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Geography Student Teachers' understanding of Indigenising the Climatology module in a South African Higher Education Institution

By

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Declaration

I, Zamokuhle Wiseman Magubane (214501893), declare that:

- The work in this thesis is from my own understanding, and wherever I included understandings from other scholars, I have referenced them as sources that support my work.
- The figures, pictures, tables and graphs that I sourced from the work of others have been properly acknowledged.
- The thesis has been submitted for the fulfilment of the master's degree only and for no other purposes at the institution where it was examined, and not to any other institution.
- Wherever I used a direct quote within the study, I used quotation marks to acknowledge that the whole idea is not mine but that of the author of a source I used to support my arguments.
- This thesis does not contain texts, graphics or tables copied and pasted from the internet, unless specifically acknowledged and the source detailed in the thesis and in the reference section.

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Dedication

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Abstract

This research project explored Geography student teachers' understanding of Indigenising the Climatology module in a South African higher education institution. While previous research conducted on indigenous knowledge systems has primarily focused on teaching strategies to teach indigenous knowledge, and approaches to integrate indigenous knowledge with western knowledge systems, this research project was interested in Geography student teachers' views about indigenising the geography curriculum, specifically the Climatology module. To gain an insight of the participants views on indigenising the Climatology module, two research questions were used, namely; 'What are Geography student teachers' understanding of indigenising the Climatology module?' and 'Why do Geography student teachers have those understandings on indigenising the Climatology module?'

To generate data and respond to the two research questions, 16 in-depth qualitative semi-structured interviews and two focus groups were employed in this study. Purposive sampling was employed in this study as only Geography student teachers who had the experience of studying the Climatology module were selected as research participants. The study findings suggest that Geography students value indigenous knowledge systems because it is practical and experiential as they witness its application and use on climate related issues in their contexts. The findings from this study also indicate that students are positive about indigenous knowledge being accommodated in their university spaces because such knowledge converges with western knowledge in some areas on climate. In conclusion, the study argues that indigenous knowledge systems have n critical role to play in transforming and decolonising the Geography curricula in South African higher education.

List of Acronyms

AR: African Renaissance

CARS: Centre for African Renaissance Studies

ER: European Renaissance

IK: Indigenous Knowledge

IKS: Indigenous Knowledge Systems

HAI: Historically White Afrikaans Institutions

HBI: Historically Black Institution

HEI: Higher Education Institutions

HWI: Historically White Institution

KMD: Kenya Meteorological Department

NGOs: Non-Governmental Organisations

TP: Teaching Practice

PCK: Pedagogical Content Knowledge

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Chapter One

Background and orientation to the study

1.1. Introduction

This chapter outlines the orientation of the research study as a whole. It gives insight into the background of the study, problem statement and its rationale. Thereafter, the significance of the study, aims and purpose of the study and the key research questions are presented. The chapter also provides an overview of the research design and methodology, as well as a broad outline of the chapters that follow.

1.2. Background to the study

The construction of universities in South Africa manifests social stratification where some universities are considered more socially dominant and more important than others, and this is apparent from research resources enjoyed by these universities (Naidoo, 2004; Maistry & Thakrar, 2012). Power dynamics are at play as some universities are considered more important than others. Scholars like Badat (2010) argue that we do not have South African universities; we have universities in South Africa hence the need for decolonisation. Institutions of higher education in South Africa are highly racialised and have institutional cultures that portray the power each institution has over other institutions. While some institutions are considered as universities for the 'privileged' others are considered as universities for the 'poor' (Adekunle, 2019). Access to these institutions is therefore determined according to the background that one comes from; it can either be a privileged background or a poor one.

The contradiction in universities of South Africa is that the knowledge that students from the privileged universities receive is immediate to their lives, identities and races while those attending in universities of the poor receive knowledge that is distant to their indigenous lives (Sium, Desai & Ritskes, 2012). The evident power dynamics in universities therefore describes the need for their decolonisation. The recent development of a Afrikaner university in Gauteng speaks volume about how racialised our universities are, the power dynamics of universities, the

knowledge system offered in South African universities, and the need for their decolonisation. I now explain the history of universities and their development.

The apartheid policy, introduced in South Africa in 1948 as a state control system, also trickled down to universities (Davies, 1996; Naidoo, 2012). This happened through the structuring of universities for blacks, whites and Afrikaans students leading to the designation of universities as Historically White Institutions (HWI), Historically White Afrikaans Institutions (HAI), as well as Historically Black Institutions (HBI) (Beckham, 2000; Govinder, Zondo & Makgoba, 2013). Black students however, have been at the heart of alienation in their academic life in these institutions structured along racial terms.

Access to university was based on the Education University Act of 1953, which restricted access based on ethnic and racial lines (Beckham, 2000; Govinder, Zondo & Makgoba, 2013). Inequality in the academic programs of universities in South Africa were complex yet explicitly visible through hierarchical tiers. The first tier; included white universities comprising pre-apartheid universities which were dominant, well resourced, research intensive, and attracted the best of students and academics, and had media paying attention to them (Mamdani, 2016). The second tier included Afrikaans universities, which we trying to respond to the influence of the first tier of universities and provided the government with cultural and intellectual resources to support the apartheid regime (Maharasoa & Hay, 2001: Dlamini 2018). The bottom tier comprised the black universities that did not have much media attention, were under resourced, were strongly controlled and monitored by Afrikaans institutions for the purpose of advancing their ideas and their institutions as efficient and resourceful (Davies, 1996; Togo & Lotz-Sisitka, 2013). They also did this to oppose the influence of the "more economically advanced white English community" (Davies, 1996, p. 322). These differences and inequalities are still evident in the university landscape today.

The higher education system in South Africa was, and to some extent still continues to be, racialised, differentiated and fragmented (Heleta, 2018). Black students have historically been engaged in mass demonstrations in disapproval of the higher education system as far as the 1960s and 1970s as they were ignored by the media and were not allowed to control their academic programs (Franklin, 2003; Field & Buitendach, 2011). Students' call for transformation

of knowledge in curriculum is not a new phenomenon, even though much focus has been given to the student movement of 2015-2016 because of its intensity (Badat, 2010).

It is for the above reason that a call for the decolonisation of the higher education system is made, alongside with the transformation of curriculum. Curriculum transformation for the researcher is something that should, not only be confined to what academics publish or discuss, but also be manifest from the input of students. It is on this basis that the study explored Geography student teachers' understanding of indigenisation of the Climatology module in a South African Higher Education Institution.

One of the challenges facing students is that they are not given a chance to participate and understand the knowledge being taught to them (Vhurumuku & Mokeleche, 2009). The assumption by Taylor & Cameron (2016) is that government in Africa has found it challenging to cultivate a curriculum that makes sense for this context.

The failure by an African led government to provide a contextually relevant curriculum by offering indigenous knowledge systems means that black students will not be given a chance to participate in the indigenisation of the curriculum. Students who are from the middle class, upper class as well as those from townships acquire indigenous knowledge from their traditional home environments and are therefore, must be given scope to voice out their understandings on indigenising the curriculum (see Nkoane, 2015). Indigenous knowledge systems have been considered pathetic and uncalled for in teaching and learning in higher education institutions, while other knowledge systems have been considered commendable and or worth learning in these institutions. Nkoane (2015) observes that;

> Dominant discourses have monopolized the parameters for interpreting realities. These dominant ideologies have continued to teach Africans that everything African is pitiful, despicable and embarrassing and should be subjected to cleansing with global Northern or Western tools. This is evident in South African rural settings, where knowledge constructed by people from these socio-political settings is subjugated or pushed to the periphery in the advancement of global dominant ideologies (Nkoane, 2015, p. 36).

The main cause of students' lack of participation in knowledge provision is the unavailability of a known route to include indigenous knowledge systems in curriculum, thereby perpetuating the status quo (Riffel, 2015). Without a known avenue of how to include Indigenous Knowledge in the curriculum, students are nonetheless proving to be thinkers in their own right as they have come up with the #Rhodes Must Fall movement; #Fees Must Fall movement aimed at decolonising the current deign of the curriculum (Le Grange, 2014).In order to include Indigenous Knowledge in the curriculum, the starting point should be to consider students' understanding of indigenising the Climatology module and the Geography curriculum.

This study explored Geography student teachers' understanding related to indigenising the Climatology module in a South African higher education institution. A substantial amount of literature on indigenous knowledge not only from a South African standpoint but also from a global point of view focuses on how teachers pass on this knowledge to students (Austin & Hickey, 2011; McKinley & Stewart, 2012; Hart, Whatman, McLaughlin & Sharma-Brymer, 2012). Moving away from the ever-present western knowledge systems in the South African learning space to an Africanised knowledge system of indigenising is a mistake if students, who are beneficiaries of the knowledge, are not given a chance to comment on indigenising the curriculum.

The argument put forward by Dube & Dipane (2017) is that, in order to prevent this, indigenous stakeholders and patrons of traditional practices, lecturers and students as well as the public can help to distribute worthwhile indigenous knowledge. A shared vision is pivotal so as not to disregard students' views as irrelevant in indigenisation. Advocates of the hegemonic knowledge of the west argue that indigenous knowledge systems are irrelevant, outdated and inferior in South African educational institutions, and this ultimately works against indigenous knowledge.

