-formal) were well known to the participants. One observation was that most were unsure of the non-formal type of assessment. The classroom observations however, showed some teachers engaging learners non-formally, without recognising this type of assessment.

In their responses the teachers mostly shared the same sentiments on assessment.

M1:

“I always make sure that I engage my learners with random oral questions during the course of the lesson. I also give them some written work in form of classwork and homework; I also give them monthly and topic tests. These monthly tests are a must as the school management requires the scores of learners from each teacher for end of month score reading. The tests questions I set usually are taken from previous final examination papers. I do this to prepare my learners with questions that will be of assistance to them in their end of year final examinations. So once in form five, from opening of schools, I should then prepare for final exam as the administration has put it clearly that they want learners to pass”.

S4:

“I give the learners a lot of work which comes in different forms. When I teach, I ask them some questions related to the climate change topic in that particular day. Then I also every week make sure that I give them written work either prepared as classwork, homework or quiz. I also make certain that their work is done and I speedily bring back their exercise books. In the next lesson we then discuss the work given so that I give them feedback that I think helps them. At times I force them to do corrections on their own after the discussion. As I teach, I also probe my learners through a lot of oral

questions to see if they understand or they are sleeping. I strive to make certain that all learners by the same token partake in the questions posed while teaching. In some instances, I instruct them to do presentations in groups and allow them to evaluate each other's presentations. I sometimes prepare an assessment criteria/tool or sometimes together with the learners we prepare one for them to assess each other”.

L2:

“I like assessing learners and I utilise a diverse ways to ask them. Frequently, when I present a climate change topic, I firstly ask them to determine in what they know on it. In practically all my lessons I start with posing a question and I also ask some as I conclude the lesson at the end. I also make my learners write lots of class works and tests by the end of every topic. The tests benefit me as I use them to gauge how much their understanding has been in any given topic. At times they do demonstrations in class and I revel in seeing them asking each other or asking the one who was doing the performance. Every so often the entire geography lesson is engaged by questioning and I it always excites me when that happens, especially in climate change lessons as it's critical in their lives. They also write tests which are in a way assessing their ability towards their final examinations. The subject inspectors emphasise that we should use past exam papers to set the tests so that learners are acquainted to the questions. The inspectors stress that we should make sure learners pass geography as it has been one of the worse performing subjects in final examinations”

As mentioned earlier almost all the participants responded by stating similar trends in the use of formal, informal and non-formal assessment. The observation is that the teachers are not certain of the voice that drives climate change teaching as far as assessment is concerned.

The clear tendency was that most teachers aim at making their learners pass the high-stakes examinations (formal assessment) which suggests a strong professional-voices drive. Van Eeden et al. (2018) lament that geography teaching in Southern Africa is generally affected by the demand of governments to show high performance in external examinations awarding a score rather than wholly equipping learners. Subject inspectors mount pressure on teachers to produce “good” results for the subject. This pressure that then encourages rote learning which does not positively benefit learners who consume any curriculum (Hoadley & Jansen, 2018; Pinar, 2012; Young, 2013).

The teachers also conducted informal assessment, making learning more meaningful to learners. The learners when engaged in informal learning assess one another and give feedback in a friendly manner which makes learning more interesting and pertinent to their needs (Makumane, 2018; Reddy & Le Grange, 2017). The learners enjoy the benefit of assessment as learning. Informal peer assessment makes learners alert, especially when the evaluation rubric has been prepared by all of them. One teacher even stated that informal assessment is practical and convenient as learners quickly finish what could be a long topic in a short space of time. This echoes an assertion by Dlamini (2018) and Makumane (2018) that informal assessment arouses interest and motivation in pupils. Learners as social beings are comfortable with a societally inclined assessment method as it presents itself as a norm in the society.

Non-formal assessment was also evident during teaching and learning sessions observed. The teachers also alluded to using such although they were not aware that they were employing assessment for learning. Non-formal assessment combines strengths of formal and informal assessment to produce a more personalised kind of assessment. The teachers used such to deduce the current climate change knowledge from the learners (feedback) and feed forward, which is an assessment type is seeking knowledge of content to be covered in next sessions. Such involved teachers using their personal voices to drive the lessons. The questions they posed demanded unique individual experiences which each teacher had in their respective schools.

This resulted in witnessing pragmatic practices. Each individual learner was allowed to be active as they constructed their own climate change knowledge. Non-formal assessment is aimed at supporting the learning process (Van Eeden et al., p., 2018). Non-formal assessment addresses the rigidity between formal and informal assessment to produce a kind of assessment that considers individual needs of teachers who in turn meet the needs of learners through identification of areas that require remedial attention by the teacher from the point of view of the professional voice or the societal voice.

A study by Makumane and Khoza (2020) resonates with this opinion and maintains that personal voices should drive the curriculum, so that teachers develop sufficient personal assessment skills and competencies to facilitate the teaching and learning of climate change. According to Beets (2012), assessment is perhaps the most crucial instrument that teachers can use in helping learners to learn and also to expose deficiencies in a curriculum. This can only take place when teachers rely on personal voices to allow them to carry out non-formal

assessment. Taken from a more philosophical perspective, non-formal assessment practices (if well implemented) encourage social justice in educational spaces (Beets & Louw, 2011; Freire, 1994).

When assessment is poorly implemented, (reliance on professional/formal assessment and societal/informal assessment), it can cause the degradation of social justice in the field of education. Freire (1994) laments that the degradation of social justice resulting from the inefficient and ineffective assessment practices by teachers marginalises innocent learners. Such learners may be disadvantaged in such a way that they might even fail to fulfil their potential. This could be regrettable especially in an era which portrays visible negative effects of climate change in Eswatini and the world at large. A kind of assessment that deprives learners of opportunities to produce their maximum potential undermines efforts of developing competencies in learners that are needed to respond efficiently to negative effects of climate change. Undoubtedly, non-formal assessment driven by personal voices comes as the ideal form of assessment.

6.2.5 Pedagogy

Anyawu (2015) notes that defining the concept “pedagogy” in a few words can be challenging. Pedagogy consists of almost everything as far as curriculum is concerned. In a generic simplified description, pedagogy speaks of teaching content knowledge to learners. Specifically, pedagogy is about how teachers would teach content, meaning that it refers to an underlying theory guiding teaching. Pedagogy entails the method and practice of teaching teachers to enact any curriculum (Koehler & Mishra, 2009; Shulman, 1986). Furthermore, other scholars theorise that pedagogy implicates specific viewpoints that describe the various activities teachers and learners engage with during the teaching and learning process (Bruner, 2006; Pollard, 2010). This advocates that as a philosophy, pedagogy describes the context of a teaching and learning environment, and what the teacher aims to accomplish, and how the execution could be achieved. According to Anyawu (2015), any commendable pedagogy on teaching of climate change should present learners with practical climate change in the society, allowing learners to ask questions, and helping them to discuss climate change issues openly in class.

See Fig 6.1 which presents a simplified description of pedagogy as it is applied in this study.

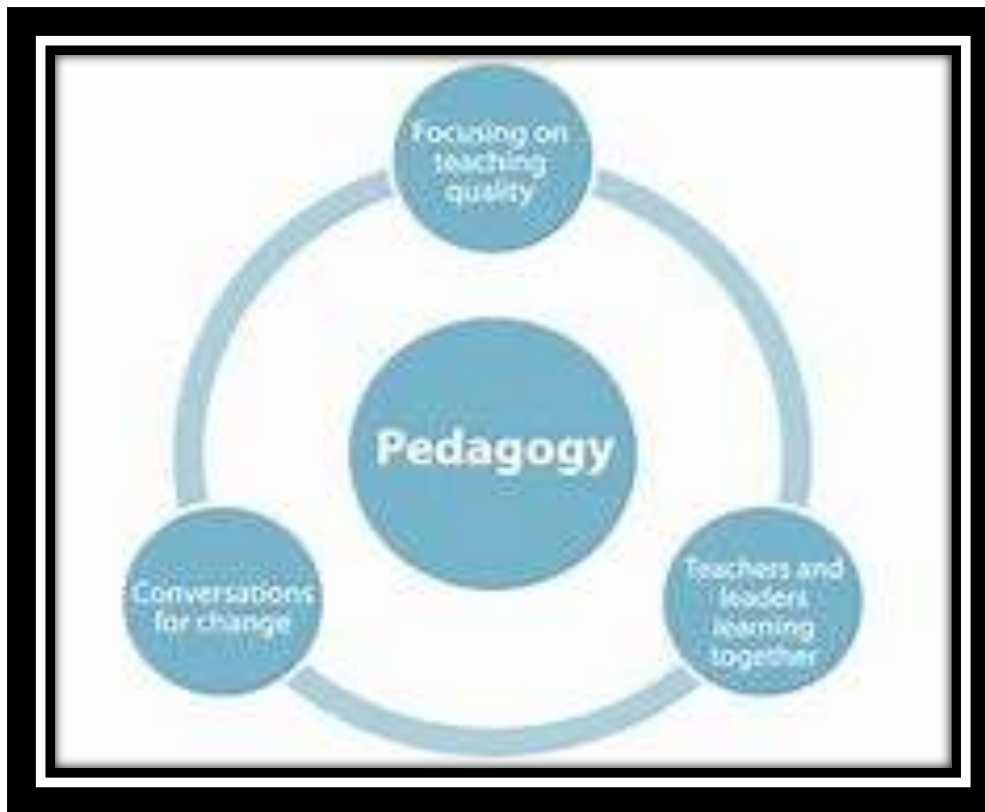


Figure 6.1: *Pedagogy simplified*

Note this figure has been sourced from Korthagen, F. A., & Kessels, J. P. (1999). Linking theory and practice: Changing the pedagogy of teacher education. *Educational researcher*, 28(4), 4-17.

Fig 6.1 shows that pedagogy should occupy the centre of climate change teaching and learning process. Its aim is to foster quality climate change teaching and demands that teachers use relevant teaching approaches to achieve the aim. Furthermore, pedagogy insists that teachers and learners use approaches that encourage them to work together to construct knowledge, leading to lessons that effect change for the learners. There are voices which influence pedagogical practices and decisions for geography teachers. This study encompassed three kinds of pedagogy that are influenced by diverse voices in enacting climate change: teacher-centred, content-centred, and learner-centred.

The central theme of teacher-centred pedagogy is that it is primarily concerned with the communication of information/facts from the teacher to the learner (Brown, 2016; Hoadley & Jansen, 2018). In effect, through this kind of pedagogy, learners entirely depend on the teacher as the sole source of content facts: the teacher becomes the main focus during teaching and

learning. Gerber et al. (1984) describe teacher-centred pedagogy as the situation in which teaching and learning depends utterly on the teacher, with learners taking a passive role. The teacher controls the learning process through maintaining a specific structure of laid-down objectives and giving instructions to the learners (Celia & Elize, 2018; Hoadley & Jansen, 2018; van Eeden et al., 2018). Certainly, teacher-centred pedagogy is driven by Tyler's model which supports professional voices.

Similar to the teacher-centred pedagogy, content-centred pedagogy assumes that learners are inactive consumers of content that teachers disseminate to them (Brown, 2016; Celia & Elize, 2018). In content-centred pedagogy the focus is mainly on what the teacher needs to cover as per requisites of the subject factual knowledge. The teaching process is driven by enacting the approved content. However, the teacher in content-centred pedagogy may allow learners to express their everyday knowledge to add to the content; also, the teacher may add relevant content obtained from societal sources. This makes content-centred pedagogy aligned with social voices.

Contrary to teacher-centred and content-centred pedagogy, there is the learner-/problem-centred pedagogy which considers the needs of teachers and their learners (Brown, 2016; Celia & Elize, 2018; van Eeden et al., 2018). Kennedy (2016) proclaim that the learner-/problem-centred pedagogy has emerged from taking advantage of content- and teacher-centred pedagogy. It presents this pedagogy which considers the needs of both the teacher and the learner. The learner-centred pedagogy is favoured because it promotes and supports enhanced knowledge construction as well as skills to solve problems. The prominent strength of the learner-centred pedagogy is that pupils are actively engaged during the teaching (Hoadley & Jansen, 2018; Pinar, 2012). Learners assume personal responsibilities for their own learning under the learner-centred pedagogy. Moreover, Le Grange and Reddy (2017) stress that the learner-/ problem-centred pedagogy acknowledges the capabilities and competencies of each learner during teaching and learning. The teacher therefore uses personal unique skills to see to the various needs of the learners.

For this theme, pedagogy, the participating teachers were expected to enlighten on each of the pedagogical styles branded teacher-centred, content-centred or learner-/problem-centred. Results displayed that some participants were not cognisant of the variances between the pedagogical styles. Apparently, the participating teachers had no idea of the preferred pedagogy to apply in enacting the curriculum. A majority of their responses indicated that they

were mostly inclined to the teacher-centred and content-centred pedagogy. Some indicated the use of learner-/problem-centred pedagogy. Even during classroom observation, a number of the teachers were observably using the teacher-centred and content-centred pedagogies, respectively.

For twelve out of the sixteen participants, the teachers would instruct the learners to use content from a given page number in their prescribed text book. Most teachers would, for example, come to class and say, “*Today I am going to teach you on the effects of climate change on agriculture*”. For the whole lesson learners would passively listen to the teacher instructing them to take down some notes on effects taught to them. Learners could have some input only if the teacher used another form of pedagogy. In their own words the teachers said:

H1:

“As made mentioned earlier, my major worry is that learners that I teach ought to pass their end of the year examinations so that will be made possible by me driving the teaching and learning because if I use other form of pedagogies, like involving the learners, I get delayed yet I have to push hard to complete this long syllabus. I therefore aim to push the syllabus through making sure that no time is lost because involving learners wastes a lot of time”.

L3 In addition to what H1 said their idea was the same. He was afraid of being blamed for failing the learners if other pedagogies are employed instead of the teacher-centred pedagogy.

“the problem I is that the geography syllabus is very long, so if I give the pupils a lot of time during my time, I will be delayed and loose a lot of time in the process and at the end I will be the one carry the blame for failing the learners which I don't want”. In teaching we are pressured by the long syllabus, expectation from the Head of department, the school administration and subject inspectors. In actual fact one does not do what he wants, he is forced by many voices”.

The account from teacher L3 showed that the teachers' choice of pedagogy is influenced by professional voices which pressure them to finish content through teacher-centred approaches; this is argued to save them time. Hoadley and Jansen (2018) and van Eeden et al. (2018) allude to the same, and argue that teachers' practices are influenced by professional voices outside the teaching and learning space. Outside voices affect curriculum enactment which should be autonomously under the drive of the individual teacher. Van Eeden et al. (2018), together with

Freire (1984), frowns on this practice which makes teachers “depositors” of content to learners who are expected to consume without any input. Teachers control the learning process; learners are left out as teachers rush to complete the syllabus. I suggest that other voices in curriculum spaces should not affect the curriculum enactment stage (pedagogy choice), rather, allowing teachers’ personal voices to dominate.

Hoadley and Jansen (2018) agree with Freire (1994) in advocating critical-/problem-centred pedagogy that liberates a teacher and learner oppressed by other voices in their teaching and learning spaces. Freire recommends a pedagogy that is based on the teachers’ and learners’ needs, which is the problem-centred pedagogy. The problem-centred pedagogy summons the teacher to use habitual enactment strategies that lead to pragmatic practices, each teacher using personal unique experiences to enact the curriculum. As the teachers employ their personal interpretations of the curriculum, they reach out to help learners to construct their personalised climate change knowledge.