From a South African perspective, there are few studies focusing on Geography student teachers' viewpoints on indigenising the curriculum with specific focus on the study of Climatology (see studies by Goduka, 1998; Tisani, 2004; Kolawole, 2005; Le Grange, 2014; Wilmot & Dube, 2015). The dearth of studies focusing on Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education Institution necessitates more research on indigenising the curriculum.

It is important to explore Geography students' take on indigenising the Geography curriculum and the Climatology module as their discipline is explicitly if not implicitly responsive to social issues that they face. There is however, a growing amount of literature on the transformation of the higher education curriculum in South Africa. The reason provided for this growth in literature focusing on transforming higher education curriculum is that indigenous knowledge systems are relevant in the scope of higher education (Knight, 2018). Higgs (2016, p. 87) suggests that "the curriculum is a critical element in the transformation of education which aims to give indigenous African knowledge systems their rightful place as equally valid ways of knowing among the array of knowledge systems in the world." From this, one takes that the transformation of curriculum in higher education would signify the recognition of indigenous knowledge as relevant.

It is important that African knowledge's be critically considered in the curriculum so that one mode of knowledge (that is western knowledge) does not take superiority over other knowledge's, as legitimately more powerful and relevant. Africans are made timid of their potential to contribute to knowledge as they are branded as people holding indigenous knowledge that adds no positive effect to education (Maweu, 2011). Curriculum transformation in higher education therefore, should promote indigenous voices on an indigenised curriculum and its relevance.

The relevance of transforming the curriculum to an indigenous one is that it preserves African traditions, ways of doing and learning, as well as the mother tongue of African indigenous people (Taylor & Cameron, 2016). The indigenous people include students, indigenous knowledge practitioners and community elders, who all have come to be a group with desires and ideas of seeing curriculum containing indigenous knowledge (Green, 2012). Indigenous knowledge should be apparent in curriculum as it serves the student population, and it should be a curriculum with knowledge(s) that is indigenous as well.

Educational and policy planners in higher education have the task of refining and reforming curriculum in South Africa by including local knowledge in the chamber of knowledge. Challenging the domination of knowledge occasioned by colonial legacies, through indigenising the curriculum means the closing of a gap in knowledge representation, and removes the barriers

that are preventing Africans from receiving indigenous knowledge (Msila & Gumbo, 2017). The student population should be able to learn from knowledge that is familiar to their understanding as the reconstruction of curriculum to an indigenous one would mean that their opinions would have been considered and implemented.

It is crucial to obtain students' understanding of indigenisation of curriculum which brings tolerance of their views in the academic world. As one of the central proponents of the indigenisation movement, students have to take a major part in it. This can be done through exploring their viewpoints on curriculum indigenisation, which is what this study did to understand their views on indigenising the Climatology module.

1.3. Problem statement

Since the demise of apartheid, universities have been failing to transform their curriculum to a point of embracing diverse epistemologies (Mubangizi & Kaya, 2015). Students have been encountering challenges of not understanding the content provided in the curriculum. There have been countless conferences, seminars and workshops held by African scholars together with a cohort of students calling for a decolonised curriculum (Nyamnjoh, 2015). In the same vein, Heleta (2016, p. 1) reveals that "South African students and a small number of progressive academics began a campaign in 2015 to decolonise the curriculum of universities by ending the domination of Western epistemological traditions, histories and figures."

This study explored Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education institution. Students are displeased with the content provided to them in higher education institutions as they argue yearly that an understanding of such content is compromised on their part as the knowledge they learn is based on western ideas and is therefore, foreign (Mkhize & Ndimande-Hlongwa, 2014). An argument put forward by Mheta, Lungu & Govender (2018) is that it is an expected eventuality for students not to comprehend knowledge that is not indigenous when they are in a context rendering indigenised curriculum requisite.

1.4. Rationale of the study

The current study explored Geography student teachers' understanding of indigenising the Climatology module in a South African higher education institution. Reflecting back to my undergraduate years as a university student, I have no recollection of being taught in a knowledge system conforming to indigenous knowledge. Throughout my university life, I have been studying Geography. Not being a first language English speaker, I had to code switch to IsiZulu, my own language of understanding knowledge systems in order to thoroughly understand Geography, when studying for exams, writing assignments and listening in lectures.

It was never an easy task to code switch in order to come to truly understand Geography work. Night became day in my studying, stuck between sleepless nights and daunting mornings filled with fatigue; I struggled with Geography knowledge that sounded strange to my very own academic experience. Often after lectures, nothing would ring a bell and I would not understand anything. English is universal in the world of academia to accommodate everyone in teaching and learning. However, not every student is accommodated as one has to interpret knowledge presented in relation to their own knowledge systems using familiar language in order to reach a desirable understanding.

I thus took it upon myself to engage with relevant literature on indigenous knowledge systems and discovered that, for students to understand curriculum material they are presented to, it has to have an indigenized element. From personal experience as a Geography student, I could not feel any indigenized components in the curriculum. It is on this basis that I decided to research on Geography student teachers' understanding of indigenising the curriculum, with specific focus on Climatology. This would allow me to close of a personal gap of not experiencing an indigenized curriculum.

Having not experienced an indigenized curriculum, the study will afford me insider and outsider perspectives (Santoro, et al, 2011). This means that while I may have a picture of what an indigenous curriculum should be, I will gain ideas from the students as to what an indigenous curriculum should look like. This will also assist lecturers as people who deliver knowledge to consider what to include or what not to include in the curriculum. Engaging students on their perspectives on indigenous curricula can help explain learning indifference. It could explain why

or why not students appreciate studying through indigenous knowledge or western knowledge. According to Tuck & Gaztambise-Fernandez (2013) students in such a point would not be treated as empty vessels who can make no contribution to the knowledge they receive and use it in the uplifting their lives and that of their communities.

1.5. Significance of the study

A study can be done to understand a particular issue or contribute to literature and/ or to respond to challenges facing society (Bradbury-Jones, Breckenridge, Clark, Hereber, Wagstaff & Taylor, 2017). In contributing to the understandings of indigenisation, this study sought to explore Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education Institution. This is because there has been limited research on student understandings of indigenisation from a national (South African) viewpoint and from an international perspective (Gray& Coates, 2010).

The limited documentation on student understandings of indigenising the curriculum has reached a turning point in the last decade, as there has been a growth in studies on the phenomenon (Creswell, 2013). This study is significant as it contributes to literature on students' appreciation of indigenising the curriculum. The assumption made by Bryman (2016, p. 3) is that "there is no single reason why people do social research but at its core, it is done because there is an aspect of our understanding of what goes on in society that is unresolved. They may notice a gap in the literature or an inconsistency between a number of studies or an unresolved issue in the literature."

This study is relevant as curriculum reorganisation remains an unsolved issue in literature. This present study would be an attempt at bringing change in higher education so that knowledge does not continue to be presented through one tradition of knowledge, but through many including indigenous knowledge. For the African children to assert their position and fight for learning of a knowledge that is rightfully indigenous, this study allows student teachers to express their opinions on indigenising the curriculum, particularly those engaged in Geography education.

Change is slowly setting in South African education as Mahabeer (2018) states that transformations done in Higher Education Institutions of South Africa are not effective as crucial

curriculum reformations have not been done. One has to nonetheless state that change is neither comfortable nor easy. The democratic Higher Education System has not considered engaging students on their thoughts of curriculum indigenisation (Hall & Tandon, 2017). This study will thus contribute to the body of knowledge on students' understandings of indigenising the Geography curriculum, as little research on this topic has been conducted. This will close the gap in knowledge on students 'take on indigenising the curriculum.

1.6. Aims and purpose of the study

The aim of this research study was to explore Geography student teachers' understanding of indigenising the Climatology module in a South African higher education institution at one of the five university of KwaZulu-Natal campuses.

1.7. Key research questions

The questions below guided the direction of the research study:

- What are Geography student teachers understanding of indigenising the Climatology module?
- Why do Geography Student Teachers hold the conceptions they hold on Indigenising the Climatology module?

1.8. Research design and methodology

This part of the research study summarizes the research design and methodology used in this academic project. A full description of the research design and methodology is provided in chapter four.

The research study employed the qualitative research approach to explore undergraduate Geography student teachers' understanding of indigenising the Climatology module. According to Ormston, Spencer, Barnard & Snape (2013), qualitative research is about looking over a particular experience or reality from the outlook of people's understandings. The Geography student teachers stated their perspective son indigenising the Climatology module. This study

was situated within the interpretive paradigm to understand Geography student teachers' views on indigenising the Climatology module. Gunbayi & Sorm (2018) observe that interpretivists see reality as explanations that emanate from the viewpoints of research participants. It is also in line with the qualitative approach (Guba & Lincoln, 1994).

The interpretive paradigm suited this study which sought to understand the reality of indigenising the Climatology module from Geography student teachers' explanations, and located within the qualitative approach. The case study was used in the study. Case studies are, in their very essence, exploratory of social behaviours, reasoning and contribute to the understanding of complex issues within a particular context (Ramani & Mann, 2016). The single case study design was used in this study exploring a real-life case from the many perspectives of individuals (Starman, 2013). The single case study was used in this study to explore the real students' accounts of indigenising the Climatology module and the Geography curriculum.

1.9. Methods of data generation

Two data generation methods were used, namely; the semi-structured interviews and focus group interviews. Wahyuni (2012) states that semi-structured interviews allow for probing where the researcher asks participants questions in order for them to share their insights on a specific social phenomenon. Semi structured interviews were used in this study to probe student teachers 'ideas on the indigenisation of the curriculum in Geography education. The focus groups were also utilised for data collection in this study. Focus group discussions are a qualitative method used for the generation of social data (Dilsha & Latif, 2013). Nyumba, Wilson, Derrick & Mukherjee (2018, p. 20) state that "focus group discussion is frequently used as a qualitative approach to gain an in-depth understanding of social issues."