Some of the participating teachers’ responses indicated that they apply problem-centred pedagogy. During classroom observation they were seen enacting their lessons in this way. One of the teachers took the learners out of the classroom to a site near the school that was losing vegetation cover as an impact of climate change. As I observed this lesson, the learners were motivated, in conversation among themselves and the teacher as the lesson was held there. In her response on the reflective activity this teacher said:

L4:

“I try to engage my learners in almost the classroom activities we do in my class almost all the time. Although I follow the syllabus to give them the content as prescribed to us but as I teach climate change here in the Lowveld where the effects are real. I make sure that the learners do not rely on abstract knowledge alone, but I want to show them that geography is real. I therefore use various ways to involve them such as handing over group tasks and discussions which are done in my class. To reduce noise, I group them sometimes in pairs to reduce noise and occasionally I also make them to do debates. I also make sure that we do field trips where they learn by seeing. It excites me when I see them discuss and although the syllabus is long, I do finish as they are able to work independently”.

Sharing the same experience, S2 said:

“I like and enjoy engaging my learners in my lessons. For example, I begin my lessons by questioning them based on previous day’s lesson. I in my opinion believe in involving pupils in my lessons because there are the ones who need understanding and moreover there are the very same pupils who will sit their end of year examinations. I make sure that we push the syllabus but I put it in mind that I need not to push to finish if they do not understand. In my teaching I use different actions because the pupils should be busy or else, they will do off in class and I try to meet each one’s needs”.

From these accounts learners play an active role and further assume responsibility for their learning which Pinar (2012) sees as the ideal pedagogy to be applied in teaching. The teacher is free of pressure from professional voices, and uses problem-centred pedagogy to allow learners to construct knowledge when active in the learning environments (Shoba, 2018). In addition, problem-centred activities allow the learner to collaborate and negotiate with peers and their teachers to create knowledge and also to meet their social needs. Socio-constructivist theories argue that any teaching that involves the learner leads to efficacious teaching and learning (Celia & Elize, 2018). Effective teaching is made possible in problem-centred pedagogy, the teacher engaging learners in motivating and interesting activities during teaching and learning. Naidoo (2017) supports problem-centred pedagogy for making learners more alert as they are engaged during the teaching process.

According to Khoza (2013), teachers must use teacher-centred pedagogy for effective presentation of prescribed knowledge, content-centred pedagogy, to judge the content to be given to learners, and the problem-centred pedagogy to take from both teacher and content pedagogy to benefit learners. Striking a balance by drawing from the strengths of the teacher and content-centred pedagogy produces a personalised pedagogy that addresses the needs of individual teachers and learners (Apple, 2000; Freire 1994; Pinar, 2012; Young, 2013). This leads to pragmatic practices which will depend on the way the teacher uses teaching tools.

6.2.6 Teaching tools

Several studies agree that teaching tools refer to any resource/instrument that communicates, enhances, and further stimulates learning (Berkvens et al., 2014; Khoza, 2012, 2013; Samuel, 2009; Van den Akker, 2010). Tools in the education space involve all that is used by a teacher to assist during teaching and learning. The teaching tool includes all materials or resources utilised to improve class instruction and promote learning. According to this definition, the teacher is also an essential tool for the learning process.

Teachers are responsible for communicating learning to learners. Khoza (2012) perceives teachers as the most important tool. They are responsible for facilitating learning by selecting the correct and most appropriate tools for learning. Van den Akker (2009) corroborates that in teaching, tools are important – they play a vital role in knowledge construction and also in sparking interest of learners in what is being taught. The successful teaching and learning of climate change requires tools as important components of the enactment of the curriculum.

As with the previous themes in this study, teaching tools have been categorised into three propositions: technical, multi-media, and personalised tools for the purpose of elucidating the teachers' voices that drive the geography curriculum. According to Khoza (2015b), Schwab (2016), and Waghid and Waghid (2016), technical tools refer to any tangible instrument or machine used to simplify the learning process. It is imperative to note that technical tools include modern power-driven tools as well as those older tools which are operated manually. The chief distinguishing factor of technical tools is that they are physical objects, and must not be limited only to computer-related devices.

Prevalent examples of technical tools that teachers use include textbooks, black/white boards, laptops, desktop computers, overhead projectors, slide projectors, movie projectors, tape recorders, and cellular phones (Le Grange, 2016). With respect to the computer as a common technical tool in the 4IR, Sokhulu (2020), together with Czerniewicz and Brown (2014), maintain that computers have been useful in curriculum enactment. These scholars cited above note that the computer has been driven by professional voices. It has been used by teachers to drill their learners to master factual subject content sourced from professional sources (Khoza, 2021). The use of computers in climate change lessons depicts teaching and learning that is driven by professional voices.

For teachers to use technical tools, they are required to possess some professional proficiency, thus they summon professional voices. For a teacher to competently use technical tools in a

climate change lesson, some professional skill is a prerequisite. Shoba (2018) labels the technical tools prescriptive in nature, in that they are rigid; one uses them through applying some level of professional know-how. Multimedia tools, on the other hand, refer to any resources fashioned for the technical tools. Such may display data or information to lead to successful learning of climate change (Khoza, 2016c; Khoza & Fomunyam, 2021; Mpungose & Khoza, 2020; Schwab, 2016).

Popular multimedia tools that are useful in teaching spaces include Modular Object-Oriented Dynamic Learning Environment (MOODLE), social-media sites (SMSs) such as WhatsApp, Face-book, online discussion forums such as Zoom and Skype, other software such as tablet software, iPad software, blogs, YouTube and Twitter (Khoza & Biyela, 2020; Khoza & Fomunyam, 2021; Mpungose, 2018). These are popular examples of multimedia tools that teachers use: the list of the tools is virtually inexhaustible (Mabuza, 2018).

Ngubane-Mokiwa and Khoza (2021, Schwab (2016) and Sokhulu (2020) note that the arrival of the Fourth Industrial Revolution (4IR) has brought a paradigm shift in curriculum spaces as far as the use of teaching tools is concerned. The shift has seen traditional learning environments including distance education dominated by online environments which favour the use of multimedia tools for teaching and learning. Furthermore, the use of multimedia tools for teaching and learning has been promoted by other occurrences, such as the COVID-19 pandemic; such has forced teachers to use software tools for teaching and learning (Khoza, 2021; Mpungose & Khoza, 2020; Sokhulu & Khoza, 2020). The multimedia tools allow teachers and learners to interact in many ways. Interactions mostly take the form of discussions which are social in nature. The use of multimedia tools is driven by societal voices as they summon socialisation habits.

Thirdly, there is the personalised kind of tools. These include theories, beliefs, ideas, as well as pedagogy used for teaching and learning purposes (Biyela & Khoza, 2020; Khoza, 2015a, 2016; 2020; Mpungose & Khoza, 2020). The personalised tool describes actions by the teacher who uses personal identity and choice to enact the curriculum (Biesta, 2015). The teacher utilises esoteric skills to combine technical and multimedia tools, producing a personalised tool that fits the context. The teacher uses personal, self-developed knowledge to enact climate change lessons.

For this reason, Samuel (2009) views teachers as critical tools. Teachers must eventually select relevant tools (technical or multimedia) that would support the effective teaching and learning

process. Khoza (2021) observes that the twenty-first century with its development in 4IR has produced new learning landscapes in which the teacher's personal voice should supersede other voices in the use of teaching tools. The use of personalised tools addresses individual personal needs of geography teachers.

Discoveries that fall under this theme expose that most geography teachers use a comparable kind of instructional tool in their teaching. The most commonly used tools were the technical tools followed by the multi-media tools which some participants used. One of the most interesting findings in this study was that the participating teachers were not aware that they were important personalised tools. The findings generated revealed that the most commonly used tool was the chalkboard. Other scholars, Mabuza (2018) and Dlamini (2019), state that the teachers in Eswatini may lack the finance for purchasing modern instructional tools such as multi-media tools. This leaves the teachers with no option but to use the available technical tools. The teachers had the following to say:

M1, M2, M3 and M4:

“The textbook and the chalk board are the mostly used tools in the school, luckily the school uses a book leasing system thus all learners are given the prescribed books. We also have some weather instruments as well in our weather station where learners are taken to. Also, newspapers are used if there is an interesting climate change story. We do have a computer lab in our school but it is only reserved for IT lessons, we are not allowed to use it for other subjects. In times of lockdown however, we use cell phones to conduct lessons via WhatsApp and google classes”.

S1.S2.S3 and S4:

“As you see our school is in deep rural areas, the only instructional tool in our disposal is the chalkboard. We have a problem with books, you find that half of the learners do not have such. It then demands one to organise some newspaper cuttings or sometimes use personal cell phone to download some useful climate change information for learners. There is no other way to teach them except for face-to-face contact sessions”.

L1, L2 and L4:

“For our lessons we rely on technical tools, books and chalk board mainly. The school is unable to even buy weather instruments for the learners to see a thermometer. One uses personal data sometimes to show learners on the cell phone some of the climate change effects in other countries”.

H1, H2 and H3:

“We use books and chalk board mainly, but we also have other multimedia tools we use as the department has a laptop that we use sometimes to display climate change scenarios in other countries and also do some power point presentations. In times of lockdown, the school requested parents and guardians to buy learners cell phones, so we do WhatsApp lessons even when the learners are in their respective places. Most of them partake in these discussions”.

The accounts of the teachers reflect that the common view amongst participants was that they teach using technical tools. Even during the observations, the teachers were seen referring learners to textbooks that they also brought to class. It was the schools in urban areas (school H and M) where teachers talked about using multimedia instructional tools especially when schools were in lockdown. For the other two schools one can conclude that their rural status might negatively affect the use of multimedia tools. As pointed out by Mabuza (2018), some schools in Eswatini are disadvantaged by their location. Teachers may be encouraged to fully utilise the multimedia, socially driven tools.

Studies, Mabuza and Khoza (2019) and Makumane and Khoza (2020) support that in the societal driven tools, learners learn to support one another as they become group members, acquiring skills to address their climate change lesson needs. WhatsApp groups can therefore be said to be powerful multimedia tools which teachers can take advantage for effective teaching and learning. Scholars Dlamini (2018), Mpungose (2018) and Shoba (2018) advance that learners do generate relevant content to achieve learning outcomes through their memberships and commitment in multimedia tools discussions such as WhatsApp. Teachers, however, need to take advantage of both the technical and multimedia tools. Berkvens et al. (2014) advise that teachers must not rely on tools that the school provide; they should design personalised tools. The subject expects that tools will be effectively used in their contexts.

Moreover, teachers may even involve learners in designing some teaching and learning tools that can assist to make climate change lessons meaningful and interesting.

Some of the teachers however, presented some self-acquired capabilities as they engaged their learners with both technical and multimedia tools especially during lockdown sessions. These teachers used their personalised ideas to engage learners in climate change sessions. Hoadley and Jansen (2018) support the idea of a teacher being in charge of the curriculum by designing personalised tools that meet his/her needs. Freire (2005) sees such a teacher as open-minded and free from being overwhelmed by either professional or societal voices. Khoza (2012), however, illustrates that it is difficult for the teachers to apply their personal voices using tools if the technical and multimedia tools are not at their disposal. Van Eeden et al. (2018) encourages geography teachers to be artistic in nature in order to improvise tools that will be helpful to their learners.

Such a teacher assumes a unique role even during curriculum enactment. Khoza (2013) stresses that it is critical for teachers to consider their ideologies, theories, and skills as powerful tools that should be put to good use to provide useful personalised tools for learners. Moreover, the teacher as a personalised tool fulfils self-actualisation needs representing the teacher's personal identity critical to enacting climate change lessons (Khoza & Fomunyan, 2021). This will be dependent on how the teachers perceive their designation in the curriculum enactment process.

6.2.7 Designation

Hoadley and Jansen (2018) state that understanding the teacher's designation in the curriculum enactment process is essential. The designation a teacher assumes serves as a vital link between the prescribed and the attained curriculum. Khoza (2016a) observes that the general practice of teachers in a school system makes them assume different designations influenced by the duties and roles they are tasked with. Some of the common titles given to teachers are: scholar, planner, supervisor, controller, superintendent, citizen, pastoral care person, researcher, life-long learner, counsellor, to name but a few. In support of this view, Dlamini (2018) also observes that there are many factors which influence the determination of a teacher's designation in a given time period.

The teacher's designation is influenced by certain specific voices which drive the teacher to assume a specific designation during the curriculum enactment stage. Furthermore, findings from other studies view the teacher as solitary individual who ought to understand a personal

title/role in the delivery of any curriculum (Celia & Elize, 2018; Hoadley & Jansen, 2018; Maharaj, 2018). According to Berkvens et al. (2014), the designation a teacher chooses to assume must be challenging, interesting, inspirational, and motivating to the learners as the teacher implements the curriculum.

In response to the question “What is your designation as a geography teacher when teaching climate change?” a range of responses was elicited, which indicated that most of the teachers assume the titles: instructor, enabler, and illustrator, respectively. This was in line with Van den Akker et al. (2009), who indicated that the designations that teachers assume must enable effective teaching and learning. Such would address professional, societal, and personal needs of learners, whilst encompassing learning outcomes. The minute a geography teacher adopts the designation/title/role of an instructor, that particular teacher exercises full control over the learners.

The control tends to be over almost all the curriculum enactment processes which range from choice of pedagogy, selection of content to be used, choice of teaching tools, as well as in the form of assessment chosen. A teacher can also be an enabler, who acts as a coordinator, allowing the learners to share their everyday knowledge and discuss it amongst themselves. Lastly, the facilitator runs the class democratically, Freire (2005), in that the teacher allows learners to freely share their views and knowledge and at the same time takes professional knowledge to balance his/her lesson. Hoadley and Jansen (2018) observe that when a teacher assumes the position of a facilitator, learners are guided towards generating their own knowledge.

The data generated for this theme suggests that a majority of the teachers were entrenched in the instructor title role as they handled their teaching and learning scenarios. Some exhibited the enabler role and the least popular designation was that of being facilitators as they taught climate change. Based on observations made, even those teachers who assumed either the enabler or facilitator designation would time and again depict elements of what Shoba (2018) describes as authoritative. Most of these teachers who resorted to a commanding voice in their lessons were heard saying, “*Ok now let us proceed, it seems what you guys are doing is wasting our precious time. Don't forget time is not in our side*”. After making such comments, the teachers would take charge of the progression of the lessons, as instructors. Celia and Elize (2018) concur with van Eeden et al. (2018) that because of time pressure and large class sizes,

a majority of teachers opts to drive their lessons using the instructor fashioned role. This is said to save time as the lesson is paced by the teacher instead of the learners.

The findings revealed that teachers are enforced by pressure to drive the long syllabus so that learners pass examinations; and also, the large class numbers lead to learners being noisy and uncontrollable, filled with disorder, when teachers embrace the enabler and facilitator roles, respectively. The teachers are driven by “other” voices rather than by their personal voices in teaching climate change. Teachers fail to consider their own individual needs when assuming the instructor role, allowing professional or societal voices to take precedence. The majority of teachers who held the instructor role said:

M4:

“I have a big class (56) learners in form five, if I can try different engaging roles of teaching I would be making too much noise and disturb other colleagues. I then should direct the learning if I wish to finish the syllabus. I should straight attack the syllabus and push it as when using other methods that involve learners, the speed and pace of the lesson is affected”.

S1:

“Climate change is a complex topic, so I always make sure that I teach myself for the pupils not get confused, I get straight to what the learners have to know in the topic instead of causing confusion by involving them or seeking their inputs, in actual fact I teach them and give them notes to write so that I cannot be caught in confusion”.

H1:

“I just make sure that I drive the lessons myself so that I cover time and make sure there is reasonable progress in my lessons”.

It was interesting that one of the participants instructs in his classes because he fears the learners will become confused when they approach climate change in other roles that involve learners. The teacher believes that he has special knowledge which he is charged to impart to the learners. Arman (2018) observes that the philosophy of teachers who are driven by the professional voice that expects them to drive the curriculum is grounded in teachers being the key persons during the learning process. Teachers carry professional knowledge that must be poured into learners’ minds through means and methods decided upon by the professional

teacher. Freire (1994) frowns on the supremacy of this role in learning spaces. This title role which is reinforced by professional voices makes teachers to be directive, dominant, and fully engrained by authority. Such teachers become in charge of learning which wreaks injustice and unfairness for learners (Arman, 2018).

The response of teachers who assumed they were aware that treating climate change in isolation from the social voices of learners would be detrimental in their practice. They then allowed learners to discuss climate change issues, but as alluded to earlier on, some of them, during observations would reverse their role to assume the instructor's designation. They had the following to say:

H4:

"I am aware that the learners need to bring some of their experiences and observations in learning climate change, so I encourage them to discuss as I only throw a topic for the day and we discuss as a class. But what I have noticed is that they then take a lot of time debating".

L1:

"The curriculum expects learners to discuss, I give them that time to discuss although sometimes the class becomes like a circus".

S3:

"I personally enjoy when I teach topics like climate change because they address issues that are even obvious to the kids in the community. I allow them to freely speak out their views especially on how climate change effects can be minimised".

M4:

"The learners are adults, in their last grade of school, I therefore encourage them to speak out and learn on their own as I prepare them for tertiary. They have their own knowledge on climate change; they should share that and be deliberated upon in class."

It can be noted from the narrations generated that participants believed in everyday/societal knowledge of the learners in their lessons. Van Eeden (2018) encourages teachers to embrace such knowledge in their lessons, but warns that teachers should be careful to discourage myths, as most societal knowledge is mythical in nature. Geography teachers should not solely rely on societal voices and assume the enabler role; instead, they should add professional knowledge to support the societal role. When teachers do that, they automatically assume the illustrator/facilitator role. They take from the professional and societal voices to coin knowledge that suits their needs and context. The teachers who assumed the illustrator's designation had the following to say:

M3:

“I enjoy teaching topics like climate change as they allow me to involve my learners as they share what they know and observe. Then I also beef up their knowledge by adding what I research and also find in their textbooks. I even encourage them to bring up current climate change stories from the media to be discussed in class. This makes me enjoy my lessons other than when I teach abstract topics such as earth movements where learners usually do not have any societal knowledge associated with that”.

S2 and S4 had similar ideas as they said:

“When you teach climate change lessons, you must always involve the learners, make them discuss and then direct their discussions with your expertise. Even when they seem to make noise its ok because it shows they are freely deliberating, all you do is to direct their discussions by throwing technical know-how as you illustrate and facilitate their learning”.

The findings from the illustrators show that they facilitated their classes by using strengths of the societal and professional voices. The interesting finding is that the illustrator teachers indicated that they personally enjoy what they do as it meets their needs. This displays that the illustrator teacher assumes autonomy in enacting the curriculum without fear and pressure from external voices. Scholars, Dlamini (2018), Makumane (2018), Hoadley and Jansen (2018) concur that learning becomes more meaningful when teachers assume the role of curriculum illustrators. When a teacher assumes the position of being an illustrator, the learners become

more involved during teaching and learning which fosters a democratic classroom environment that encourages equal participation opportunities for learners.

Moreover, the illustrator positions the self during the enactment process such that the needs of learners are catered for. Learners are able to construct their own knowledge (Celia & Elize, 2018; Dlamini, 2018; Maharaj, 2013). In the same line of thought, Nkohla (2017) and Shoba (2018) posit that, if teachers assume the illustrator designation, they should practice effectively as they display creativity and innovation skills that demonstrate a personalised voice in driving the curriculum. Bernstein (1999) asserts that an illustrator teacher uses the strengths of societal and professional voices to strategically and systematically communicate climate change knowledge to motivated and ready-to-learn learners. In an event other voices supersede the personal voice; the teacher's enactment practices are compromised. Van den Akker et al. (2009) insists that the title role/s that teachers assume must enable effective teaching and learning. The roles must consider professional and societal voices to produce a personalised voice that addresses personal needs of learners, while encompassing learning outcomes.

The geography curriculum does not make an overt indication of the designation of teachers. Makumane (2018) laments that such a situation might pose a threat as teachers are essential bridges between practice and policy. The voice that drives the teaching of climate change has to be clear. Teachers must not have incorrect interpretations of their expected designations when attempting to achieve intended curriculum outcomes.

6.2.8 Setting

The setting in which learning takes place has a significant influence on the efficacy of the curriculum enactment process. This study defines the setting as any knowledge-created environment suitable for teaching (Dlamini, 2018; Khoza, 2013; Mabuza, 2018; Makumane, 2018; Van den Akker et al., 2009). Van den Akker (2020) corroborates this and clarifies that the setting represents both the physical and social characteristic features of the learning environment. The setting is any appropriate space which allows learning to occur. Berkvens et al. (2014) posit that any setting chosen for curriculum enactment should be safe and should incite motivation for the learners. Shoba (2018) states that the teaching and learning setting should be enabling to both learners and teachers. For geography lessons, van Eeden (2018) submits that teachers choose to use one of three common settings: classroom, field trip/educational tours, and blended learning.

The class-/schoolroom setting is the traditional professional location in which teaching and learning occurs in a demarcated four-walled enclosed building where instruction is usually face to face (Bernstein, 1999; Khoza, 2013; 15b; Mpungose, 2018; Shoba, 2018). In the classroom setting the organisation and enactment process is professional in the sense that the teacher assumes full professional authority to drive lessons through systematic activities and various other ways of controlling and regulating the teaching and learning process. This includes conducting lessons with laid-down objectives using prescribed text books, with learners seated in rows to limit any form of involvement. The teacher instructs as a way of enacting the curriculum.

Climate change lessons favour learning taking place outside of the demarcated classroom. Teaching occurs in a social space in which learners have the opportunity to learn through observing the actual phenomena (Van Eeden et al., 2018). According to Fuller, Rawlinson, and Bevan (2000), geography learners revel in learning outside the classroom, in a real social setting. Oost, De Vries and Van der Schee (2011) posit that the outdoor experience brought by field trips merges effective and cognitive learning to support the learners. When learners are exposed to climate change reality outside the classroom, their understanding is greatly enhanced.

Taber (2012) confirms that learning which takes place at a field trip site favours constructivism which empowers pupils to create and create climate change knowledge in their own unique way in a socially interesting learning atmosphere. Field trips help geography learners to comprehend more readily and speedily what otherwise would have been theoretical climate change content (Fisher & Binns, 2016; Oost, De Vries & Van der Schee, 2011). In geography learning, field trips are considered an important way of developing geographical comprehension on climate issues of the world.

Lastly, there is blended learning which as the name suggests. This is a combination of multi-media/societal teaching tools and face-to-face teacher-led instruction in enacting the curriculum. Bernstein (1999) and Khoza (2013) advance the idea that blending the two learning settings, classroom/professional and field trips/societal settings does contribute to meaningful learning as it meets the needs of teachers and learners individually. Blended learning thus creates a personalised kind of learning setting in which learners and teachers enjoy benefits of both professional and societal settings. As discussed in the literature chapters, COVID-19 attacks forced educators to encourage blended learning. As with field-trips, this depends more

on the availability of necessary resources (multi-media tools). However, some of the teachers indicated that they use blended learning in enacting climate change. However, the majority indicated that they depend more on the classroom setting. The teachers from school S said:

“All our lessons are conducted in the classroom. We do refer to some examples in the surroundings but because of time we cannot go out to those places. Because we are located on a rural area, most learners do not own cell phones, so we can’t even do blended lessons”.

Interestingly, teachers from school L which is situated in a rural area indicated that they take learners out to experience climate change realities in the surroundings of the school. The participants said:

“We teach climate change mainly in the classroom as it allows us to pace the lessons in ways that pupils push the syllabus, but for topics which require that we look at effects of climate change we take them out to the real area where desertification has started. Because of lack of resources, we do not do blended learning”.

However, one teacher from school L indicated that she does communicate with her learners over WhatsApp which indicated the existence of blended learning.

The responses of urban located schools, H and M, also shared some similarities. In both schools the participants indicated that the classroom is the common setting used for climate change lessons. They also indicated that their schools, after serious negotiation, do allow the geography teachers twice a year to take out learners for field trips/educational tours. Recently, however such has been affected by lockdown restrictions. Moreover, the participants indicated that their schools have internet access, thus they engage learners in online lessons. This showed that they do blended learning. One teacher indicated that most of the learners become more active in online sessions than in face-to-face sessions.

This study established that as far as the learning setting is concerned, the dominant voice driving the teaching of climate change is the professional voice. This was supported by the data generated from observations. Only in school L learners were seen learning outside the classroom. School L showed a drive by societal voices. Learners were exposed to learning climate change in their nearby community; they utilised their societal knowledge to describe what they were seeing. Blended learning, which is driven by personal voices, was only indicated by schools M and H, with the two other schools citing lack of resources as the major

limiting factor. This study's theory of teachers' voices supports that teachers should embrace blended learning. Teachers can then continue to work with learners even when they are not within the classroom setting. Castle and McGuire (2010) note that blended learning caters for learners' diverse needs; thus its use should be encouraged in climate change lessons as it increases chances of effective attainment of learning outcomes. Moreover, blended learning increases learners' motivation and interest, and allows the teacher to work independently in enacting the curriculum (Fitzsimmons & Kilgour, 2017; Turbill, 2002).

6.3 Summary

In this chapter, discussions from data generated were made to establish the 'what and how' aspect of teachers' voices on the teaching of climate change. The chapter intended to determine the exact nature of the voices that drive the teaching of climate change; and how the voices were portrayed by the teachers in the curriculum enactment process. The findings presented here demonstrate that there are varied voices that drive the teaching of climate change. The themes that were used to guide the discussions presented that in some cases the professional voice dominated, while in others the societal voices were prominent drivers of curriculum enactment. The personal voice also featured in some themes. An interesting finding was that the teachers were ignorant of their personal voices and the strength of personal voices in driving curriculum enactment. The next chapter, Chapter Seven, extends the discussions on voices by seeking to establish the reason/s that teachers are driven by the said voices/s.

CHAPTER SEVEN

ADDRESSING THE PHILOSOPHICAL “WHY” OF THE STUDY

7.1 Introduction

The previous chapter presented data that was responding to the first and second research questions; what and how teachers’ voices are realised on the teaching of climate change? The purpose of this present chapter is to present and discuss data on the third philosophical question: Why are geography teachers’ voices the way they are on the teaching of climate change? The data presented here was generated from semi-structured interviews and focus-groups discussions. These two data-generation methods, according to Cohen et al. (2018), Bertram and Christiansen (2020), permit the researcher to probe and pose follow-up questions. The methods were thus suited to finding reasons for teachers’ voices being the way they are on the teaching of climate change in Eswatini.

The discussion in this chapter is arranged following the same themes as the previous chapter; rationalisation, educational goals/drives, content, assessment, pedagogy, tools, designation, and setting. This chapter presents the reasoning on the voices that the participants believed were driving the teaching of climate change. As the “why” question underpins this chapter, it also responds to the demands of EDR which guides this study. Since the previous chapter treated the first and the second phases of the EDR, this chapter presents deliberations that address the last phase: evaluation and construction. This chapter theorises that new knowledge useful to educating and addressing the tension that exists between the voices of teachers in curricular spaces as it emerges. The tension between teachers’ voices in curriculum spaces does not benefit either learners, teachers, or policymakers. Professional and societal voices should blend to allow teachers’ personal voices to drive the implementation of the intended curriculum.

7.2 Rationalisation

As indicated earlier on, the theme rationalisation sought the reason/s for teachers teaching climate change (Khoza, 2015b; Mpungose, 2016; van den Akker, 2010). Generally, the

participants were not aware of the presence of voices that influence their rationale. They were even unaware of the three propositions on rationalisation of voices. Thus, their responses were varied. However, teachers indicated that they teach for professional reasons (knowledge), to help their learners acquire skills and competencies (societal) and for the love of the subject (personal). When sought for clarity through probing, the teachers who cited professional reasons (S1, L3, H4 and M4) all pointed out that they were employed as professionals by the MoET to teach the learners.

Upon further probing and even in focus-group discussion they categorically stated: *“as professionals our duty is to teach, we should execute such instead of beating about the bush as if we do not know what we are doing. Our responsibility is clear, we are qualified, what else would one want”*. These assertions confirmed that the teachers are fully entrenched in executing their professional tasks, without any deviation or having a full back-up of their educational/professional backgrounds. Hoadley (2018) acknowledges that usually professionally driven teachers are rigid in their reasoning for practice; they do not easily accommodate ‘other’ voices, but become completely entrenched in their professional viewpoint.

The teachers who were driven by the professional rationalisation indicated during probing that their qualifications are reason enough for them to teach climate change. They indicated that they have a syllabus to follow. They preferred not to think of other drivers of their rationale; their task was clear and straightforward: hired as qualified professionals to teach. These teachers’ subconscious minds were inflexible. They were certainly hired to teach. However, upon engagement with these participants in focus-group discussion on the inflexible manner of their reasoning, the teachers realised a need to accommodate other voices in their rationale for teaching climate change. It was deliberated that teaching climate change is not only for knowledge. As it affects the entire society, considering societal voices would benefit the learners.

This was after the societal-voices-driven teachers had presented in the focus group that *“geography is a societal related discipline, so learners should be connected to the society whenever possible. Climate change is a worldwide phenomenon, affecting communities in different ways, so teaching should not be guided by our professional background alone, but we should consider sharing skills and competencies to the learners to equip them for the society and communities where they live. In this way even the society can appreciate the work of*

teachers and education in general. Moreover, as we teach the learners, they should acquire knowledge that will help them fit in the outside world, so the learners should be equipped by us as geography teachers to be useful, employable and further be agents of change in the community in as far as climate change issues are concerned” (a summary of what teachers H4, L1, S3, and M1 said).

This idea presented by the societal-voices-driven teachers made the teachers who taught only for knowledge change their awareness. They concurred with the researcher and indicated in the discussions that geography and climate change in particular affects social lives of people, thus there is need to accommodate the social reasoning. The societally driven teachers also indicated that, as they teach the skills and competencies, they consider the professional knowledge such that what they teach is in line with the curriculum. They include skills which the curriculum also encourages.

In this way, the participants discovered the value of taking advantage of both professional reasons and societal reasons to present personal rationalisation of teaching climate change. The personally driven teachers (H3, L2, L4, M2, M3 and S4) had indicated that they teach because they love the subject. Driven by that value, they then present each climate change lesson to assist individual learners to do well in the subject and also to be relevant in their communities. Biesta (2015), Freire (1994), Schiro (2012), support a teacher who enacts a curriculum rationalised by personal voices instead of being coerced by other voices. Freire sees such a teacher as liberated who efficiently passes on knowledge to learners. Hoadley (2018) concurs and states that the teachers become objects of change as they enact the curriculum. They have a personal drive to enact the curriculum in their own unique ways. The theory of teachers’ voices suggested by this study supports that teachers must drive the curriculum by means of personal rationalised strategies.

7.3 Educational goals

A number of scholars in curriculum spaces have indicated the importance of educational goals in teaching and learning (Celia & Elize, 2018; Hoadley, 2018; Khoza, 2015c). The main significance of the educational goals is that they guide the teaching and learning process. The goals in this study were categorised into three: short-term, long-term and learners’ goals. As specified in the previous chapter, the participants lacked a perfect understanding of goals that drive climate change teaching. The majority indicated in the reflective activity that they were

only used to the short-term goals. When probed further in the course of focus-group discussions and interview sessions, some teachers stated that these objectives/short-term goals were given in their syllabus. They said:

“We thought this is all that we had to achieve as it is stated in black and white in the subject syllabus. It is given as general objectives and specific objectives. We in actual fact use these short-term objectives when we write our daily preparation books. We thought these are the only goals that we should follow”.

When probed further, the teachers stated that even in their pre-service training they were not introduced to the other educational goals. It was only during focus-group discussions where three of the participating teachers remembered that in their training and in one workshop for geography teachers, it was pointed out that the short-term goal is taken from the long-term goal/aim. The general understanding, however, was that the long-term goal was not as important as the short-term goal. All teachers had been trained on how to write a short-term goal well (SMART). From the participants’ responses one can deduce that the teachers follow on what they were trained to do, and do not deviate on such. This shows that the participants were mainly influenced by professional voices that drove their understanding of educational goals.