Focus group interviews were utilised as a qualitative approach as this study is also positioned within the use of a qualitative approach to gain a comprehensive insight of Geography student teachers' perceptions on indigenising the Climatology module. Moreover, a focus group was composed of six to nine individual's set-up by a moderator (the researcher) to inquire into their opinions, beliefs and understandings of a particular social phenomenon (Denscombe, 2007, p. 115 also see Doddy, Slevin & Taggart, 2013). Focus groups suited this study which sought to

explore a social issue or phenomenon; Geography student teachers' understanding of indigenising the Climatology module.

1.9.1. Sampling

The terms sample and sampling have come to be explained as terms with similar understanding in research of a qualitative nature. The idea of Cook & Cook (2007) and that of (Shorten & Moorley, 2014) stipulates that a sample is a selection of individuals from the population actually nominated to partake in the study and these entities serve as agents representing the entire population they were selected from. In other words, a sample is a sub-group of people typically chosen as representing the whole group of people from which the research participants are selected. Similarly, Gentles, Charle, Ploeg & McKibbon (2015, p.1772) state that sampling is "the act, process or technique of selecting a population for the purpose of determining parameters or characteristics of the whole population."

Sampling is about selecting a group of individuals with similarities to generalise findings to the whole population of which could have been participants of the study. The sampling procedure that was employed in this study was purposive sampling to determine a sample characteristically representative of a select of Geography student teachers. According to Cohen & Arieli (2011), purposive sampling is a technique that has demonstrable usefulness in carrying out research when dealing with marginalised societies. This means that one can employ purposive sampling in their study if they are researching about marginalised societies.

Purposive sampling is also explained as a technique that is used for a particular purpose hence the name 'purposive' and it is also used to determine and select information rich participants (Cresswell & Plano Clark, 2011). This comes with finding and choosing participants that know about and have experienced the phenomenon under study (Palinkas et al, 2015). Purposive sampling was used in this study with the purpose of exploring Geography Student Teachers Understandings of Indigenising the Climatology module in a South African Higher Education Institution. The Geography students were selected to be part of this study as they are knowledgeable about Climatology and have experienced it as they study Climatology at university.

1.9.2. Data analysis

Data analysis is at the heart of research because it draws out important features from the data coming from the participants responses. Data analysis is a process of deducing crucial information from the collected data (Wahyuni, 2012). Data analysis is in simple terms sourcing out integral data from the researched data. Data analysis is predominantly of two types; qualitative content data analysis and thematic analysis. However, this is not to say that there are no other data analysis types. To do analysis of the data generated in this study thematic analysis was used. Thematic analysis is a procedure for discovering and analysing trends of patterned interpretations in a data set, for the sake of meaning-making (Boejie, 2010). Thematic analysis was applied in this study to analyse emergent patterns from the students 'account of indigenising the Climatology module and the Geography curriculum. Thematic analysis was used in this study for showing important themes on the subject of indigenising the Climatology module from the Geography student teachers' accounts.

1.9.3. Ethical considerations

Ethical clearance was attained from the social science section of the University of KwaZulu-Natal's School of Education for a research project. Informed consent was sought from the Geography students and they were given a form to sign and agree to be part of the study. In the form it was specifically stated that participation in this study was voluntary and no financial rewards were to be given to those who chose to participate. Research participants were also informed that they have freedoms and should they wish for the freedom to withdraw from the study, such freedom will be guaranteed. The participants were also made aware that the information obtained from them would-be for the purpose of research and would-be kept confidential.

1.9.4. Limitations of the study

In this part of the study, I explain the limitations I faced while doing the study. This study was conducted at a Higher Education Institution for a specific module namely the Climatology module; therefore, the results cannot be generalized. Secondly, the study was carried out in a

different academic year and was done on students that had specifically enrolled for the climatology module. The findings of this study therefore cannot be used in studies that were previously done nor for studies that are yet to be conducted either than providing some insights into student's understandings for this particular study. I explored students 'ideas and understandings on indigenising the Climatology module and I had my own subjective views on what was being researched on which had the potential to deter the data in the study. I had to be mindful of my own ideas by keeping them at the back of my mind and focus on those of the students.

1.9.5. Location of the study

The study was conducted in 2019 in South Africa at the KwaZulu-Natal province and it lasted for a year. It was carried out at a teacher education institution in Pinetown, a small town mostly surrounded by townships like Kwa-Ndengezi. This teacher education institution is a small institution with little infrastructure and research equipment even though it is close to Durban city.

The institution where the research took place is a historically black institution (Allen, Jewell, Griffin, & Wolf, 2007). The student population in the institution depict it as a historically a black institution as a majority of them are from the rural areas. The teacher education institution is small campus of the campuses associated with it. There are very limited lecture venues for students even though they are a large population. However, recent developments in the form of new buildings and residences indicate that the campus is a growing space of education.

The teacher education institution trains pre-service teachers over four years. It specializes on educational disciplines and has varying courses. Climatology is one of the modules offered in the Geography curriculum. The intention of this study was to explore Geography students' understanding of indigenising the Climatology module and the Geography curriculum at large. Student teachers are equipped with content and pedagogic content knowledge (PCK) and also engage in teaching practice (TP) for experiential knowledge. This is done to equip the novice teachers with skills for professional teaching, upon completion of their Bachelor of education degrees.

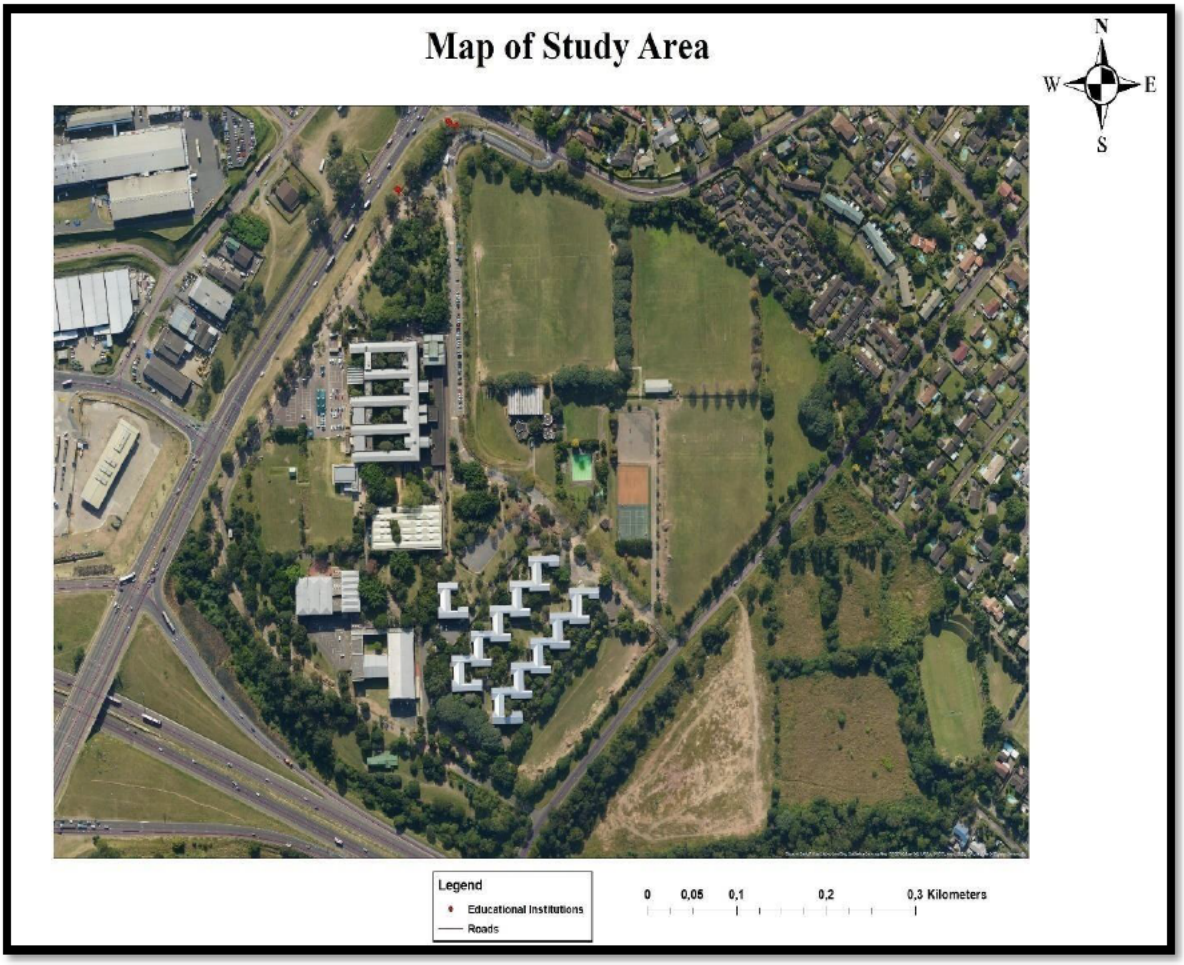

Figure 1: The showing the location of the study (Source; Magubane, 2019).