On a philosophical point of view, teachers do not interrogate the voices that drive their enactment decisions. Upon further probing and engagement to pave a solution as the EDR stage expects, the teachers unknowingly revealed that as they teach, they do have the long-term goal in mind, which they indicated was their individual conscious reasoning they apply when teaching climate change. The teachers accommodated societal-driven approaches although inadvertently. Shoba (2018) and Hoadley and Jansen (2018) bemoan such a situation in which teachers enact the curriculum without a clear understanding of what long-term goals are.

The teachers would lack a vision of the skills that learners ought to be exposed to. The main reason the teachers put forward as interrogation and probing of the dominance of the short-term goals was that they guide them in the content delivery which gives them assurance that learners who are taught guided by the short-term goals will finish the syllabus and will be in a position to pass their external examination. Again, the issue of high-stakes examination-driven curricula emerged as one major influence on teachers’ actions in curriculum enactment.

It was interesting also to discover that some teachers, although they use short-term goals, do consider contextual factors and teach climate change considering the needs of the learners.

These further benefited when the discussions were driven by the theory of teachers' voices. This study advances this theory as one which could be useful in addressing the tension between long and short-term goals in curriculum spaces. The teachers were able to see the advantage of merging the long-term and short-term goals in order to present learners' goals. It was agreed that learner goals address the individual needs of teachers as well as pupils throughout the teaching and learning process.

The reasons that one would advance as responsible for the teachers' actions as far as educational goals are concerned had to do with pre-service training and in-service training dynamics. The teachers indicated that they received training on short-term goals. Workshops that they attend emphasised short term goals. Furthermore, the high-stakes examination mounts pressure on teachers to drive the curriculum with short-term goals so as to make learners pass or obtain high marks. Achieving good grades in geography was another reason which influences the voices of teachers on the educational goal aspect. The teachers drive the climate change lessons with short-term goals so that they do not get blamed for any poor results.

Teachers that came from two schools in this study expressed in the course of the focus-group discussions that when the results come, the school administrators interrogate them if the performance of learners is poor. This also puts pressure on the teachers who do not want to be scolded for poor results. Some of the teachers indicated satisfaction when their learners excelled in the final examinations. They argued that it helps the learners to gain entry into tertiary institutions, giving them the advantage of finding employment. However, the utilisation of the theory of teachers' voices could be one way of addressing the tension on goals teachers find themselves entangled in for climate change enactment. The teachers were able to realise the importance of using the learner goals. Such allows the teachers and the learners to be unrestricted and helps them to consider contextual factors as they enact climate change. Pinar (2012) advocates for such freedom when teachers approach curriculum enactment through the lens of *currere*.

7.4 Content

Bernstein (1999) and Shulman (1987) purport that content in curriculum spaces refers to what is taught or learnt. Teachers are tasked to guide learners and offer them content knowledge sourced from somewhere. The concern in this study was on the sources the teachers use to obtain the climate change content that is consumed by learners. Consequently, the study

concentrated on the voices that influence the choice of sources teachers use to teach climate change. Three categories that represented the three voices on content sources emerged for this study: everyday/indigenous knowledge, prescribed sources, and personally developed climate change content. As illustrated in the preceding chapter, a majority of teachers relied on prescribed content more than the other forms of content. It should be noted that prescribed content is one of the pillars of the vertical/professional curriculum (Tyler, 2013; Celia & Elize, 2018; Hoadley, 2018). The participants were thus driven by professional voices as far as climate change content is concerned.

More than one reason was presented by the teachers during interviews and focus-group sessions for this stance. Firstly, the participants who formed a majority pointed out that the prescribed content they use is generated from the prescribed text; also, learners are made to buy text books. Some schools give the books to the learners. The teachers indicated that the prescribed books are recommended by the subject inspectors as the supreme source of content that teachers should use. The teachers indicated that they believe in the authors and the content of these prescribed texts as they have been researched by subject specialists (Khoza & Fomunyan, 2021; Tyler, 2013). The teachers who favoured this professional-voice prescribed content also indicated that relying on the prescribed texts saves them time. The content is there, thus they do not have to concern themselves with where learners will obtain climate change content. When interrogated on the limitation of the prescribed text, in that it fails to consider local examples and that its information can be outdated, some of the teachers indicated that they do make necessary corrections where possible.

Furthermore, the teachers who stood by the prescribed sources indicated that the examinations require learners to consume the prescribed content. Again, this brought the issue of high-stakes examinations which influence curriculum enactment processes. In their own words, the teachers said:

“The school buys the books for us and learners to use. Why worry to look for other sources when the prescribed books have been researched and tested to be fit for learner consumption. Moreover, the examinations require the learners to come with answers that these prescribed books have”.

An interesting finding was when the other teachers who had earlier indicated full reliance on prescribed content specified that if the prescribed text is limited in some climate change aspects, they support it by adding knowledge generated from other sources, such as from multi-

media sources. The participants were not aware that they were then using both professional and societal sourced content. Teachers had indicated that they were not aware of the personal developed content. When they discovered that their action of supporting prescribed content with everyday/societal content led to the development of a personalised content they were enthusiastic. I determined that teachers perform certain actions without realising that they are in line with the theory of teachers' voices. The theory advocates for the merging of professional and societal knowledge to produce a personalised type of content that reacts to the individual needs of teachers.

The teachers who relied on everyday/indigenous knowledge which Khoza (2021) posits consists even of content from multi-media sources indicated that they do not bank on such alone. For climate change content, IK has been valuable in a number of ways. Indigenous societies of Eswatini understood, for example, the importance of the sun and its contribution to rainfall patterns. Van Eeden et al. (2018) notes that the challenge with IK came when western education labelled IK as inferior which resulted in it being excluded from teaching and learning spaces. It is vital to note that in many African societies, the exclusion of IK created a situation where education gained in school was presented as different and did not fit well in lived experiences of African school-going children. Teachers developed a negative attitude towards societal content (Hoadley, 2018; van Eeden et al., 2018). Van Eeden et al. (2018) insists that geography learners learn better if the lessons are presented in such a way that is aligned to the context of their society, something they are familiar with. Societal-voices-driven teachers use such IK in teaching climate change.

The societally driven teachers participating in the study indicated that they do consider the value of IK from learners but also consulted the prescribed texts to reinforce and add to the everyday content knowledge. Even though some of these participants indicated some resentment on the prescribed texts, they stated that they do consult the prescribed texts. The responses of the teachers at this level became very interesting as they acknowledged that they now could see that they used personalised developed content as they teach climate change. They said this type of content is generated from the shortcomings of prescribed texts which fail to consider local examples. The teachers opt for societal knowledge to produce a kind of content that is relevant to their context. It was clear to all participants after the focus-group discussions that the personalised content is best suited as it embraces both the professional and societal voices. The teachers also indicated that it was not difficult to produce the personalised content. The teachers indicated that they have been doing this unknowingly.

This new discovery made on personalised content knowledge allows teachers to embrace pragmatic practices which are favoured by the EDR, the design which this study employed. McKenny and Reeves (2014) acknowledge that, since EDR is pragmatic, its main function when utilised in practice is to generate new usable knowledge that brings solutions to challenges that are faced by teachers in curriculum enactment. Moreover, the adaptive nature of EDR also came into play as the pragmatic practice the teachers realised was possibly adapted to the theory of teachers' voices that this study puts forward. In the emerging of personalised content EDR contributed an intervention in practice which produced new reusable knowledge for the participants (McKenny & Reeves, 2014).

7.5 Assessment

This theme was categorised into three: formal, informal, and non-formal assessment. In general, there is a scarcity in the form of evidence of Eswatini geography teachers' assessment practices, even though assessment is one critical area in curriculum spaces (Celia & Elize, 2018; Hoadley, 2018). In this study, as shown in previous chapter, teachers were familiar with the assessment categories. The common and popular choice of assessment that the participants applied was formal assessment which indicated a practice driven by professional voices. This was in line with Bijsterbosch (2018)'s study which stated that for most geography lessons, the focus of geography teachers was mainly on formal/ summative assessment.

According to Bijsterbosch (2018), the major drive for teachers to place more attention on formal assessment is the focus on passing learners in high-stakes national examinations. In this study, the teachers also held similar sentiments. The teachers in the semi-structured interviews expressed that they have to make sure that the learners pass their final examinations. Focusing on the formal assessment was noticeably driven by pressure from professional circles, school administrators and subject inspectors.

For two schools for the duration of the focus-group discussions, teachers revealed that the school principal summoned the teachers and instructed them that poor geography results will not be accepted. When the high-stakes exit examination results are out, the principals would require each subject teacher to explain any poor performance of their learners. The subject inspectorate also mounts pressure and demands that teachers to pass learners, thus encouraging formal examinations. Van Eeden et al. (2018) also indicate that in most geography lessons in

South Africa the common form of assessment is formal. The major reason put forward was also pressure from professional voices.

The teachers stated that the formal assessment questions were given to learners in the form of monthly tests where questions taken from past exam papers are recycled and set for the learners with the aim of familiarising them with the exit examinations questions. The reason remains, formal assessments are for the purpose of making learners pass the exams. Besides the teachers unanimously pointing out that the formal questions they take from past examination papers are simply generated. They stated that there was no need for them to think of original questions; they merely selected from the already available questions. Bijsterbosch's (2018) study suggested that geography teachers require some professional improvement to support them in mastering the skill of setting questions. When I asked the teachers whether they had been trained on setting questions, all twelve of them said they do not know of such training. I realised there was a gap in this aspect of assessment literacy or questioning for geography teachers in Eswatini. The EDR unearths areas that need further research or inquiry in curricular enactment practices so as to offer strategies to improve the implementing of the intended curricular.

In as much as the popular assessment type used was formal assessment, during lesson observation I saw some of the teachers engaging learners in informal types of assessments. This took the form of peer and group assessments which are societal in nature. The teachers who favoured this type of assessment indicated that it helps pupils to improve essential skills which they consider learners must know. In their own words they said:

“Learners should not only be drilled and exposed to rote learning alone, but they should also be allowed to gain some necessary life skills as they learn interesting topics like climate change. The learners are therefore given a chance to do some peer or and group assessments so that other skills on top of formal ones are tested”

The focus-group discussions revealed that the societal-voice-driven teachers were against rote learning which they claimed is encouraged by conducting formal assessments. They argued that it is critical that geography learners acquire necessary skills during climate change learning which they could use in their different communities after finishing school. Their main point in the argument was that education should develop a learner holistically instead of having learners who, for example, lack debating skills. These societally driven teachers also indicated that they do want their learners to pass, which is why they expose them to formal assessment as well.

The teachers who favoured formal assessment also do ask oral questions to support their learning and for feed-back and feed-forward purposes.

Both professional- and societal-voices-driven teachers address the tension between formal (assessment of learning) and informal (assessment as learning) by unintentionally embracing non-formal (assessment for learning). The teachers indicated that they use their personal decision to enact the curriculum in a way that suits their needs and that of learners. The skill of combining the strengths of formal and informal assessment produces a pragmatic assessment skill as suggested by the theory of teachers' voices. According to Dlamini (2018), non-formal assessment is possible in curriculum enactment landscapes in Eswatini. Moreover, Khoza (2021) defends that teachers in the twenty-first century must enact the curriculum without being coerced by any external voices, but should be motivated by their personal identities. This resonates with what has been argued by Pinar (2012), Freire (2013) and Young (2013), that the voices of teachers who are tasked to enact the curriculum should be prominent in all curriculum enactment categories.

7.6 Pedagogy

A generic explanation of pedagogy is that it is about the approach teachers choose to teach content to learners. For Pollard (2010) and Brunner (2006), however, pedagogy does not only denote the manner in which teachers enact the content, but refers to specific diverse philosophies that describe the nature and type of the various activities teachers and learners take part in throughout their learning progression. The preferred form of pedagogy is one that allows the learners and their teachers to work together in constructing new climate change knowledge. As with the other themes in this study, voices which influence pedagogy in the teaching of climate change result in the development of three pedagogical categories: teacher-centred, content-centred as well as learner/problem-centred pedagogy.

Teacher-centred pedagogy, as described by du Plessis (2016), mainly focuses on content transmission or direct instruction to learners who become merely passive listeners. In a typical teacher-centred pedagogically driven lesson, the teacher presents content to learners who are coerced into memorisation/remembering of content with limited application of the knowledge (Chai, 2010). For Celia and Elize (2018), Ertmer (2005) and Hoadley (2018) these characteristics of the teacher-centred pedagogy make it product-orientated thus summoning professional voices.

The results of this study revealed that the participating teachers were not aware of the dissimilarities amongst the pedagogical styles. The teachers lacked knowledge on the ideal pedagogy to use in enacting climate change. A common trend was that most of the participants used and favoured the teacher-centred pedagogy. In responding during semi-structured interviews, the majority who favoured the teacher-centred pedagogy said: H1 *“there is no other way here, the syllabus is long and teaching periods are not enough, so the best thing is to teach the learners and waste no time.”*

L3:

“You see here we are tasked to enact a very long syllabus in just two years, if one really wants to finish, there is no other way, and must be in control of the teaching process. So what I do is to pace the lessons in my particular suitable way. The other methods I know them but, they are time consuming”.

The idea for almost all the other participants who favoured the teacher-centred pedagogy, (M4, S1, H3, and L2) revolved around the same opinions as expressed by H1 and L3. When probed further and engaged in focus-group discussions, these participants expressed a strong drive from professional voices. They favour the teacher-centred pedagogy because it allows them to pace the climate change lessons in their own way thus covering the long syllabus timeously. These teachers stated that there is pressure on them from their HoDs together with the inspectorate who suggest that by a particular time of year certain topics should have been covered. The professional-voices-driven teachers stated that they do not like to be blamed for being slow, so they decide to drive the lessons themselves.

The major goal of finishing the syllabus as argued by the teacher-centred group of teachers lies in making sure that learners are not disadvantaged when the time comes for the high-stakes examinations. Bernstein (1999) observes that the vertical curriculum will demand that teachers work hard to fulfil needs of professional voices. Celia and Eliza (2018) likewise concede that when the curriculum is driven by professional voices, the needs of the teachers and learners are not considered. Only the professional needs gain supremacy (rushing against stipulated time, completing the syllabus, learners passing high-stake examinations). In the focus-group discussions, the professional-voice-driven teachers expressed their dissatisfaction on the teacher-centred pedagogy they find themselves using. They pointed out that in practice this disadvantages some learners, especially slow learners because they are not given enough time to understand content, and the speed of the curriculum delivery is usually high. Their

declaration of dissatisfaction indicated that the teachers can embrace other forms of pedagogy if and when they are exposed to such so that they may be able to have their personal voices in handling climate change lessons.

Another finding that emerged as an added reason for teachers to rely more on teacher-centred pedagogy was the history associated with their epistemic and pedagogical beliefs that they held from their past experiences as learners as well. The teachers argued:

“We were taught this way by our teachers and we passed, look where we are now, teachers, we rely on this type of pedagogy because we are its results. It is also orderly in that there is limited amount of noise as teaching is solely in the guidance of the experienced teacher”.

The account of these teachers is supported by du Plessis (2016) study in which some science teachers who used teacher-centred pedagogy reasoned that their previous experiences as learners influenced their present practice habits. Moreover, other scholars, Chai (2010) and Ertmer (2005) resonate with the finding and that of du Plessis. They postulate that teaching experiences of practising teachers might play a major role in the way that teachers choose a specific pedagogy to enact any given curriculum. Therefore, earlier school experiences, together with what potential teachers experienced at tertiary, do have influence on their present practice habits and choices.

Teachers M1, S3, L1 and H4 pointed out that their main intention in class is to deliver the content. These content-centred teachers stated that they waste no time; their duty is to convey content to the learners. The difference between their choice of pedagogy as against the teacher-centred was that the content-centred teachers allowed learners to share content knowledge obtain from social voices. In short, these teachers allowed societal voices to feature all through the learning process. When asked why they do this, the teachers explained that they want the pupils to be aware that climate change content is available everywhere, not only in books. These teachers who were driven by societal voices emphasised that the learners should not be deprived of the content as this helps them pass their examinations.

The difference between the content-centred and learner-/problem-centred pedagogy lies in that the latter allows learners to be more active in the course of the learning process. Unlike the teacher-centred pedagogy, where the teacher occupies the centre during teaching and learning, in learner-centred approaches the learners drive the lessons (Hoadley, 2018). The learner-centred pedagogy advocates for some form of collaboration among learners themselves and

their teacher. This collaboration results in learners achieving meaning-making of content and the presentation of their individual understanding (Chai, 2010; du Plessis, 2016). Learner-centred pedagogy advocates for active learning through guided discovery that focuses on understanding as a replacement for memorisation, together with application of knowledge gained. Learner-centred pedagogy demands that a teacher be aware of personal needs and the needs of the learners.

M3, S2, L2 and H3 stated that they use the learner-centred pedagogy. These teachers in summary argued that:

“We view our duty as teachers as that of being facilitators who should be assisting the learners to construct their own climate change content. These learners are adults; they will be enrolled in tertiary institutions if they do well, so they should be exposed to working on their own instead of being spoon-fed. Our colleagues mention the issue of time, that is not a problem because the learners are able to work on their own, and there is no way we cannot complete the syllabus as we work using timelines”.

The account of the learner-/problem-centred teachers revealed that it was possible to cover the content in the time given for the syllabus even when the learners are the ones who drive the lessons, using the teacher’s personal voice. Pinar (2012) and Freire (1994) observed that learners, if given the right instruction and directions, are capable of working for better results on their own. In geography lessons, van Eeden et al. (2018) points out that some teachers fear allowing learners to engage with problem-/learner-centred activities, whereas learners are capable in engaging in most of the activities, despite teachers believing that they cannot.

The personally driven teachers pointed out that the learners who engage in learner-centred pedagogy have the ability of constructing their own personalised knowledge. They are then equipped to respond better to higher-order questions in their final external examinations. The learner-centred approach demands that a teacher prepare and give necessary directions and instructions to learners. This implies that such a teacher will address the tension between professional and societal voices, offering a personal pedagogy to drive the curriculum to meet needs of learners.

One can argue that the teachers opt for teacher-centred and content-centred pedagogies because of lack of tools.

7.7 Tools

According to du Plessis (2016), teachers have been using various tools to support their learners during teaching and learning of different subjects. Several other scholars, Berkvens et al. (2014), Van Eeden et al. (2018), and Van den Akker (2009) uphold that for a long time in teaching, tools have been playing an important role in enhancing knowledge construction. Moreover, teaching tools are valued for their ability to spark the interest of learners during their learning. Accordingly, teaching tools in this study were divided into three: technical, multimedia, and personalised tools. The technical tools speak of any tangible devices or machines that may well be used to enable the teaching process (Khoza, 2015b; Mpungose & Khoza, 2020; Schwab, 2016; Waghid & Waghid, 2016).

Le Grange (2016) and Chai (2010) bring to our observation that technical tools comprise the modern power-driven tools as well as the older versions which work or are operated by hand. For geography teaching, van Eeden et al. (2018) warn that technical tools are not only computer-associated devices, but include textbooks and black/whiteboards. The most recent types of technical tools common in the 4IR era useful for teaching and learning include laptops, desktop computers, overhead projectors, slide projectors, movie projectors, tape recorders, and cellular phones. Shoba (2018) observes that the use of technical tools requires the application of professional skills, thus they summon professional voices.

A larger percentage of the participants in this study favoured the use of technical tools especially the old-fashioned ones. Findings generated exposed that teachers mostly used the non-electric-powered tools. The most commonly used tools were text books and the chalkboard. Teachers in school L stated:

“Our school is situated in the poor Lubombo district; there is only one computer lab which is used for IT classes not for geography lessons, so we only use the available chalkboard and books as our available tools to aid us during teaching and learning”.

School S shares similar ocational factors with school L. Both are situated in under-resourced rural areas. The teachers shared similar sentiments:

“We only use the textbook as well as chalk board for teaching as our school lack resources to buy us other electrical tools we can use. Even though the schools can buy us the modern technical tools, some of us are not well trained to use it”.

One teacher S2 added an interesting comment on the issue of professional know-how on technical tools:

“Some of us are about to retire, even if the school administration can buy the computers for us, I have no clue on how to use it and, in my age, I don’t have the need of knowing it, I am close to my retirement, I want no stress”.

The explanations of these participants justified that they rely on the old-fashioned technical tools to teach climate change because of lack of resources to purchase computers. Teachers also expressed lack of professional knowledge to use the modern technical tools. One teacher who was close to retirement was even not willing to learn the computer even if the school could provide such. Scholars Mabuza (2018) and Dlamini (2017) concur with this finding. In their studies carried out in Eswatini, they discovered that a majority of teachers are hampered by the lack of resources/ funding in some schools for procuring modern instructional technical tools. Thus, they use the available older versions to drive their lessons. The teachers boasted about having been taught blackboard skills during tertiary studies. They thus believed themselves professionally skilled to use these tools.

The lack of modern technical tools, especially for schools L and S, indicated that the use of multi-media tools was also limited. Some teachers however, during focus-group discussions, indicated that they do sometimes use their own cellular phones to share some societal knowledge, especially from the media to their learners. It was only in schools M and H who are located in an urban setting that the teachers indicated that their school administrators provide opportunities for the use of multi-media platforms for teaching and learning purposes. Teachers in school M indicated that they conducted Google classrooms as well as WhatsApp lessons during lockdowns. The teachers favoured the use of multimedia sources as they made learners to learn in groups. Such allowed them to discuss freely as learners and together with their teachers. Likewise, teachers in school H indicated that they have a departmental technical tool (laptop) that they use during face-to-face lessons to display different forms of multi-media for the learners. Even during lockdowns, the teachers engage their learners through various multi-media platforms.

The reason for their ability to use the multi-media tools was that their schools provide such. Moreover, a majority of the teachers were digital natives; therefore they possessed the required professional knowledge to use multimedia tools. Khoza (2021) notes that digital natives are the type of teachers who are confident with using of multimedia tools. They are interested in, and

enjoy teaching using digitalised information which is displayed on screens. An interesting finding on tools was that both groups of teachers, who relied on technical tools and multimedia resources, do not solely depend only on these tools at all times. The participants pointed out that they use their personal knowledge (conscious and subconscious minds) to access their own desires and the needs of the learners, blending the two kinds of tools to produce their personalised voices.

Mpungose (2020d), together with Khoza (2021), see this action as one that establishes individual or pragmatic uniqueness. Teachers combine the strengths of the technical tools and multimedia resources by applying their ideas, theories, beliefs and pedagogy for the teaching of climate change, producing personalised tools (Biesta, 2015; Biyela & Khoza, 2020; Khoza, 2015a, 2016; 2020, 2021; Mpungose & Khoza, 2020). To all intents and purposes, the personalised tool describes the teacher's actions as use of personal identity to teach climate change. Chai (2010) resonates with the studies cited above and maintains that when teachers blend technical and multimedia tools, they produce lessons that are personal and meet the needs of both the teachers and learners.

Yet, the teachers were not aware of this important tool, although themselves drivers of the curriculum enactment process. New knowledge was gained at this stage of EDR. These participants realised that they could handle the curriculum better if they recognised their value as personalised tools. The teachers when asked further on the lack of the realisation stated that they did not comprehend themselves as important drivers of the curriculum. They always thought they were driven by professional voices. This shows that teachers lacked their personal/pragmatic identity, and Khoza (2021) laments that teachers still lack such. Teachers need to drive the curriculum at a more philosophical level where they understand their natural identity.

7.8 Designation

It has been generally observed that a teacher's designation is significant as it influences the curriculum enactment decisions of a teacher. One can declare that the designation a teacher assumes is influenced by voices that drive the teacher towards assuming and recognising his/her designation. For Berkvens et al. (2014), a teacher is one who is motivating, challenging, inspirational, and interesting to the learners during the curriculum enactment process. A variety of responses was elicited as this theme of designation was interrogated. The ultimate categories

that emerged were that the geography teachers generally assume three distinct designations: instructor, enabler and illustrator, in that order.

Findings indicated that a majority of teachers take the role of instructor when enacting climate change. According to Khoza (2021), Hoadley (2018), and Shoba (2018), a teacher who is an instructor compels learners to master prescribed content. An instructor follows strict laid-down professional principles so as to instruct learners according to the professional mandate laid upon. The teacher who instructs learners drives the lesson, having full control. Shoba (2018) notes that such a tendency makes a teacher authoritative. The teacher commands and imposes instruction and content to learners.

Participants who are instructors posed a number of reasons as contributory factors to their choice of title. M4 said:

“As you might have seen, my learners are too many inside one class. This makes it impossible for me to organise my learners into groups as they may be too noisy and also take a lot of time as learners delay when instructed to form groups. I also find it hard to manage the class myself, how much more when I permit them to work on freely; I would be creating a circus”.

Teacher M’s justification for assuming an instructor role was based on overcrowded classroom, fear of losing time and fear of too much noise that the learners are likely to cause when using learner-centred pedagogy. Van Eeden et al. (2018) concurs on the issue of overcrowded classrooms. One limitation that causes teachers to fail to adopt designations such as facilitators as the classrooms become congested such that learners cannot even make groups. For Marais (2016), the negative effects of overcrowded classrooms have been realised to be extensive for both teachers and learners, such limiting the smooth running of learning experiences. In particular, Ayu (2019) theorises that overcrowded classrooms have space problems. There is inadequate space for the teacher to assume designations other than instructor. The conditions of overcrowded classrooms limit appropriate teacher and learner interactions – this always encourages disorderly behaviour among learners. Khan and Iqbal (2012) observed that, because of the instructional and discipline challenges associated with overcrowded classrooms, effective teaching and learning is not possible. Teacher M chooses to be an instructor while learners remain passive.

Accounts from teachers S1 and H1 were similar. Both stated that they chose to be instructors so as to drive the content for learners to pass their examinations. The main reason was to drive towards high-stakes examinations. Hout, Elliott and Frueh (2012) lament the negative effect of teaching for high-stakes examinations. This forces teachers to rush to complete a given curriculum besides giving learners necessary knowledge of critical content knowledge. Teachers choose to become instructors to select “valuable” chunks of the syllabus with the purpose of making learners excel in their high-stakes examinations. Instructional teachers overlook that any teaching and learning experience should be interesting, inspirational, motivating, and also challenging to learners (Berkvens et al., 2014).

Teachers, M4, H4, L1 and S3 shared similar views on the designation they assume during climate change teaching and learning. These teachers were of the opinion that climate change is a matter of social concern. Learners should be allowed to discuss climate change issues freely using societal content and IK. These teachers were of the view that, as the learners discussed climate issues on their own, they would be able to generate the necessary skills which learners were expected to possess at the close of the year. What was interesting with the societally inclined teachers was that they were not much concerned with examinations. They were not teaching for exams but for the learners to know. Van Eeden et al (2018) complain about teachers who allow learners to use only societal content to discuss climate change. Some sources in society are based on myths which need to be corrected by engaging professional knowledge. A geography teacher should merge societal content with professional knowledge.

As a teacher allows the merging of the instructor and facilitator roles, a unique illustrator positions emerges which permits the teacher to take advantage of both professional and societal content. Teachers S1, S4 and M3 stated that they allow the learners to discuss issues. However, they direct the discussions using researched climate change knowledge. According to these teachers the learners are free during teaching and learning and they are also given necessary content for their examinations. These illustrators stated that the main reason for choosing this designation is that it allows learners to create their own climate-change content being guided by the teacher. These teachers declared that their designation is time consuming, but they claimed it is helpful to learners as it equips them with skills for tertiary learning.

Freire (2012), Dlamini (2018), Makumane (2018), Hoadley (2018) and Shoba (2018) concur that teaching and learning are more meaningful when the teacher assumes the role of illustrator, learners becoming more active during teaching and learning. Pinar (2012) and Young (2009)

observe that an active learner tends to share equal ground with the teacher. Such makes climate change teaching a democratic learning environment which inspires equal participation chances for all learners. Van Eeden et al. (2018) see a class run by an instructor as supporting the constructivist environment which replaces the traditional behaviourism environment. This was characterised by a teacher-dominated class instead of by learners as consumers of the curriculum. It is thus critical for geography teachers to consider the theory of teachers' voices when presenting the curriculum. They would then be able to take advantage of both the professional designation (instructor) and societal title (facilitator) to come up with a more pragmatic title that meets the needs of teachers and learners. Moreover, the instructor designation allows the teacher to have a personal voice in curriculum enactment.

7.9 Setting

The setting describes everywhere that learning takes place. Scholars aver that the setting specifically refers to a milieu fashioned to be appropriate for teaching and learning (Celia & Elize, 2018; Dlamini, 2018; Hoadley, 2018; Khoza, 2013; Mabuza, 2018; Makumane, 2018; Shoba, 2018; Van den Akker et al., 2009). As with other themes in this study, the teaching setting was divided into three categories: inside the four-walled classroom, field trips/educational tours, as well as blended learning. Bernstein (1999) and Khoza (2013) posit that the use of the class-/schoolroom setting is a customary practice that summons professional voices. Teaching and learning take place in a delineated building where lessons are typically face to face.

Field excursions and educational tours denote a teaching milieu that occurs out in the society away from the confines of the classroom. Van Eeden et al. (2018) observes that field trips can be undertaken to any place in the immediate vicinity of the school or where learners can be taken for a day or more to learn in different communities and locations which are relevant to the topic learnt. This shows that the field trip setting is societally driven. Lastly, there is blended learning which pools together the strengths of the classroom setting and that of field trips to create a unique teaching and learning setting that is personally driven. Blended learning is flexible in that learning tends to take place anywhere. In this current study most participants showed that they mostly favour teaching on the classroom and varied reasons were advanced for this stance.

Teachers S1, S3 and S4 had a similar idea on the reasons they prefer the classroom setting for teaching climate change. They said:

“Where else can one teach? The classroom is the ideal place to teach. The learners in the classroom setting sit in a way that they are ready for any learning and the classroom space psychologically prepares them to be in a position to learn. In the classroom disturbances are minimised and learners are easily controlled. Moreover, one is able to lead the lesson well as the sitting arrangement of the learners permits me as a teacher to control lesson and teach”

When I engaged these teachers on why they do not use the other settings, the response was:

“Like you see our school is situated in a rural area, most of the parents struggle to pay school fees, they can’t pay for school trips. Moreover, blended learning expects learners to have cell phones and because of the economic standing of most parents, a majority of the learners lack this important gadget for blended learning”.

Teachers from school L, a school which shares similar locational conditions to school S also were in favour of the classroom setting. Reasons given were similar to those raised by the teachers from school S. However, one teacher from school L pointed out that he does take learners out of the classroom to learn in a place near the school that shows degradation because of climate change. Furthermore, this teacher also indicated that he engages some of his learners through WhatsApp which indicated elements of blended learning. This showed that the use of societal and blended learning settings lies within the teacher’s planning and desire.

Teachers in urban schools M and H indicated that they use all three settings. The classroom setting, however, even amongst them was popular. It was said to be the only setting that allows teaching to be more organised; and teachers make evident progress in the classroom setting. The teachers indicated that they take learners for field trips even in areas near the school. However, because of COVID restrictions in the recent years such has been limited to small-scale trips near the schools. Because of the availability of resources and infrastructure in the urban schools, the teachers indicated that they do blended learning especially when schools are in lockdown. The teachers indicated that, although blended learning helps, they are still not comfortable with it. They said:

“Although we engage in blended learning with our learners, one however feels when the learners come back for face-to-face contact sessions, should go back a bit and cover what was done online”.