1.9.6. An overview of the chapters

This section summarizes the various parts of the chapters reported upon in the study.

1.9.7. Chapter One: Background and orientation to the study

This chapter gave an overall view of the research study. It looked at the background of the study and how the phenomenon researched on was investigated. The problem statement was explained, detailing the challenges that led to the undertaking of this study; followed by the rationale, significance, aim and purpose of the study, as well as the research questions that constituted the

foundation of this study. Provided in this chapter is also the summarised version of the research design and methodology inclusive of the overview of the research study.

1.9.8. Chapter Two: literature review

The chapter on literature review is a divided into many sections; the first section clarifies the concept indigenous knowledge systems. The second section looks at the conceptualisation of curriculum in higher education while the third section looks into the curriculum as reproduction. The fourth section provides a perspective on indigenous knowledge systems in the higher education curriculum and the fifth area looks at locating indigenous knowledge systems in the Geography curriculum. The sixth area delves into decolonising the curriculum for the ordering of an African University whilst the last section is the conclusion of this chapter.

1.9.9. Chapter Three: theoretical framework

In this chapter, I focused on the theory that informed the study. I begin the chapter by defining what a theoretical framework is. I thereafter, discuss the African Renaissance theory as a theory informing this study. I however, do this by looking at its background, particularly in accordance with the European Renaissance theory. I then conclude the chapter by summarizing what I had covered and discussed in it.

1.10. Chapter Four: research design and methodology

In this chapter, I reveal the research design and methodology that I used in the study. I firstly discuss the interpretive paradigm used for this study. I then go into the research design where I discuss the single case study and the qualitative research approach. Under the research methodology, I explain the sampling type used in the study, method triangulation, and data generation methods. I thereafter, discuss data analysis, the limitations of the study, ethical considerations, and trustworthiness, before concluding the chapter.

1.10.1. Chapter Five: findings and data analysis

This chapter presents data generated by the two data techniques used in this study, namely; the semi-structured interviews and the focus group discussions. The analysis of the data is enabled by looking at what the research questions intended and what data was generated. Thematic analysis is used to analyze the data gathered in this study. The data is transcribed according to the themes that emerged from the generated data. The key themes that came from the students' view were on indigenous knowledge systems and were about reclaiming African beliefs, indigenising as a waste of time, indigenising an opportunity, and so on.

1.10.2. Chapter Six: theorizing the findings

The information gathered by the interviews and focus groups is presented and discussed. The data is presented in relation to the research questions, together with links to the reviewed literature as well as the theory framing the study.

1.10.3. Chapter Seven: summary, conclusion and recommendations

This chapter offers the summary of the findings as presented in the study. The recommendations of the findings and gaps seen in the study are also given in this chapter. Thereafter, the chapter and the whole study are concluded.

1.10.4. Conclusion

This chapter presented an overall discussion of the purpose for undertaking the research study based on seeking Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education Institution. It raises the need to understand students 'ideas towards an indigenized curriculum so that indigenous knowledge systems can be part of the curriculum. It is an arena for students to share their accounts of indigenising the curriculum with reference to the Climatology module. The argument in this study is that there should be a shared vision of knowledge, where not one knowledge is taken as superior but where indigenous knowledge systems are also provided in the curriculum. This chapter outlined the entire research project; the chapter that follows is the literature review.

Chapter Two

Literature Review

2.1. Introduction

The basis or focus of this chapter is on indigenising the curriculum however I also cover concepts like decolonisation and other related terms such as Africanising. In this chapter, I review international studies broadly focused on indigenising university curriculum and transformation within university environments. I then cover aspects on whether indigenous knowledge systems are available in higher education institutions of South Africa, and in the discipline of Geography. Towards the end of the chapter, I broadly discuss decolonisation of the African university. I reveal the deficits or gaps in the literature and then conclude the chapter.

2.2. Conceptual clearing

According to Ngozwana (2015), indigenous knowledge is local based knowledge which is passed down from one generation to the next. Indigenous knowledge is knowledge that is area bound and not borrowed from any other knowledge system, which is extended to future generations. Mapara (2009) asserts a similar position and states that indigenous knowledge systems are a form of knowledge or forms of knowledge of the local people of certain natural localities that have endured for an extended period of time.

Mapara (2009) further observes that indigenous knowledge systems work and have worked before and after colonial times as they are natural and originate locally. The presented definitions of indigenous knowledge systems indicate their importance and that their inclusion in the Geography curriculum could make the learning material relevant. The status quo remains unchallenged as African nations' academic spaces have for a long time been, and still are dominated by western thoughts and knowledge (Yoon, 2007). This means that for indigenous knowledge systems to survive this domination, they must be integrated with western knowledge systems. Understanding in this study is seen as exploring the ideas that student teachers have with regards indigenising the Climatology. Indigenising in this study is understood as making the Climatology module relevant to the African context.

2.3. Knowledge integration: Western knowledge systems and African knowledge systems

In this section of the study, I review literature that advocates the use of indigenous knowledge system in higher education institutions and their integration with western knowledge systems. Indigenous knowledge systems are relevant knowledge systems for African people although western knowledge systems give the impression that they are irrelevant. Motala (2015, p. 29) argues that knowledge in the African state is overly inclined to Western perspectives which he regards as 'disingenuous'. This discriminates against African indigenous thought and knowledge as it is controlled by the west. Redress of the colonial wrongdoings on African nations and on South African education in particular, is something that is yet to happen (Bohensky & Maru, 2011). True redress can come through integrating knowledge of the South and those of the North through gradually indigenising the curriculum (Overmars, 2010).

African scholars are seeking to change the way knowledge is presented as knowledge has come to be dominantly presented through western perspectives. Transforming and decolonising education to the point of having indigenous knowledge in higher education has an educative benefit to black students and black communities alike. The integration of modern and traditional knowledge should be a central focus of indigenous knowledge systems research, so that the benefits of such a research can be transferred to local cultural communities (Keane, Khupe & Seehawer, 2017). This is a rallying call for establishing respect and appreciation for all knowledges which ought to systematically function together in the distribution of knowledge (Bohensky & Maru, 2011).

Research on indigenous knowledge systems' social benefits to communities is requisite. Concurring with the above idea is the indigenous knowledge systems research proponents of South Africa (Keane, Khupe & Seehawer, 2017, p. 12) who state that, "it is concerning that the research knowledge is available to academics and generally not to indigenous communities who are usually contributors at least to the research data." Neglecting the very same suppliers of indigenous information-'indigenous communities' ensures failure of their personal development. Traditional knowledge is mostly seen as a knowledge that exists in a specific environment for a certain class of people (Dei, 2012).

Owuor (2007) asserts that since indigenous knowledge is a context-dependent knowledge, the transfer of environment-specific knowledge to higher education institutions means that it would be challenging for such knowledge to work in a different environment. This is particularly not true because black students are also found in the institutions of higher education and learning through their first language dismantles the learning of a language foreign to their existence as they are not first language speakers (Mudaly, 2018). This means that indigenous knowledge would work in higher education environments given that there are students who would use such a knowledge systems and solicit more information about these knowledge systems from surrounding indigenous communities. Indigenous knowledge systems are hence accessible in our indigenous communities and further research can assist on ideas on how to include them in the higher education curriculum.

A study in South Africa by Breidlid (2009) on the relationship between indigenous knowledge systems and sustainable development concluded that more research needs to be carried out on the feasibility of indigenous education responding to sustainable development barriers. By the same token a study carried out by Kratli & Dyer (2006) on the need to include indigenous people in modern education revealed that there is scant research on transformed education focusing on indigenous knowledge systems in curriculum. The feasibility of indigenous knowledge be it in responding to sustainability issues or bringing about change in curriculum is a problem at hand that has not been given paramount exploration in literature. This study sought to close this gap by seeking to understand Geography student teachers' understanding of an indigenised Climatology module in a South African Higher Education Institution.

2.4. Reorienting Education and Indigenous knowledge

Plagued by disease, poverty, hunger, drought and malnutrition, Africa needs indigenous responses to assist impoverished Africans and bring them back to life and allow them to break away from their dire conditions (Kaunga, 2008). Indigenous practices of herding, hunting and subsistence farming serve to minimize hunger, sickness, and disease, as pastoral communities collect traditional herbs, food and medicinal plants (Aikman, 2011).

The appreciation of learning from an indigenous curriculum in higher education institutions is something that can happen through Geography, Agricultural studies and other sciences. This is because they touch on environmental resources such as different food, plants and animal species on which indigenous communities depend for their healing and survival (Dei, 2011). Reframing education to accommodate local ways of knowing is no overnight effort. Aikman (2011, p. 22) argues that "achieving an education for indigenous justice in Africa is a herculean task."

Colonial wisdom, deeply rooted in South African education, prevents the indigenisation of curricula, specifically in the subject matters of mathematics and in Geography (Horsthemke, 2017). To this end, poor, marginalized and powerless students are denied the possibility to learn about knowledge that is familiar for their context (Dei, 2012). One of the means for re-orienting education to offer a culturally indigenous knowledge is by giving voices to the voiceless.

It is the purpose of this study to explore Geography student teachers' understanding of indigenising the Climatology module in a South African Institution. Critical is the provision of an anti-colonial knowledge system as a developmental opportunity to align with the students' identity, individual and shared respect, agency and emancipation, to facilitate community building (Dei, 2012). Cultural education is something that indigenous people of South Africa and African scholars possess. However, decolonising knowledge is devalued by knowledge institutions.

Afrocentric views are muted and out casted and the indigenous information that local students hold end up not being used. The indigenous movement has not confronted the world of academia on the design of curriculum to be at a point where we see indigenous knowledge being used for teaching and learning in higher education institutions (Santoro, Reid, Crawford & Simpson, 2011). Challenging though is finding a replacement for the modelled colonial knowledge system (Nyamnjoh, 2012). Knowledge within the curriculum of universities has been non-indigenous for a long period of time. Current science curriculum in multicultural institutions in South Africa and Japan are silent on indigenous knowledge, and therefore, the learning encounter is distinctly separate from the "home experience" (Ogunniyi & Ogawa, 2008, p. 175).

African indigenous students have expressed their desire for an indigenised education. A study carried out by Mudaly (2018) on the possibilities of indigenising mathematics curriculum

revealed a position where students considered individual work as a colonial venture and group work as promoting the African essence of Ubuntu. Students argue that the way they are expected to do work is challenging because it is not promoting their indigenous model of humanity. In my view, this propels the indigenisation of the curriculum as requests are made by students who receive the knowledge.

Discriminating against its own people, the democratically appointed South African government has to reform the exclusionary and fractured apartheid education where indigenous forms of education were unwittingly overlooked (Harley, Barasa, Bertram, Mattson & Pillay, 2000 also see De vries, Timmer & De vries, 2015). An education that lacks super natural knowledge has been viewed as "a national disaster that is essentially dysfunctional and requires redesigning and reengineering" (Letsekha, 2013, p. 4864). It is an exclusionary education which imposes on students yet we know that students are not empty vessels, but that they come to the educational spaces with prior knowledge which they gain from the home setting.

Students' prior knowledge means that they too should be respected and not be disregarded because they can contribute to the teaching and learning of indigenous knowledge systems (Angaama, Fatoba, Riffel & Ogunniyi, 2016). Students have declared African knowledge systems as an important knowledge system and indigenisation would mean studying them even if there are other knowledge systems worth teaching and learning. A survey by Riffel, Langenhoven & Ogunniyi (2013) on Grade 9 South African Geography learners in the Western Cape found that learners felt that indigenous knowledge is universally crucial for Africans even in the presence of non-African knowledge. It is therefore, not a fantasy to indigenise the Geography curriculum and to solicit student teachers' understanding of indigenising the curriculum.

2.5. Conceptualizing the curriculum

In this study, I was interested in exploring Geography student teachers' understanding of indigenising the Climatology module in a South African higher education institution. I cannot comment on Climatology and its debates without firstly discussing how curriculum was conceptually understood in the study. Engagements on curriculum in higher education focus on

various features of the curriculum. However, for this particular study, focus is on the knowledge systems within the curriculum. I define the curriculum and show what is happening or not happening in curriculum in terms of indigenous knowledge systems. The term curriculum comes from Latin where it is associated with athletics in the long-gone Greek culture and included parts of achievement and success (Botha, 2009). Similarly, Stefan (2010, p. 12) states that "the origin of the word curriculum is Latin in which it means a running, race, lap around the track, course." Different scholars have different conceptual understandings of curricula and this is reflected in the definitions they propose. The definition by Higgs (2016) is that curriculum is planned material aimed at relaying knowledge from the many know ledges in existence in a manner that is relevant to particular people in society. The society includes the parents, curriculum planners, governments, departmental representatives, and the students. The definition by Higgs (2016) creates the impression that a curriculum is planned material that stipulates what knowledge(s) are to be presented in the teaching and learning process in higher education. Curriculum is a predetermined material on knowledge suitable for teaching and learning in society. One learns from this that the curriculum includes only a selection of knowledge, which is strange as not all people of society would conform to it.

Karseth & Sivesind (2010, p. 114) establish that "curriculum is a social and cultural text; it's neither a fixed, stable body of knowledge nor a logical manifestation of a discipline or a well defined political decision." Karseth & Sivesind (2010) further posit that curriculum is about creating a sense of knowledge and discussing it amongst various people within the area of education. Barnett, Parry & Coate (2001) assert that curriculum is taken as an informative assignment creating personalities through knowledge exchanges, the act of learning and the development of the self. The above proposed definitions of curriculum mean that curriculum is not a packaged text, but rather a dynamic discourse in education that is to be shaped and moulded by many role players.

Bovill, Bulley & Morss (2011) assert that the curriculum is a prepared project which outlines what knowledge is to be taught. By contrast, Karseth & Sivesind (2010) and Barnett, Parry & Coate (2001) argue that curriculum is not a planned project but a negotiated and renegotiated project by stakeholders from the society. The authors imply that curriculum is not an imposed design, nor a planned project but a project developed by many people from society through

endless discussions. Students are co-creators of knowledge in higher education institutions and should thus, have the power to propose their views on the knowledge they learn through the curriculum. If students are afforded the opportunity to propose their understandings of indigenising the curriculum, they become co-constructors and developers of knowledge together with their lecturers.

According to Kaya & Seleti (2013, p. 34) "education and higher education in particular, in Africa is still too Eurocentric, that is still dominated by European worldviews". Curriculum in higher education is clearly abandoning African indigenous knowledge systems which are appropriate for learning, for the majority of African students in the higher education institutions of South Africa, and rather, supports the few white students. There is therefore, a need to fundamentally reframe curriculum in higher education so that a curriculum that accommodates knowledge traditions and student populations of different backgrounds can be built.

A divergent view on curriculum than the previously proposed definitions is that of Gosper & Ifernthale (2014) who argue that curriculum is the learning possibilities given to students at the university as part of their qualification arrangements, assessed formally using specific standards. The divergence in the argument of Grosper & Ifernthale (2014) is on its centeredness on the learning possibilities given to students through assessment as part of their qualifications. The meaning conveyed by this view is that students do not question what they are assessed on, they just follow the standards of assessment given to them in order to get the qualifications.

Curriculum scholars like Smith (2000) take similar stands as proposed by previous authors on conceptualizing the curriculum and label the curriculum as praxis of teaching, learning evaluation and intervention by academics and students together. Noteworthy is the placement of critical importance on the curriculum, not as a product delivered to students but as a piece project that offers knowledge that is developed together by the students and lecturers through curriculum intervention.

In this research project, I argue that curriculum ought to be understood as socially constructed by students and other various actors as proposed by Karseth & Sivesind (2010) and Barnett, Parry & Coate (2001). I now turn to outlining the curriculum as reproduction.

2.6. Curriculum as reproduction

The designation 'hidden curriculum' is a central term when one looks at the curriculum as a reproduction, and there is a sense that a certain student population benefits more from curriculum over and above other students (Barnett & Coate, 2005). It gives the idea that in the learning context there are unseen incidents. The concept of hidden curriculum refers to the non-communicated, unseen beliefs and attitudes that are in place within the learning environments (Alsubaie, 2015). It is not that some are superior and privileged enough to understand the hidden curriculum, "but that this hidden curriculum acts as a deliberate form of gate-keeping by ensuring that only certain types of students will be able to use it to their advantage" (Higgs, 2016, p. 91). This means that the curriculum is developed in a biased way such that certain students gain more privilege from what is in the curriculum than others.

According to Bitzer (2011, p. 33), "higher education curriculum researchers and developers are faced with both practical and theoretical questions as to what selection of knowledge should be presented in higher education programmes and courses and how knowledge might be constructed, facilitated, mediated and learnt. Higher education curriculum researchers and developers need to think critically about the knowledge they select for teaching in higher education programmes (Shay, 2013). The balance of the curriculum is uneven in higher education in South Africa as projects of knowledge are not represented at equal levels for students to successfully learn. Students' experiences of learning in higher education are thus, not the same as curriculum content has ways of knowing that are in favour of mainstream students (*white students*) but against other students (*black students*) (Fraser & Bosanquet, 2006).

The curriculum and knowledge should develop students (Shay, 2011) and students should develop strong and fundamental relations to the knowledge they learn from curriculum. It is important to develop a curriculum that has an indigenous knowledge influence. With regards to students, if the curriculum offers western ways of knowing, knowledge loses relevance for them because it would have no indigenous meaning (Shay, 2011). Curriculum reproduction at this point can be said to be taking place as the same knowledge would is reproduced at the expense of

African knowledge systems. It is for this reason that some scholars (Heleta, 2016; Nkoane, 2015, Dube & Hlalele, 2017) have called this knowledge violation.

The legitimisation of some knowledge over other knowledge's means that there is curriculum reproduction. This is disadvantageous to the majority of black South African students who struggle to understand the dominant discourse of knowledge offered in higher education institutions of South Africa. The content in the curriculum should be an encounter with one's experiences and not merely a reproduction of the knowledge's of other people. The word curriculum is widely used in teacher education institutions, and is a familiar term in this context. According to Fraser & Bosanquet (2006, p. 271), "student teachers encounter it regularly in their studies of curriculum theory, and educational philosophy and psychology". Students are not the only ones who are familiar with curriculum, so too are the lecturers familiar with this term as they research about it and teach it.

Terwel (2005) express that although lecturers research and teach about and from curriculum, they, in their varying fields, take no decisions on what knowledge is to be offered in curriculum whether indigenous or external knowledge. Curriculum reproduction in this instance happens because of the institutional boards of directors, governments and committee directorates who discuss policy and planning of curriculum in terms of what knowledge to include (Maton, 2009). The notion of curriculum reproduction takes place because those who take decision about what knowledge is to be included in curriculum only include knowledge from western modes of knowing and not those from African knowledge systems.