Teachers still believe more in a classroom setting than in blended learning. According to Ertmer (2005), teachers’ present practice is always influenced by their previous learning experiences which might influence their choice of the mode that teachers teach. The choice of setting teachers use to teach climate change is influenced by how they were taught. At the time they were learners, blended learning was not common; teachers thus prefer the classroom setting which they know. Chai (2010) concurs with Ertmer (2005) that the choice of setting for enacting curriculum is influenced by previous experiences as learners and even in tertiary institutions. If teachers’ practices have to be changed to suit the ever-changing landscape of curriculum enactment, tertiary institutions should also embrace changes, as what they do affects practice of their students.

Interestingly, at this stage of the study, the EDR was at the reflection and evaluation phase. Bijsterbosch (2018) and Berkevens et al. (2014) maintain this should be a phase in which the best solution to a problem should be carefully chosen. As such, the participating teachers in the focus-group discussion agreed that fieldwork is essential for the teaching of geography; it can be done near the school to reduce costs. This can solve the problem of lack of money which was raised by many teachers as the main cause for failure to have fieldwork. The idea of field trips in the vicinity of schools came as new knowledge. Teachers were made to better understand practice for improvement (Bijsterbosch, 2018). For Taber (2012), Fisher and Binns (2016), fieldwork is one of the teaching settings teachers can make use of in order to develop enriched geographical comprehension on climate change.

Furthermore, at this stage the theory of teachers’ voices was applied. Teachers were able to realise that it was possible for them to engage learners in blended learning, although the issue of lack of the gadgets was a challenge for some teachers. Khoza (2021) declares that the teaching setting that is favoured by the use of portable devices is limited by lack of resources in other societies. However, for those where the devices are available the teachers realised that blended learning permitted pragmatic practices. Another discovery that was made in the course of the focus-group discussions is that some teachers were not fully equipped to handle the online/blended learning milieu.

Dlamini (2020) observed that the switch to online learning brought by COVID-19 lockdowns was instantaneous for the Eswatini education sector. As such, there were no prompt initiatives that were in place to guarantee continuity in teaching and learning through the use of multimedia tools. The Ministry of Education has tried to air lessons over the media (print, radio and television). This media inventiveness meant lessons were driven by societal voices; however, not all learners had access to the media lessons (Dlamini, 2020). Some schools started to utilise blended learning which is driven by personal voices. Khoza (2021) supports the drive that is personal as it allows every teacher to even use personal natural identity. Teachers are at liberty to use any teaching milieu that favours their unique current situations. Blended learning is the suitable milieu as it is supported by personal voices. There is a need, however, for teachers to be empowered to embrace blended learning, applying the theory of teachers' voices which this study puts forward. The theory could be useful in addressing the contestations between the professional and societal voices in curriculum enactment spaces.

7.10 Summary

This chapter used findings from data generated through employing semi-structured interviews. Focus-group discussions were deliberated with the sole intent of establishing why teachers' voices on the teaching of climate change are the way they are, as presented in Chapter Six. Furthermore, this chapter was envisioned to determine whether EDR as the design that guided this study had an impact on practice by bringing in new knowledge. The findings discussed established that to a certain extent EDR was able to make the teachers reflect on their practice. They thus realised that the personal voice was the recommended voice in curriculum enactment as suggested by the theory of teachers' voices. The subsequent chapter is a summary of the whole study; thus, it deliberates on emerging insights on voices of teachers and their implications. Possible contributions of this study to the body of knowledge are presented.

CHAPTER EIGHT

THE SUMMARY OF TEACHERS' VOICES

8.1 Introduction

The principal goal of this study was to explore teachers' voices on the teaching of climate change. The pragmatic paradigm using both qualitative and quantitative approaches guided the study. The educational design research was employed and the reflective activity, artefacts, observations, semi-structured interviews and focus-group discussions were used to generate data. Data was analysed and presented in Chapter Six which responded to the descriptive and operational questions, "what and how". Chapter Seven analysed data responding to the philosophical "why" question.

From Chapters Two, Three and Four, pertinent literature was interrogated to conceptualise and theorise teachers' voices. The literature unveiled two major voices which drive curriculum enactment actions: professional and societal voices. What emerged from the findings is that the third voice, which is the teacher's personal voice, is concealed. I argue that this is the crucial voice desirable for successful curriculum enactment. According to Waghid (2001), the unnoticed personal voice ought to be brought to attention and be embraced as a transformative process summoning democratic practices in teaching and learning spaces. Thus, this chapter presents and theorises on the study's findings through specific propositions.

I argue that these propositions provide possibilities in curriculum spaces for teacher's personal voices to assume supremacy in driving teaching and learning practices and as well as teachers' habits. These propositions have been generated from the study and relevant literature towards finding workable solutions to address the tension between the two giant voices in the curriculum: professional and societal voices. The propositions support that the personal voice addresses the needs of individual teachers who enact the curriculum. These propositions are presented as the act of transforming curriculum spaces from being dominated by two voices which overwhelm teachers whose voices are lacking in the curriculum enactment stage.

The outcome of the study proved that teachers find themselves torn apart between the two giant voices (professional and societal) that summon curriculum enactment (Tezci, Erdener, & Atici, 2016). The situation teachers find themselves in is shown by Figure 8.1.



Figure 8.1: *An illustration of tension in two voices for teachers*

The kind of tension as presented by Fig 8.1 which was theorised deeply in Chapter Four makes teachers confused as they teach. It can be argued that such a tension negatively affects teachers. As such the study suggested a solution to address this tension which led to the birth of the theory of teachers' voices presented and discussed in Chapter Four of this study.

The model clearly indicates some of the new identities and practices that may form when teachers take advantage of the societal and professional voice's strengths to produce unique pragmatic practices that summon personal voices. Through integrating with participants in the study in the phases of EDR, the model has been tested and proved that it could be helpful to produce teachers' personal voices in curriculum spaces. Employing the theory of teachers' voices made the teachers realise the possibility of merging the strengths of both professional and societal voices in order to produce a unique personal voice that meet their needs. Figure 8.2 presents the theory of teachers' voices.

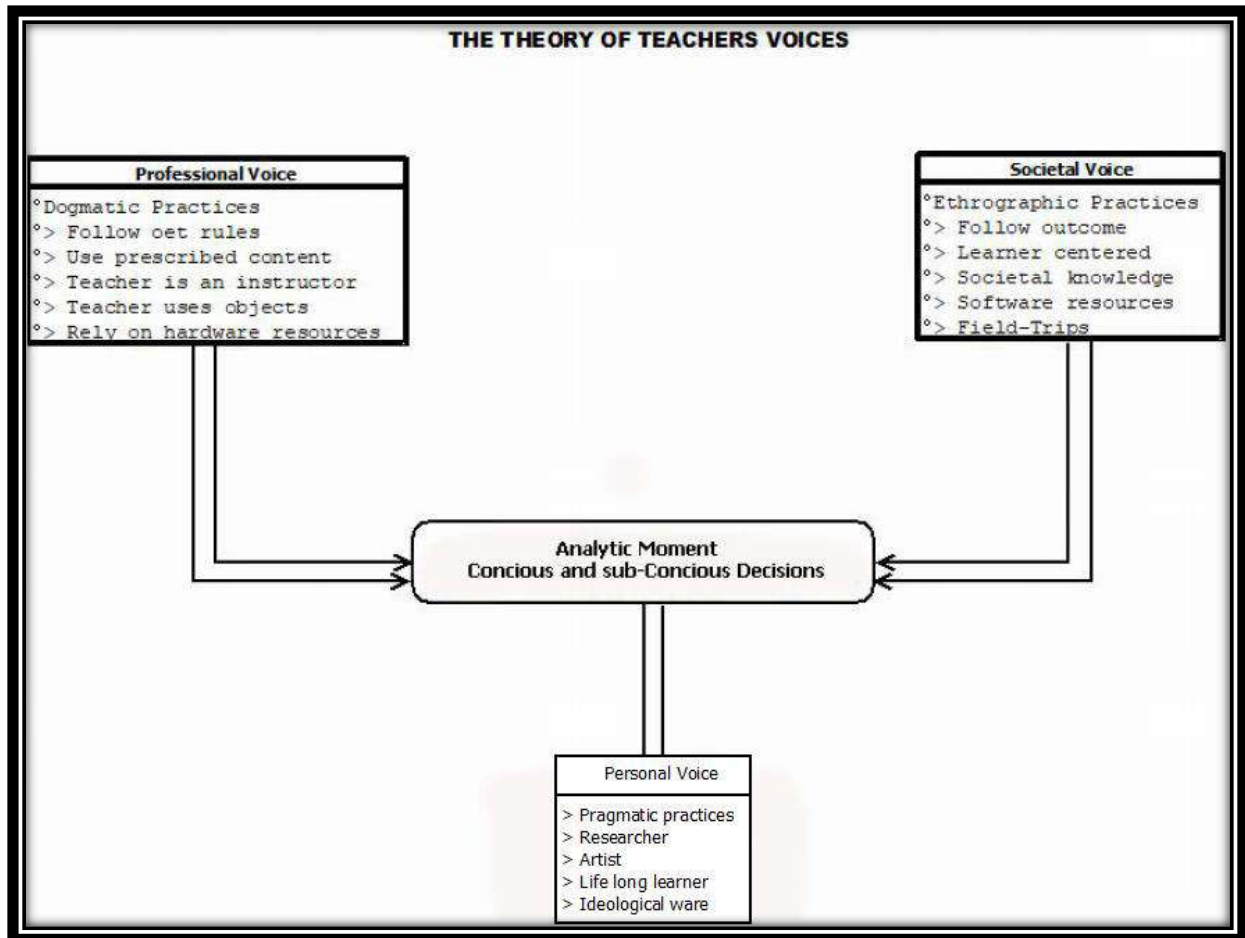


Figure 8.2: *The theory of teachers’ voices*

The theory shows that the curriculum has been mainly driven by two voices. The professional voice, which is discussed at length in Chapter Two, and the societal voice presented in Chapter Three are the two giant voices that compete in curriculum enactment spaces. The study realised that there is a gap. The personal voice is missing which is a neutral voice that can address the tension between the two giant voices and further meet the needs of teachers who are tasked to enact the curriculum. Because of the gap, this study argued for the acceptance of the personal voice which would combine the strengths of both the personal and societal voice to produce unique quality personal teachers’ voices that address teachers’ individual teaching and learning needs.

The individual or personal needs addresses and concentrates more on “who” this individual is who teaches climate change. According to Khoza (2019), there are those individual teachers who are not interested in being driven by the professional voices or societal voices because

they are self-actualised. Such teachers are those who are aware of how to handle the tension and take advantage of the strengths of the two voices. These individuals, instead of teaching climate change, which is what they are supposed to do, seek for justifications, why one does it, and why it is done in a certain way.

I argue that, if teacher's personal voices are welcomed to summon teachers' practices, the need for justifications can be minimised as teachers can function on pragmatic practices. According to Biesta (2010), pragmatism is practical and denotes a philosophical situation whereby a teacher is able to address and solve teething troubles in practice in a practical and realistic manner. With the aid of the theory of teachers' voices, findings and literature, I present five propositions that can aid teachers' personal voices being accommodated to summon teaching and learning. The propositions have been generated from the study as contributions that address the tensions that exist between the professional and societal voices. As such, discoursing on the propositions could assist teachers to recognise how they can neutralise the tension in order to apply personal voices when enacting the curriculum. The propositions are: identity, reflective teaching, teacher's autonomy, and resourcefulness.

The presentation in this chapter resumes with the propositions; a reflection on the main questions that drove the study follows. In summing up the chapter I present its implications and suggestions for further research.

8.2 Propositions that theorise teachers' voices using the theory of teachers' voices to produce personal voices

8.2.1 Proposition one: Identity

Vermunt, Vrikki, Warwick and Mercer (2017) note that, although research on the concept of teacher identity is on the rise, the concept in educational circles still lacks a common and clear definition. This points towards identity being a complex notion. However, in generic terms, identity refers to a set of specific unique qualities, beliefs, practices and or habits that make an individual person distinctive from others. Identity also brings up a particular character or condition that distinguishes an individual from others. Identity defines who an individual is including the way the individual perceives the self and the way the world views such. Identity defines who an individual is.

Biesta (2010) notes that an individual's identity is helpful in explaining actions. The identity of climate change teachers could help to elucidate their practice decisions and actions, which was the main focus of this study. Beauchamp and Thomas (2009) observe that while literature on curriculum enactment accentuates the significance of identity for teachers, understanding identity and its related issues can be a thought-provoking endeavour. I therefore, purposely linked teacher's identity in this study to the actions of the teachers in practice. Khoza (2021) observed that exploring teacher identities in this Fourth Industrial Revolution (4IR) is essential.

In this study, I realised during data generation that some of the teacher's responses on the reflective activity as well the artefacts inquiry that there had challenges with their identities. Most participants in the study, M1, M4, S1, S3, L1.L3, H1, H2 and H4 demonstrated that they were not aware of their identities in terms of the selection of teaching tools, choosing suitable learning spaces, selecting a form of assessment that met their teaching needs. These participants were seen doubting in their identity in as far as their actions were concerned. They chose to use certain tools for teaching and learning as they were instructed by either the personal or societal voice: the teachers did not understand their identity. This made them to fail to affect innovative ways of addressing their individual needs in practice. However, Khoza (2021) and Mpungose (2020c) posit that through taking advantage of the strengths of both societal and professional voices, teachers can develop a strengthened identity to address their personal and practice needs.

Participants, L4 and M4 presented a high level of identity. They showed that they were self-actualised as they presented unique characteristics of being problem solvers and being objective. In the situation where they had to abide to the professional voice demands, they decided to merge it with societal voice to present unique personal voices. For example, where there were few textbooks in school L, teacher L4 instructed learners to form groups to share the available teaching resources. This action according to Maslow (1970) presented a self-actualised teacher. , self-actualisation describes the identity of individuals, that is to say, who they actually are and why they act in particular ways. Khoza (2018, 2019) urges that teachers should be assisted towards reaching a stage where they display self-actualisation, where their identity is not removed in curriculum implementation spaces. I argue that if teachers can take

advantage of what is provided and available from the professional or societal voices, their identity will be witnessed and start executing their task pragmatically to meet their needs.

Although Allen (2016) observes that the identity of teachers can be influenced by contextual factors operating outside of the teachers control such as conditions in the workplace, curriculum policies, cultural differences, teaching resources, and many other factors, I argue that individual teachers should negotiate using the strengths of the giant voices to secure their identity. Good examples in this study are those of participants who lacked school computers to post work to their learners. The teachers opted to use their personal gadgets which served the purpose. This showed that teachers embracing the personal voice in curriculum enactment must be aware of their identities and always choose to act on what works to meet their individual needs instead of being overcome by either societal or professional identities.

8.2.2 Proposition two: Reflective teaching

For teachers to have their voice realised in curriculum enactment spaces, this study found it essential that teachers practice reflection. According to Mabuza (2018) reflection involves an action where teachers transform their subconscious mind frames by critically inspecting their present practices by learning from past experiences to inform present and future actions. The notion of reflecting is traced back from Dewey (1933)'s study. As an American educator and a philosopher, Dewey theorised that reflecting entails the interrogation of voices from the professional and societal sources in order to make specific decisions that would make the teacher assume a personal voice.

Other studies, Mpungose and Khoza (2021), Khoza (2019), Maxwell (2013) and Schon (2017) concur with the conception of reflection, which I also embrace in this study. The studies cited above have extended the discussions on reflections to state that there is reflection that occurs on the professional voice spaces (reflecting-on-action), reflection on societal voices spaces (reflecting-in-action) and when one merges these two the final product is personal voice reflection (reflecting-for-action). Consequently, I argue that reflecting is one of the major practices that teachers need to engage in to allow their personal voice to drive their actions and choices for teaching and learning.