2.7. Indigenising curricula

There is a significant amount of literature on indigenous knowledge systems from an international perspective. In Australia, for example, Nakata (2011) reveals that over many years, the Aborigine indigenous communities have used local knowledge to assist them in weather and associated climate problems. Presently, these knowledge systems are still extensively used by these Aboriginal communities for fishing, hunting, planting and traditional gathering informed by seasonal periods (Green, Billy & Tapim, 2010). This implies that Australian indigenous communities' value local knowledge. Clarke (2009) attests to this by stating that the Bardi people in Western Australia, (Kimberly) have developed their own indigenous calendars for

changes in seasons, by studying weather conditions, and are able to predict the occurrence of wild fires, determine wind direction, and establish the amount of rainfall in a season and animal growth. There is thus, a wealth of indigenous knowledge that contributes to indigenous communities and such knowledge remains a response to climatic and environmental change challenges directed towards them.

Watson & Huntington (2014, pp. 727-728) suggest that "the underlying assumption is that the oral tradition is of pre-literate tribal groups that no longer has the same application in a literate and technological world." This is worrying as indigenous knowledge has served a complementary role to western science on climate change research undertaken by both non-indigenous researchers and indigenous communities. A case of such complementarities is given by Green et al. (2010, p. 340) who argue that "in the Canadian Arctic, local, land-based expertise and community-based assessments undertaken by indigenous communities have provided observations, predictions and explanations of climate change at scales and in contexts currently underrepresented in climate change research."

Having reviewed indigenous knowledge use in Australia in relation to climate observations, I see indigenous knowledge as highly valuable and as serving a significant role in the generation of Climatology knowledge neglected by non-indigenous researchers. Despite lack of recognition of indigenous weather and climate related knowledge that comes from indigenous people as such as those from Australia (Cochran et al, 2008), the knowledge they possess is fruitful in seeking convenient solutions to environmental issues presented by climate change.

Higher education institutions in Latin American countries such as New Zealand and Canada have taken an initiative to have an indigenous induced educational curricular so as to not sideline indigenous students and to create an institutional tradition that reinforces interculturality (Cupples & Glynn 2014). This means that Latin American countries are infusing transformation in their universities by incorporating home knowledge while at the same time representing multiple cultural practices of. This parallels African universities' attempt to transform their institutions through availing indigenous knowledge systems.

The change towards indigenising beginning to happen in Latin American universities is proof of what can be established through local knowledge as an alternate form of knowledge rather than

reliance on a single knowledge system as superior (Escobar, 2007). Studies in universities from diverse backgrounds indicate that using alternate knowledge systems like indigenous knowledge systems could enrich the Climatology module or any other module.

A study by Barrington (2004) on teaching diverse students in higher education found that students in the United States and the United Kingdom felt that the current teaching methods used in curricula did not meet their expectations and different ways to gain knowledge should be used. Similar studies to that of Barrington (2004) have been carried out see (Iverson, 2012). Similarly, Agrawal (1995) in his comparative study of indigenous and scientific knowledge found that Australian indigenous students complained that the teaching strategies used in their institutions were of a poor standard, and that they were disregarded as students in terms of their input in the teaching process. One can also see similar findings to those of Agrawal (1995) from (Seth, 2014). Students therefore, call for transformation in curriculum, teaching methods, and the use of knowledge systems never tapped into before. Over and above that, students advocate being partners with their lecturers in co-creating curriculum.

From Indigenous American research studies, researchers have suggested that indigenous people's knowledge is important for development plans and environmental management policies (Louis, 2007; Tole, 2010). This means that indigenous knowledge is critical for people in governance and working towards the development of policy and the environment of their people, because without such background knowledge, they would not know what happens in these environments and how to develop them. Indigenous knowledge is equally important for indigenous communities because they largely depend on the natural environment for their economic and social activities, and they are the hardest hit people when nature strikes with its environmental hazards (Clarke, 2009). Indigenising curricula is hence important because indigenous knowledge is valuable to communities and students alike.

2.8. Transformation and policy directives towards indigenisation

In this section, I review literature on transformation in higher education institutions in South Africa, and policy directives that are in place for indigenising knowledge and curricula. In South Africa, 1994 was crucial as democracy brought political transition which also demanded higher

education institutions to develop frameworks aligned to democracy. The injustices of the past brought upon inequality in higher education institutions and therefore, needed to be addressed (Subreenduth, 2013). Varied literature on transformation from global and national perspectives indicates that transformation is a complex term and difficult to place a single definition to it (Venter, 2015). The view of Venter (2015) is further echoed by du Preez, Simmonds & Verhoef (2016, p. 1) who argue that "transformation has been loosely defined." Using selected scholarly literature, I explore policy directives that influence its occurrence and the embedding of indigenous knowledge systems in South African higher education, and the need to rethink transformation.

Higher education institutions at the time of apartheid were implemented according to ethnic groups, and the white minority derived more benefits in the universities they attended compared to the black majority who benefited less where they attended (Subreenduth, 2006). The end of formal apartheid meant institutional transformation on knowledge, curriculum and on resources within universities. The end of apartheid also meant the endorsing of a curriculum that was supposed to include indigenous knowledge systems as appropriate and relevant knowledge. It also meant that there would be an endorsing of a curriculum that deconstructs the inherent violence's, injustices and silences in education (Sayed, Motala & Hofman, 2017). This was important for the development of a transformed university and a new South Africa

The education white paper 3 advocates transformation as it states that higher education institutions have a role to play in the development of all South Africans through advancing the use of indigenous knowledge (Department of Education, 1997). In the Soudien report of 2008, it is stated that change is noticeable within higher education institutions on affairs related to curriculum. However, policy directives still indicate that transformation of knowledge taught and learnt in institutions of higher education is one of the difficulties confronting universities (Department of Education, 2008). This idea of transforming knowledge in universities links with knowledge discourses in higher education institutions which prioritize western knowledge systems. African indigenous knowledge systems are seen as less valuable, and less effort has been made to include them in the teaching and learning of university curricular.

One of the reasons that make the politics of knowledge in South African higher education institutions to be cantered on the radical call for decolonising knowledge and curriculum is the characteristics of racism, sexism and biasness (Fataar, 2018). The South African university knowledge and curriculum have not been constructed in a manner that counteracts post-apartheid challenges, but continues to perpetuate the legacies of apartheid. The section that follows discusses indigenous knowledge systems in the higher education curriculum.

2.9. Indigenous knowledge systems in the higher education curricula

In this section of the study, I focus discussion on pro-indigenous views and their use in curriculum. A consistent trend in literature has been the discussion on indigenous knowledge systems in the higher education curriculum. According to Kaya & Seleti (2013) the discussions on the relevance of indigenous knowledge systems have gained momentum in the last two decades or so. Nevertheless, Knowledge has been theoretical for the African child and is purely western as African indigenous knowledge systems have been reduced in importance to the margins of irrelevance.

Education in the space of African academia is not responsive to the intellectual needs of the African society Moodie (2003). Moodie (2003) further states that the western world views are brought for use in the knowledge space as the chief ways of knowing that can only be used in the construction of knowledge. This means that indigenous knowledge systems are not taken as knowledge systems that can be employed and applied in the space of producing knowledge. The absence of indigenous knowledge in the higher education curriculum is visibly frustrating as indigenous knowledge systems are pushed to end of the margin due to a colonial past.

Chilisa (2005, p. 659) states that “the marginalisation of local knowledge systems was established in the colonial times that relegated all things indigenous or from the colonized communities as unworthy, uncivilized, barbaric and superstitious.” From the outset of colonisation, the indigenous knowledge systems were marginalized and alienated in the higher education curriculum. The restoration of indigenous knowledge systems in the curriculum can be given impetus through the voices of student teachers. In this study, the Geography student

teachers were asked for their understandings of indigenising the Geography curriculum in general and the Climatology module specifically.

Limited attention has been placed on African Indigenous Literacy and students have missed the chance of learning about their societal beliefs for both lifelong learning and for sustaining indigenous knowledge (Ocholla & Onyancha, 2013). The re-establishment of African indigenous literacy is crucial in the higher education because such knowledge is valid. This is evident in the argument of Kaya & Seleti (2013, p.33) who state that "indigenous institutions of knowledge production, conservation and sharing such as initiation schools, indigenous games, agricultural systems, dances and songs, storytelling, proverbs et cetra still remain as pillars of indigenous African ways of knowing." A large amount of indigenous knowledge is hence available to transpire in the higher education curriculum.

It is on this basis that it is necessary to transform the thinking and approaches of western scholars engaged in African scholarly research to substitute the primitive indigenous knowledge systems with the advanced western knowledge systems (Ndlovu-Gatsheni, 2013). Western scholars have to thus, take into consideration that no one knowledge can function alone and reach a diverse student group. Hlalele (2019) asserts that a recognizable number of studies have underscored the value indigenous knowledge systems have and therefore must be inserted within the educational settings of South Africa.

Inserting indigenous knowledge in the curriculum seems to be a taxing task as the curriculum has for a long time been crowded by colonizer world views (Msemula, 2013). Indigenisation does not call for a total dismissal of western knowledge systems but calls for indigenous knowledge systems to also appear in the curriculum. Hlalele (2019, p. 89) states that "the call for indigenous knowledge systems does not necessarily mean repeal and replace but argues against the marginalisation of indigenous epistemologies." Indigenisation does not mean abolishing western knowledge systems but allowing them to work along with indigenous knowledge systems.

Indigenous knowledge is important and should be in the curriculum as it has been used in curing of Malaria in Zimbabwe through traditional healing plants, and it remains central in climatic adaptations (Mugambiwa, 2018). It has also been used as a tool to emancipate women in Senegal to do away with the practice of circumcising females and aided Mozambican groups of people to

sustainably utilize natural resources near the coast (Hlalele, 2019). Taking from these examples, indigenous knowledge systems have proven helpful and should be part of society and public institutions.

Similarly, in Africa and in South Africa there has been a substantial amount of literature that points to the use of indigenous knowledge systems. This is revealed by Riffel (2015, p. 909) who states that "Despite the volume of literature and the fact that indigenous knowledge systems reside among the majority of South Africans, the topic has not been given the attention in educational curriculum development policies it deserves, resulting in a lack of attention to Indigenous Knowledge in the discursive terrains of all learning areas/subjects." Western knowledge in curriculum has been presented as the only knowledge for learning even though it is an ill-suited knowledge to the indigenous African societies (Dube & Hlalele, 2017).

Disapproving attitudes of indigenous knowledge means that indigenous people knowledgeable about indigenous ways of living have to keep it to themselves leading to extinction of indigenous knowledge systems. On the use of indigenous knowledge for farming, Dey & Sarkar (2011) argue that indigenous knowledge benefits agriculturalist as local cures are affordable and readily available. This means that local knowledge is immediate and accessible to indigenous farming communities. In order to reclaim African knowledge and counteract the hegemonic dominance of knowledge systems by the west, a common African dream is critical between indigenous communities, practitioners and developers of indigenous knowledge (Gorjestani, 2000; Lo, 2011). Mutekwe (2015) sates that higher education institutions should publicize indigenous knowledge because they are knowledge institutions and their aim is to promote learning through any mode of knowledge.

The path to restoring indigenous knowledge in the curriculum is still noteworthy; however, it is taking long. Dube & Hlalele (2017, p 244) argue that "the challenge that academics face in their quest to promote indigenous knowledge pedagogies, especially in mainstream curricula, is lack of disciplinarity of indigenous knowledge, by disciplinarity meaning a formal arrangement and documentation of indigenous knowledge into subjects for simple and convenient transmission." Geography is one of the disciplines that can promote indigenous knowledge; nevertheless, the legacy of colonialism is still evident within the arrangements of higher education as courses have

not placed indigenous knowledge as one of the learning outcomes for student teachers. Chilisa (2005) notes that African institutions are promoters of western knowledge in non-western contexts even though reality in the African situation is in need of African indigenous knowledge systems. The African situation requires an indigenous movement which appreciates indigenous thoughts in the universal western knowledge systems (Seehawer, 2018), which would speak to African lived realities and experiences.

Developing room for other forms of knowing than those of the West should start by acknowledging indigenous languages and their use in conducting research (Nkoane, 2006). The current focus points to a different direction as knowledge of research on HIV/AIDS is predominantly western whilst most Botswana people have indigenous forms of research relevant to knowing and researching about HIV/AIDS (Chillisa, 2005). The problem is with African education systems and research. Letsekha (2013) argues that the main problem facing teaching and research in Africa is that there are efforts being made to silence African beliefs and traditional practices of doing research and teaching in the curriculum. African academics have to reconsider and change their perceptions towards the curriculum as well as on research.

Seehawer (2018) argues that localizing the curriculum would widen students' perspectives as knowledge would be in an indigenous form that comes from their local setting. This would also facilitate ownership of the knowledge in the curriculum. The overarching framework of a foundationally localized curriculum can best start by students advocating the need for having an indigenized curriculum to broaden their perspectives on knowledge. I now turn to the section on locating indigenous knowledge systems in the discipline of Geography as this study focuses on indigenous knowledge systems within the boundaries of Geography.

2.10. Locating indigenous knowledge systems in Geography

Home knowledge and classroom science are said to come together in the class as teachers teach students and students share their experiences. This has largely been happening in human Geography where students share their experiences on the way people live together and how they share ideas (van Wyk & Higgs, 2012). Human Geography is amongst the various disciplines that can include indigenous knowledge systems because of its focus on the way people live and

exchange ideas. In agreement with this idea is Kogoda (2009) who states that the focus of Geography education on the experiences of people places it in a right position for integrating indigenous knowledge and technology as has happened in Uganda. This means the Geography curriculum from this notion can be a discipline that widely includes an indigenous education.

According to Kagoda (2009), one of the ways that would help in placing indigenous knowledge in the Geography discipline is the common good of public education. This cause, however good, is a process that can be delayed as there are few journal writings in Geography dealing with indigenous challenges (Shaw, Herman & Dobbs, 2006). This, however, does not mean the silencing of indigenous knowledge systems in Geography as student teachers can share their indigenous experiences in the Geography curriculum. This is in accordance with Louis's (2007, p. 137) view on Geography in Hawaii where, "the university of Waikato, not only provides a course on Maori Geographies, but also encourages students to use their voices, and it is probably the only Geography department in the world to provide that opportunity".

This is exemplary and we can learn from it and adopt it to the point of allowing Geography student teachers in the African university to use their indigenous voices to indigenising the Geography curriculum. Geography is in any nation, a study of place, environment and its occupants (Graham et al, 2017). For example, the Geography curriculum in Australia is premised on seeking knowledge about places (Harrison, 2017).

Students are unable to understand knowledge that is totally outside of their places and environments of origin. Concurring is Harrison (2017, p. 275) through the assertion that "the Geographical knowledge that students learn at school is almost abstracted from its real-life context and packaged for a middle-class audience. Students learn about de-contextualized knowledge, about cyclones and volcanoes, mountains, floods, climates and population distribution." Curriculum scholars are confronted with the challenge of entrusting students with knowledge models that are fitting to their places of origin, and not doing this makes learning a meaningless exercise.

Students have voices and are energetic players in curriculum development and in the knowledge systems they receive (Castling & Martin, 2011). Castling & Martin (2011) see students as asserting their voices on curriculum. A study by Adyanga & Room (2016) in a community in

Mpumalanga in South Africa, found that student teachers have a belief that having indigenous knowledge systems in the Geography curriculum would improve understanding for those students who battle with conceptualizing Geographic terms. This feeds into the task of the study as student teachers are already revealing their understanding on indigenous knowledge systems in the Geography curriculum.

Student teachers' voices on an indigenized curriculum are needed so as to address the search for African knowledge in curriculum. This means that students' voices are sites of contesting knowledges offered in curriculum to develop an attitude that knowledge is in their own perspectives of seeing and knowing. Students' African traditional knowledge systems are yet to be included in Geography with the aim of appreciating learning in an indigenous curriculum (Green, 2008).

The dominance of western science has opened an opportunity for students' views of indigenous knowledge systems in the Geography curriculum. This is evident in Govender's (2014) study on pre-service student teachers' perceptions on science and indigenous knowledge systems. The study of Govender (2014) reached a conclusion that the student teachers value indigenous knowledge but they perceived science as the ultimate way of understanding and experiencing realities of the world. This evidence suggests that students view science as universal knowledge and develop pessimism towards indigenous knowledge systems.

Similar sentiments are expressed by Quigely (2009, p. 76) who argues that "much of the current but diverse literature in science education does not address the complexity of the issues of indigenous learners in their postcolonial environments and calls for a one size fits all instructional approach." Indigenous knowledge is a system of knowledge that must be maintained as a knowledge model fitting to other students. Disciplines must not put up with that western science. In this section I uncovered indigenous knowledge systems in Geography through the voices of students as documented in literature. The section that follows relooks and re-centers climatology in indigenous knowledge systems.

2.11. Relooking and Re-centering Climatology in Indigenous Knowledge Systems

Climate variations are dominant issues in our planet of which South Africa is no exception. Climate modifications and variations are a complicated process that requires deep sighted, flexible, multifaceted thinking as well as transformative approaches in education (Vogel, Schwaibold & Misser, 2015). A comprehensive education is one that fosters understanding of climate change and its risks in a critical and transformative manner. The knowledge system, which is used in higher education structures to think about ecological issues such as sustainability and climate change, has been called to rethink on how experts go about understanding these issues (Wals, 2011).

Sustainability issues and climate challenges impact the planet issues and need to be thoroughly examined and understood. Vogel et al. (2015, p. 82) note that "alongside the recognition of sustainable development, there has been a growing acknowledgement that systems that sustain our planet including complex socio-ecological systems, should include a range of knowledge's, including those informed from African perspectives- such as local and indigenous knowledge."In attempting to understand issues of climate change, indigenous knowledge has to be part of Climatology curriculum so that experts and students can know about climate issues and their implications, using other knowledge systems.

The need to relook and indigenise the Climatology module based on student teachers' understanding arose from the desire to understand Climatology through indigenous knowledge. In terms of what is not happening in the Climatology field of study, indigenous knowledge systems have not been fully integrated within the branches of Climatology. Hewson & Ogunniyi (2011, p. 679) assert that "an innovative school science curriculum in South Africa requires the inclusion of African societal/ cultural knowledge such as indigenous knowledge."