Reflection-on-action in the study is evident as participants demonstrated how they rely on the professional voice, guided by objectives as they taught climate change, teaching taking place inside the confines of the classroom, relying on prescribed textbooks, as well as them assuming the instructor role as they taught. These trends were manifest in participants M4, S1, L3 and H1, respectively. Moreover, participants H4, L1, S3 and M1 displayed reflection-in-action as they were driven by the societal voices to embrace everyday knowledge, encouraging peer assessment and conducting lessons out of the four walled classrooms.

I argue as did Khoza (2016), Mpungose and Khoza (2021) that teachers should embrace reflection-for-action which suggests that teachers should draw from the strengths of reflecting-on-action and reflecting-in-action so as to address their unique individual teaching needs. Participants, M2, S4, L2 and H3 displayed the notion of reflection-for-action. These teachers on different scenarios, reflected both on-action and in-action to enhance their action. According to John (2009), reflecting-for-action is advantageous to a teacher as it allows a combination of societal and professional voices to understand, address and change an otherwise problematic situation in practice. This was evident in the study as some participants sought their professional voice (textbook knowledge) and combined it with societal knowledge to provide personalised content which was appropriate for the learners they were teaching then. Therefore, I argue that reflection-for-action has to be done for everyday practice.

Moreover, Schön (2017) sees reflection-for-action as vital in the sense that it empowers teachers to sort challenges that constantly rise during teaching and learning. I argue that reflection-for-action is the best way to address the challenges of the tension that exist between the professional and societal voices because teachers can critique their actions in practice. Reflection-for-action also promotes creativity amongst teachers which implies that the teacher who drives the curriculum with the personal voice will be creative in practice, reducing problems and helping learners to enjoy geography lessons (Candy, 2019). A teacher who reflects-for-action is one who has autonomy in driving the curriculum, which is addressed next.

8.2.3 Teachers' autonomy

Autonomy has to do with freedom from any external voice that controls and influences the teacher in practice. In this study autonomy further infers to freedom in teachers' actions, habits and thoughts. The autonomous teacher is one who acts independently or separately from others.

As the ultimate aim of developing an intended curriculum is to have it enacted the way it was planned, it is apparent that teachers who are the key players in curriculum enactment must have their voice embraced which calls for teachers to have personal self-directed freedom to enact the curriculum. This self-directed freedom in this study has been labelled autonomy.

By gaining autonomy I do not imply that teachers will be at liberty to do as they wish, but I argue that teachers should gain self-direction that is accountable to relevant authorities in the school and national level. The main point of argument is that teachers should be free from control by other voices that erode their autonomy as enactors of curricula. By teacher's autonomy in this context, I refer to a situation whereby the teacher is free from control by other voices (professional or societal) regarding pedagogy-related decisions and general choices made for effectual teaching to take place.

According to Haapaniemi, Venäläinen, Malin and Palojoki (2021) the teacher's autonomy is a complex phenomenon. It is intricate in the sense that it touches on a number of aspects, such as psychological, philosophical, and sociological facets. But here, I have used autonomy as a concept that manifests in the way a teacher enacts the curriculum. The findings uncovered that teachers are exposed to pressure from either professional or societal voices, which restricts their freedom to drive the curriculum in ways that meet their personal needs and also the needs of the learners in respective schools. Waghid (2019) observes that since teachers are professionals, they should be given liberty to think for themselves how best to handle the curriculum. The personal voice that caters for the individual needs of teachers would then be the one that assumes supremacy in curriculum enactment decisions.

Manifestly, by giving teachers the autonomy they deserve, they would improve in their practice (Lai, 2010). Likewise, a study by Nxumalo (2016) in Eswatini discovered that the tendency of coercing teachers with other voices instead of giving them autonomy leads to a situation where curriculum outcomes are usually not met. It is sad to note that in most cases in curriculum enactment, teachers struggle with having to deal with tensions of voices that are imposed on them which results in negative effects on the enactment of a curriculum. According to Dikilitas and Mumford (2019), when teachers gain autonomy in their practice, they automatically develop intrinsic motivation and also gain agency, both essential elements for the 21st century teacher. Autonomy addresses the individual needs of teachers and allows each teacher to construct own unique personalised meaning for the benefit of learners.

Most participants in the study showed that they lacked understanding of the voices that drive the curriculum, which indicates a lack of autonomy. Waghid (2019) observes that teachers as professionals in the field should frequently analyse their practice habits to gauge whether they understand and have autonomy in what they do. The teachers would reflect-for action in order to come up with possible solutions that would address any difficulties in curriculum enactment. Autonomy of teachers is presented by Pinar (2012)'s currere, Apple (2004) and Young (2009) who argue against teachers being bound by other voices in practice. One example of practice which a number of participants raised was the issue of high-stakes examinations. In agreement with this, Hoadley (2018) grants that teachers now are more concerned with performance scores than producing a kind of learner that fits into the society. Teachers' autonomy in teaching and learning spaces has been captured.

A majority of participants lamented that there is pressure from professional voices to produce 'good' results for learners. Haapaniemi et al. (2021), however, posit that there is a glut of evidence and facts in the contemporary 21 st century world that expects teachers to present their lessons in a way that learners are challenged to think critically in order to make informed decisions that they can defend. In order to gain such abilities, learners require analytical skilled teachers that would employ their personal voice (autonomy) in order to integrate theories, aptitudes and knowledge from the professional and societal voices to equip learners. This would produce integrative thinkers who would possess specific competences necessary for their survival and development in the world we living. I argue that if teachers can gain autonomy, they would recognise their voice and their practice will be guided by being resourceful which would bring a world view of individual teachers driven by personal voices.

8.2.4 Resourcefulness

In this study, when participants came across challenges on the teaching climate change, they began to be resourceful. I describe a resourceful teacher as one who has the ability speedily to find ways to overcome any challenge/obstacle/difficulty that affects the teaching of climate change. A resourceful teacher is able to produce meaningful learning for learners. It is essential for teachers to be resourceful as teachers can reflect-for-action while in practice. According to Allen (2016), resourceful teachers possess characteristics that suggest a teacher who drives the curriculum summoned by a personal voice.

A resourceful teacher is one who is open-minded and passionate about breaking boundaries (Allen, 2016). Such a teacher is tolerant and flexible in managing learners in such a way that their needs and the needs of the teacher are met. One teacher in this study, L4 teaching in a rural under-resourced school stated that he uses his personal cellular phone to reach learners. He did not receive any form of financial help from the school. This passionate open-minded teacher opted to be resourceful and thought of any possible means of reaching learners, thus using his personal device. Resourceful teachers are self-assured. Personal-voice-driven teachers are capable of handling and sorting any challenge met in the practice.

Teachers in this study who had challenges brought by professional voices (for example lack of textbooks) or from the societal voice (lack of money for field excursions) resorted to engaging their personal voices as resourceful teachers either to organise personal researched context and resorting to field trips near the school that did not require any payment from the learners. Teachers can be resourceful and proactive to limit challenges that can affect the teaching and learning of climate change. I argue that the notion of teacher's resourcefulness gives teachers a voice in curriculum spaces. It allows the teacher to be creative and organise teaching tools that are available in the context where the school is located.

Pearman, Bowles and Polka (2021) postulate that resourceful teachers tend to be a relational agency, which describes the ability to work with others in responding to a given task at hand. Teacher S3 and H1 indicated that they would invite their colleagues to assist in some sections of climate change teaching on which they lacked clear understanding. This portrays a situation in which resourceful teachers respond to the needs of learners and are not subjected to pressure by either the professional or societal voices. Hence, for a teacher to be resourceful, I claim that the teacher should be neutral in addressing the demands of both the professional and societal voice.

The above propositions are all intertwined: identity, a reflective teacher, an autonomous teacher, and a resourceful teacher denotes pragmatic practices which a teacher displays when approaching curriculum enactment with a personal voice. These propositions suggest that a teacher would be a researcher, using ideological-ware, and an artist when approaching the teaching of climate change driven by a personal voice. This brings me to the heading of the study, "Voices of teachers on the teaching of climate change".

8.3 Addressing the title: Voices of teachers on the teaching of climate change

This study was conducted to explore geography teachers' voices on the teaching of climate change. To address the needs of the study, I framed three key research questions;

1. What are the voices of teachers on the teaching of climate change? (descriptive question)
2. How do the teachers' voices influence the teaching of climate change? (an operational question)
3. Why are the voices of teachers the way they are on the teaching of climate change? (theoretical/philosophical question)

In answer to this critical research questions, I conducted this pragmatic study and employed five data-generation methods (reflective activity, artefacts, semi-structured interviews, observations, and focus-group discussions). The entire methodology is discussed in detail in Chapter Five. A major gap was identified as literature was engaged to scrutinise other scholar's findings on voices of teachers in curriculum spaces (Chapters Two and Three). The recognised gap was that curriculum enactment is driven and dominated by two major voices: professional and societal voices, neglecting personal voices of the teachers who are tasked with enacting the curriculum.

8.3.1 What are the voices of teachers on the teaching of climate change? (descriptive question)

This critical research question was answered in Chapter Six by presenting and analysing data from participants who reflected on themes and categories presented in this study. The data generated from the reflective activity and artefacts inquiry uncovered that the teaching of climate change is summoned mainly by two voices, professional and societal voices. According to Berstein (1999), these two voices are driven by the vertical and horizontal curricula, respectively. Participants in this study showed that they were driven by professional voices which summon the performance curriculum. This was evident from the data generated which indicated that a majority of participants were reliant on school content knowledge that fulfils specific objectives. The teacher assumes the instructor position who relies more on technical

tools and summative assessment in enacting the curriculum (Dlamini, 2018; Khoza, 2015c, 2016b, 2021; Mabuza, 2018; Mpungose & Khoza, 2021; Shoba, 2018).

Moreover, to indicate tension in the voices, some of the participants indicated inclination on societal voices. The societal voice summons the horizontal curriculum – teachers use indigenous knowledge which accompanies the use of multimedia tools. The teacher assumes the position of a facilitator who relies on assessment as learning during teaching and learning of climate change (Celia & Elize, 2014; Hoadley, 2018; Stenhouse, 1975). The data from participants gave a vivid picture that the geography teachers' actions are overwhelmed by these two giant voices that drive the teaching of climate change. As a result, the teachers feel the strain of the contestation between these two giants. The teachers become disempowered as they are torn between heeding either societal or professional voices, and in the process their personal voices are neglected.

A few participants unknowingly indicated to be driving the curriculum with personal voices. These participants designated that they would take advantage of the strengths of both professional and societal voices to produce their unique personal voices. These participants however, were not aware of the strengths of using their personal voices; instead they considered their action as one that resulted from improvising.

8.3.2 How do teachers' voices influence the teaching of climate change? (operational question)

This critical question was addressed in Chapter Six and utilised data generated from observations where participants witnessed how their practice is influenced by voices. Data generated revealed that teachers' actions were mostly influenced by professional and societal voices. This was evident during the observations as teachers assumed the positions of instructors or facilitators. For content used for teaching, most participants depended on prescribed books and other highlighted material, depending on the prescribed sources. They preferred indigenous or everyday knowledge. These are some examples from the data-generation exercise which proved that the participants were overwhelmed by the two giant voices (Berstein, 1999; Khoza, 2019).

The observations showed that the professionally driven teachers drove their lessons using professional knowledge, inside their classrooms, using objectives to guide their teaching. They

mainly took centre stage as instructors that grilled learners for high-stakes examination. However, some participants showed a societally driven practice as they drove lessons to achieve outcomes through facilitating in their teaching actions. However, it was evident that teacher's actions were disordered in the sense that they were torn between professional and societal voices.

In addition, a few participants indicated that they were able to draw strength from both professional and societal voices to assume their personal voices in practice. This shows that personal voices (philosophical voices) were afforded very little attention in the actions of the participants. This study argues that combining the professional and societal voices would help to address teacher's personal needs in practice; and further see them being able to develop self-identity. This study discovered that teachers were either driven by professional or societal voices. The study revealed that a combination of the strong points of both voices would aid in addressing teacher's individual needs; and further develop self-identity. In this way, teachers can assume a voice in curriculum enactment that would be instrumental in enacting curriculum free from any tension. This would be an advantage for both schools and individual teachers.

8.3.3 Why are the voices of teachers the way they are on the teaching of climate change? (theoretical/philosophical question)

This was the third research question – the philosophical/theoretical question. This critical research question was answered by empirical findings that have been presented in Chapter Seven. Semi-structured interviews and focus-group discussions were employed to generate responses from participants to address this question. Findings revealed that teachers' voices were motivated mainly by both professional and societal voices. Teachers attested to being summoned by objectives and the use of prescribed school content that prepares their learners for summative examinations. This indicated a drive by professional voices. As such, the professional-voice-driven teachers measured their performance by completing the syllabus. According to the professional voices' point of view, this gives learners a better chance of passing. Some pointed out that they were driven by outcomes; and they assume the facilitator's role during teaching and learning, which indicates a drive by societal voices.

The findings revealed that the drive by participants' personal voices was limited. According to Khoza (2018), a limited drive by personal voices is lamentable. Teachers have to learn firstly to address the 'who' and 'why' questions when enacting any curriculum. Reflecting on the

“who and why” helps teachers to recognise and understand their personal identities in the teaching and learning space. Khoza and Mpungose (2020) hold that if teachers understand their identity first, they are better placed to enact any curriculum and to address any tension that may negatively impact their practice.

Furthermore, findings uncovered that there was need to neutralise the professional and societal voices’ tension in order to meet the personal needs of teachers. Such would develop self-identity, which would drive the teachers towards self-actualization. As discussed in the propositions in this chapter, self-actualisation is attained when one moves from personal needs, which are the basis of who they are (self-identity) towards being able to reach their full potential. If teachers operate at their full potential or have full autonomy, they are addressing work-related challenges by being resourceful.

This study proposed the theory of teachers’ voices which places the personal voice of teachers at the centre, by taking advantage of the strengths of the professional and societal voices. As discussed in the propositions, the teacher’s identity is key. The teacher reflects for practice which allows the teacher to be autonomous and resourceful in practice. Driving the curriculum with personal voices assumes that teachers will be able to address and satisfy their needs. I conclude that teachers assume their voices in curriculum enactment through combining the professional and societal voices to address their personal needs. It can be argued that teachers may lack a voice in curriculum enactment if they depend only on the professional or societal voices. Individual personal needs could still remain unmet.

I maintain that should personal voices be welcomed in curriculum spaces, teachers would individually practice naturally, which would cater for their needs and those of their learners. The important idea that this study suggests is that teachers have a duty to summon teaching and learning with their personal voices. This will occur when teachers understand their identity. According to Khoza (2021), identities are generated when conscious considerations that probe subconscious judgements drive teachers towards understanding their personal needs. It is, therefore, imperative that teachers as individuals understand their identities so that they drive the curriculum with their unique personal voices.

8.4 Implications and Contributions of the Study

8.4.1 Study implications matching propositions

Based on discoveries of this study presented in Chapters Six, Seven, and Eight above, four recommendations have been advanced to inform teachers' voices in curriculum enactment. These are associated with the propositions presented in Section 8.2 above. The recommendations raised here can inform academics, education stakeholders, curriculum developers, teachers, and the wider research community, on how to handle voices in curriculum enactment spaces so that teachers can drive the curriculum with their voices.

In connection with the outcomes of this study, firstly, it was established that generally, teachers are summoned by either the professional or societal voices in curriculum enactment; there was little consideration of personal voices of individual teachers. This resulted in the clash or tension that teachers experience as they enact the curriculum, both societal and professional voices always in tension (Berstein, 1999; Mabuza & Khoza, 2021). This pressure which teachers find themselves under, does not consider their personal voices. It was found that teachers are not aware how they can take advantage of the societal and professional voices' strengths to create a personal voice.

Therefore, it may be necessary for policymakers and subject inspectors or even pre-service teacher training institutions to educate and introduce teachers to the understanding of driving the curriculum with personal voices. In-service training programmes may also be conducted so that teachers can reflect on how to be resourceful and the importance of the personal voice for curriculum enactment to address the tension between professional and societal voices. Such reflections and training may further help teachers to create a neutral space by means of the personal voices. Such may be helpful in reducing challenges teachers face as a result of demands of professional and societal voices.

Secondly, the study findings also showed that most teachers lack teaching and learning tools which affects their efficient curriculum enactment decisions. This led to some teachers leaving some learners unattended to, especially during lockdowns where teachers had to use blended learning. The study recommends that school administrators support geography teachers by providing them with the necessary tools for effective improved teaching actions. Lack of tools such as computers affects teacher's decisions. Moreover, school administrators or departmental heads could source certain important tools from neighbouring schools so that teachers who enact the curriculum do not complain of lack of necessary tools.

Thirdly, related to the issue of tools is the lack of computer or software competency by teachers. The world is heading fast towards the 4IR. This means that most teaching and activities are being digitalised (Schwab, 2017; Sokhulu, 2020). To align with this shift, some of the schools in which participants in this study were teaching have computer lessons for all learners; while other schools reportedly do not have enough computers for the teachers and learners. Discoveries in this study showed that some teachers do not know how to use a simple computer, let alone Zoom and other software teaching and learning platforms. The advent of COVID-19 has moved the world into a dimension where teaching and learning is becoming more digital, therefore online teaching is the way forward (Khoza, 2021a & 2021b; Sokhulu, 2020).

According to Khoza (2020), teaching online leads to knowledge-building for teachers. Knowledge-building is described as a process that assists teachers and learners to create unique particular personal habits and values that are used to recognise their individual personalities (Khoza, 2020, Khoza & Mpungose, 2021, 2022). This study consequently recommends that teachers who are sceptical about the use of computers should urgently consider training. Ignorance *vis-à-vis* computers might threaten their practice in the near future. The Ministry of Education and school administrators may also come in handy in making sure that teachers gain computer literacy.

Fourthly, a number of participants in the study specified their ignorance on how to handle what is said to be a “long” geography syllabus. The teachers mentioned that they opted for the instructor roles when teaching because they are able to pace their lessons well. The other roles like facilitator and enabler were criticised as being time-consuming. The study recommends that subject inspectors organise cluster workshops at which teachers in schools close to one another can have workshops on handling the long syllabus in a personal-voice manner. Teachers can also share how best to address their needs and those of learners without wasting time. This points towards being resourceful.

8.4.2 Implications for future research

This study explored teachers’ voices on the teaching of climate change. Informed by findings made in it, I suggest that further research be carried out in the following areas: studies that explore and undertake research for continuous improvement and connection between teacher

preparation in tertiary institutions and what is offered in schools, so that smooth transition between theory and actual practice is guaranteed. This should be carried out mostly in times of curriculum change so that teachers as curriculum enactors are aware of how their voices are critical in practice. Moreover, research should always be undertaken to examine whether teachers who are curriculum enactors are ready to enact any given curriculum. Such studies would then assist in showing gaps in practice that may be addressed by relevant sectors in the education fraternity. Lastly, studies can be undertaken based on analysing the geography curriculum, and continually suggesting ways that enactment can be improved, geography being a dynamic subject.

8.5 Conclusion

This study endeavoured to interrogate and further seek understanding of voices of teachers on climate change teaching, a topic in the EGCSE geography curriculum. The study's phenomenon was "voices" and the literature that was scrutinised offered two giant voices that dominate and drive the curriculum: professional and societal voices. Various scholars demonstrated that there is tension between these two major voices in curriculum spaces (Berstein, 2006; Celia & Elize, 2014; Hoadley & Jansen, 2018; Khoza, 2016c; Young, 2009). Consequently, the battle between the two voices in the curriculum-enactment stage demands unbiased ground on which the teacher can operate. The neutral ground gives the teacher a voice; the teacher combines the strengths of both voices to work together to enact the curriculum efficiently. The study then offered the theory of teachers' voices which attempts to address the tension between the giant voices by allowing the teacher to have a personal voice.

Through the use of EDR, the teachers in this study were able to comprehend how their personal voices can be presented in the curriculum enactment spaces. The pragmatic paradigm used in this study supports that individual teachers be empowered to enact any curriculum in their own personal voices. Data generated by reflective activities, observations, artefacts, semi-structured interviews, and focus-group discussions revealed that personal teachers' voices were absent from the curriculum. This was unfortunate as teachers are the critical players in the enacted curriculum field. The study endorses the vital need for personal voices in the teaching and learning ground which meets the needs of teachers and learners.

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Appendix A – Letter of Request to Ministry of Education and Training

Dlamini B.B (Mr)

P.O.BOX 7159

Manzini

The Director

Eswatini Ministry of Education and Training

P.O.BOX 39

Mbabane

Dear Sir/ Madam

Re: Application for Permission to Conduct Research at selected schools in Eswatini

I am Dlamini Boy Bongani a student studying for PhD in geography Curriculum Studies at the University of KwaZulu-Natal, Edgewood campus, Pinetown, South Africa. I am conducting a study titled “Voices of Eswatini General Certificate of Education (EGCSE) Geography Teachers in Teaching Climate Change”.

As an educator in Eswatini, I have observed that geography teachers are challenged to enact the topic on climate change and literature has shown that teaching climate change is problematic for many teachers in the world. As they teach this relatively new topic that most

of them did not even learn in school or in tertiary, their voices which emanate from their experiences have not been heard in Eswatini. This study seeks to explore the geography teachers' voices with the aim of improving the teaching of a vital topic climate change.

I intend to carry out a case study research of geography teachers at each of the four schools as indicated above from each region of the country. The schools are located in rural, semi-rural and urban areas for a purpose. I therefore, would like to kindly request four participating teachers in the geography department in each of the schools who will be teaching EGCSE geography by the time of data gathering. Please note the following:

- The school and teachers' confidentiality is guaranteed;
- The interview and observation may last for about 1 hour;
- Any information given by the teachers cannot be used against the school, and the generated data will **ONLY** be used for purposes of this research;
- There will be no limit on any benefit that the school and teachers may receive as part of participation in this research project;
- Data will be stored in secure storage and destroyed after 5 years;
- Teachers have a choice to participate, not participate or stop participating in the research. The school and the teachers will not be penalised for taking such an action;
- The school and teachers are free to withdraw from the research at any time without any negative or undesirable consequences;
- Real names of the schools and teachers will not be used, but symbols such as M, L, H, and S will be used to represent teachers' names;
- The School and teachers' involvement is purely for academic purposes only, and there are no financial benefits involved.

I can be contacted at:

Cell: +268 76087383 /79087383

Email: bbdlamini7608@gmail.com

My supervisors;

Prof. Simon Bheki Khoza who is located at the School of Education, Edgewood campus of the University of KwaZulu-Natal.

Contact details: email: khozas@ukzn.ac.za Phone number: 0312607595.

Dr Shoba Makhosazane who is located at the School of Education, Edgewood campus of the University of KwaZulu-Natal.

Contact details: email: shobam@ukzn.ac.za Phone number: +27312603688

You may also wish to contact the Research Office through:

Ximba Phumelele

HSSREC Research Office,

Tel: 031 260 3587 E-mail: ximbap@ukzn.ac.za

Appendix B– Letter of request to principals

Curriculum Studies, School of Education
College of Humanities,
University of KwaZulu-Natal,
Edgewood Campus

Dear Sir/Madam

Re; Request to conduct a research

My name is Dlamini Boy Bongani. I am a Curriculum PhD candidate studying at the University of KwaZulu-Natal, Edgewood campus, Pine Town, South Africa.

I am interested in exploring Voices of SGCSE geography teachers teaching climate change and have identified your school to be one where I would carry out my research. Your school has been randomly chosen. I have observed that climate change teaching is challenging to teachers whereas it is very crucial topic.

I would like to apologise in advance for any inconvenience this study might cause. Hopefully the research will not disturb the smooth running of the school.

My plan is to interview four teachers from the geography department in your school who will be teaching SGCSE geography classes when the data is generated .I would like to assure you that information gathered will be treated with utmost confidentiality. I am bound by ethical standards of conducting research not to reveal any information gathered. Furthermore the dignity, privacy and interest of the participants will be respected.

The following items will be given to the teachers to read;

- 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, observation 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;
- There will be no limit on any benefit that the participants may receive as part of their participation in this research project;
- 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 penalised for taking such an action;
- The participants are free to withdraw from the research at any time without any negative or undesirable consequences to themselves;
- Real names of the participants will not be used, but symbols such as A, B, C and D will be used to represent participants' names;
- Your involvement is purely for academic purposes only, and there are no financial benefits involved;
- If you are willing to be interviewed, please indicate (by ticking as applicable) whether or not you are willing to allow the interview to be recorded by the following equipment.

	willing	Not willing
Audio equipment		

Photographic equipment		
Video equipment		

I can be contacted at:

Email: bbdlamini7608@gmail.com

Cell: +268 76087383/ 79087383.

My supervisors;

Prof. SB Khoza who is located at the School of Education, Edgewood campus of the University of KwaZulu-Natal.

Contact details: email: khozas@ukzn.ac.za Phone number: 0312607595.

Dr Shoba Makhosazane who is located at the School of Education, Edgewood campus of the University of KwaZulu-Natal.

Contact details: email: shobam@ukzn.ac.za Phone number: +27312603688

You may also contact the Research Office through:

Ximba Phumelele

HSSREC Research Office,

Tel: 031 260 3587 E-mail: ximbap@ukzn.ac.za

Thank you for your contribution to this research.

Appendix C – Letter of participants

Curriculum Studies, School of Education,
College of Humanities,
University of KwaZulu-Natal,
Edgewood Campus,

Dear Participant

INFORMED CONSENT LETTER

I am Dlamini Boy Bongani a student studying for PhD in Curriculum Studies at the University of KwaZulu-Natal, Edgewood campus, Pinetown, South Africa. I am conducting a study “Voices of Eswatini General Certificate of Education (EGCSE) Geography Teachers on Teaching Climate Change”.

I have observed that geography teachers are challenged by teaching a controversial topic such as climate change in the EGCSE syllabus and no study has been undertaken to hear their voice, thus this study seeks to explore their voices which may improve practice.

Therefore, to gather the information, I am interested in asking you some questions and also do classroom observation.

Please note that:

- 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 and observation 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;
- There will be no limit on any benefit that the participants may receive as part of their participation in this research project;
- 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;
- The participants are free to withdraw from the research at any time without any negative or undesirable consequences to themselves;
- Real names of the participants will not be used, but symbols such as A, B, C, and D will be used to represent participants' names;
- Your involvement is purely for academic purposes only, and there are no financial benefits involved;
- If you are willing to be interviewed, please indicate (by ticking as applicable) whether or not you are willing to allow the interview to be recorded by the following equipment.

	willing	Not willing
Audio equipment		
Photographic equipment		
Video equipment		

I can be contacted at:

Email: bbdlamini7608@gmail.com

Cell: +268 76087383/ 79087383.

My supervisors;

Prof. SB Khoza who is located at the School of Education, Edgewood campus of the University of KwaZulu-Natal.

Contact details: email: khozas@ukzn.ac.za Phone number: 0312607595.

Dr Shoba Makhosazane who is located at the School of Education, Edgewood campus of the University of KwaZulu-Natal.

Contact details: email: shobam@ukzn.ac.za Phone number: +27312603688

You may also contact the Research Office through:

Ximba Phumelele

HSSREC Research Office,

Tel: 031 260 3587 E-mail: ximbap@ukzn.ac.za

Thank you for your contribution to this research.

DECLARATION

I..... (Full names of the participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participate in the research project.

I understand that I am at liberty to withdraw from the project at any time, should they so desire.

Signature of participant

Date

Appendix D – Ethical Clearance Certificate

27 August 2020

Mr Boy Bongani Dlamini (214583322)
School Of Education
Edgewood Campus

Dear Mr Dlamini,

Protocol reference number: HSSREC/D0001756/2020 :

Project title: Voices of Eswatini General Certificate of Secondary Education Geography Teachers in Teaching Climate Change

Degree: PhD

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 14 August 2020 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) 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.

This approval is valid until 27 August 2021.

To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 – 3 months before the expiry date. A close-out report to be submitted when study is finished.

All research conducted during the COVID-19 period must adhere to the national and UKZN guidelines.

HSSREC is registered with the South African National Research Ethics Council (REC-040414-040).

Yours sincerely,



Professor Dipane Hlalele (Chair)

/dd

Humanities & Social Sciences Research Ethics Committee
UKZN Research Ethics Office Westville Campus, Govan Mbeki Building
Postal Address: Private Bag X54001, Durban 4000
Tel: +27 31 260 8350 / 4857 / 3587
Website: <http://research.ukzn.ac.za/research-ethics/>

Heading Campuses:  Edgewood  Newbold College  Medical School  Pietermaritzburg  Westville

INSPIRING GREATNESS

Appendix E- Turnitin Report

Photos - Turnitin Report.png

Feedback Studio - Google Chrome

ev.turnitin.com/app/carta/en_us/?lang=en_ssd@student_user=1&ip=1695075741&u=1021117796a=

feedback studio Bongani Dlamini Thesis

curriculum is a complicated conversation, and indeed it is as it is driven by voices. In the course of my study, I was also captivated by discovering that teachers can understand their voice in curriculum spaces through for example applying curriculum theories such as currere.

Moreover, I learnt that teachers need to decolonise their reflection about curriculum and practice. I pondered how Eswatini's geography curriculum seemed colonised and I wished teachers would be liberated to enjoy practice. I was influenced by curriculum scholar such as Houldley, Pinar and Young. Fundamentally, the professional understanding of the curriculum and research made me enjoy my master's study such that I got interested to study on the voices of teachers on curriculum spaces and that is how this PhD study came about.

In conducting this study, I sought to find out and gain more insight on the interplay of the two giant voices that drive the curriculum: professional and societal voices. In essence, I wanted to explore how and why these voices drive teaching and learning and specifically find out how the tension can be addressed by encouraging that the personal voices are afforded space as well in the curriculum landscape. I aimed to discover how teachers can come with unique personal voices that meet their needs as I discovered that the professional and societal voices are in constant tension, it is the individual teacher who has to realise and address self-identity to

Match Overview

7%

Rank	Source	Similarity
1	researchspace.ukzn.ac... Internet Source	3%
2	hdl.handle.net Internet Source	<1%
3	uit.unisa.ac.za Internet Source	<1%
4	www.tandfonline.com Internet Source	<1%
5	Submitted to University... Student Paper	<1%
6	repository.up.ac.za Internet Source	<1%
7	scholar.sun.ac.za Internet Source	<1%

Page 3 of 298 Word Count: 116341 Text-Only Report High Resolution On

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Appendix F- Editor's certificate



Lydia Weight
NTSD English Specialist
SACE No: 11135129

E-mail: lydiaweight@gmail.com

Pinpoint Proofreading Services

40 Ridge Rd

Kloof

Durban

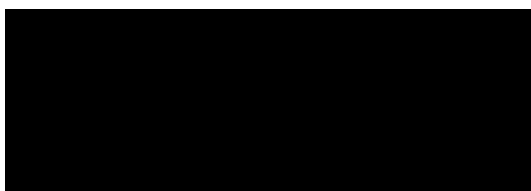
3610

5 December 2021

To whom it may concern

This is to certify that I, Lydia Weight, have proofread the document titled: Voices of Eswatini General Certificate of Education Geography Teachers on Teaching of Climate Change, by Boy Dlamini. I have made all the necessary corrections. The document is therefore ready for presentation to the destined authority.

Yours faithfully



L. Weight