Climatology is a science which can be studied using indigenous perspectives. This is advance to us by Hewson & Ogunniyi (2011, p. 681) who argue that "in relation to science, indigenous knowledge systems embody agriculture, fishing, forest resource management, Climatology as well as architecture, engineering, medicine, vertinary science and pharmacology." Indigenous perspectives should be part of understanding the scientific field of Climatology because it is also a knowledge mode that presents useful information.

Modules offer the most accessible road towards indigenising curriculum, it would be however illogical to indigenise a module and develop curriculum that furnish African knowledge without firstly looking into how Africans live. What is happening within African and South African universities is a slow but steady work in progress of indigenising the curriculum and university modules (Mkhize & Ndimande-Hlongwa, 2014). In the frame of creating African indigenous education, higher education institutions have begun to situate indigenous knowledge within their modules. Accordingly, within the Climatology module there has been a sense of situating indigenous knowledge however so consideration points to a weak inclusion since the content of the module draws predominantly from western knowledge systems (Keane, Khupe & Muza, 2016).

Universities in Africa have adopted the use of African indigenous knowledge systems within their learning environments and in their university modules. The University of Botswana has developed a centre for Research on Science, Indigenous Knowledge Systems and Creativity, as has the South African Universities of Limpopo, North West and Venda (Ndofirepi & Gwaravanda, 2019). The aim of these African universities was to embrace and include African indigenous knowledge systems in their education, enquiry and public-community teaching (Ndofirepi & Gwaravanda, 2019). African institutions have minimally established African indigenous knowledge systems; the imperative is to now have indigenous knowledge as a fully-fledged knowledge system within modules like Climatology, otherwise western knowledge systems will continue to be a reference for knowledge.

2.12. The African University

In this study, I locate the calls for indigenous Climatology in the broader clarion call for decolonising the university in South African higher education. In other words, we cannot exclude indigenous knowledge systems from the broader decolonial project. Students enter into the university with world experiences unique to them and not conforming to the curriculum knowledge that they encounter at the university (Ensor, 2004). The curriculum has not been restructured to conform to students' knowledge needs; hence, a knowledge delink is apparently visible and an African university is not yet in place. The intellectual and property structures of universities in South Africa feature statues of people whom the students know and these statues

represent people who took black people for shame (Mbembe, 2016). The students nonetheless, have come to the forefront in a collective voice about the need for decolonisation in the academic space of higher education. This was apparent in the student revolt of 2014-2015. Lange (2017) put it succinctly that the student revolt commanded that black students be seen as black and the decolonisation of universities and teaching strategies as well as the curriculum be considered.

There is need to look deeply into the connection between knowledge, student identity and curriculum in relation to the universities as they are marked out as abstract to the African student (Mbembe, 2015). Decolonising the curriculum of an African university is underway but is, however, let down by the frame of the knowledge, student identity and curriculum that is within the current university.

The current curriculum is a colonial excerpt or simply put an exoskeleton because students were not consulted on the form of knowledge to be included in the curriculum to offer a comprehensive learning experience (Lange, 2017). In the absence of students voices in curriculum developments, the curriculum is neither indigenous nor does it advocate an African university. African institutions of higher education have to attend to the words that have become the order of the day, which are; indigenising, decolonising or even the africanisation of the curriculum (Mahabeer, 2018).

The need for higher education institutions to attend to indigenising, decolonising and africanising stems from that there are colonial legacies found in our curriculum. Mbembe (2016, p. 23) argues that “there is something profoundly wrong when, for instance, syllabuses designed to meet the needs of colonialism and apartheid should continue well into the liberation era.” In our institutions of higher education, truth is regarded as the western knowledge system (Mutekwe, 2015). It is because of this that curriculum must put up with decolonisation of the knowledge systems within the universities of Africa for the realisation of an African university.

The compliance of African academics and the student population to the knowledge offered in curriculum has been practised for long but has slowly begun to be challenged (Fomunyam & Teferra, 2017). Within the context of South African higher education, the ways of decolonising the curriculum are disoriented as the means to such a cause are defined differently by different stakeholders (Paredes-Canilao, 2006). In this decolonisation project, an agreed upon avenue by

different stakeholders is absent, and this prevents the decolonisation of the curriculum. In the absence of an avenue for decolonisation, it becomes even more difficult to respond to local needs like having an African university with indigenous knowledge systems (Fomunyam & Tefera, 2017).

Perhaps, a look at what features of the curriculum must be decolonized needs attention to facilitate success of the decolonisation of the curriculum. The focus of this research project was on exploring Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education Institution. African scholars themselves have contributed to the colonisation of African education as they have focused on competing and shining at an international level, whilst neglecting the local challenges (McMillan, 2008).

Indigenisation of the curriculum is one way of doing away with colonisation of the curriculum but the African scholars in universities have to be at the forefront of this as well, rather than focusing more on competing in the global knowledge order. This is also particularly revealed by ParedesCanilao (2006, p. 7) who asserts that in order for decolonisation to be thorough and successful, decolonial scholars have to continue with their attempts to indigenise curriculum so as to recover indigenous ways of thinking about knowledge. These are one of the ways to emancipate indigenous knowledge in the curriculum and counter-claim that western ways of life are all that we should know about.

Universities in Africa generally, and in South Africa particularly, have slogans and cultures which they are expected to adhere to. For example, the University of KwaZulu-Natal has a memorable slogan "inspiring greatness". By the same token, the University of South Africa (UNISA) as an institution claims, as its mission statement, to be an African university in service of humanity, and "this should reflect in its institutional culture, curricular and library holdings and practices" (Dube, 2012, p. 71). African education institutions are still on the same point of offering education that is remotely distant from African challenges (Mutekwe, 2015).

Sharing a similar sentiment to this idea is Le Grange (2016) who argues that decolonisation and indigenising the curriculum is a debate that is behind the hand of time, as knowledge civilisations from the west endure as unaltered and unchallenged systems of thought in the many of the universities of South Africa. This is an antithesis to what Dube (2012, p. 72) asserts, "an African

university cannot be but part of the African Renaissance, it cannot be neutral in matters of national significance, it should promote the development of African knowledge systems in their own right." African academic institutions should endorse what they claim to be and not give an impression of what they ought to do and not implement it. I agree with Dube (2012)) that curriculum in every academic institution in Africa should have indigenous knowledge systems as their center of attention.

Academics from the mainstream knowledge system may disprove of indigenising the curriculum however the misfortunes of not indigenising the curriculum would be that knowledge would still be defined as foreign in an African university. Much focus has been placed on the Africanisation of higher education Institutions and the decolonisation of curricula. There has been very limited direction on how to do it (Chemhuru, 2016). It is no wonder that the positive steps towards decolonising African universities and indigenising curricula is characterized by hardships in the absence of progressive direction.

The quest for decolonising the universities is a response to the fundamental beliefs and significant experiences of society. This is revealed by Mahabeer (2018) who asserts that, in the South African case, curriculum decolonisation means building the curriculum for the significance of the past and present realities within which higher education institutions operate. Arguably, the current curriculum is irrelevant as it does not reinforce indigenous knowledge that indigenous students uphold and which the indigenous communities depend on.

Traditional knowledge models must be seen as significant in knowledge spaces and must be all embracing in the curriculum (Barnhardt, 2005). A review and reform of curriculum is needed as it is colonized and hegemonised in South Africa education (Horsthemke, 2017). A decolonized curriculum means a changed education with knowledge systems that allow for the construction of an African university. Decolonisation is as a reaction to the apartheid of the past in the case of South Africa, which ended up belittling and destroying knowledge that is indigenous (Le Grange, 2016).

It is not easy to remember the alienating past however the present realities in the knowledge spaces of universities, with its violence, brutalities and harm are the features of the past (Wolf, 2016). Knowledge violence in this indigenising exercise ought to be fought against with keeping

in mind that colonial apartheid was the cause behind the absence of indigenous knowledge in higher education. Colonisation in higher education in Africa should not be a perpetual regard of African indigenous knowledge systems as inferior (Adebisi, 2016). The regard of western knowledge as a knowing of all form is the very colonisation of curriculum in higher education that undermines African knowledge as inferior (Wolf, 2016).

Decolonising higher education curriculum means confronting the injustices of the past and having indigenous knowledge systems as part of the conventional curriculum (Mampane, Omidire & Aluko, 2018). Emphasis on decolonising curriculum is placed on taking in or containing indigenous knowledge systems as part of the whole education system. It is not enough to be labelled an African university without the voice of an African student in what happens in the curriculum.

Famunyam & Teferra (2019, p. 205) argue that "higher education in South African has amongst other things three intrinsic objectives; value for money, fitness for purpose and transformation." Famunyam &Teferra (2019) state that, because students pay for education, they have to partake in the discussions about curriculum and have to be updated on changes made on curriculum as should many of the university interested parties. Multiplicities of voices need to be heard for an African university to emerge. The difficulties found in institutions of higher education question what knowledge can be taken as authentic (Favish & McMillan, 2009). In responding to this, universities have begun to rethink what knowledge means as it is a changing and challenged discourse. Diverse knowledge system is pivotal if African indigenous knowledge systems are to be taken as authentic knowledge systems (Moodie, 2003).

Indigenisation challenges the dominant knowledge systems at universities. Ndlovu-Gatsheni (2017, p. 51) asserts that "every human being is born into a valid and legitimate knowledge system." Transformation and devotion to a bottom up approach is necessary in the university if successful change is to be realised in an African university. This can happen through the joint taking of decisions on what knowledge to have in the curriculum by both power holders (lecturers) and those at the lower chains of power (students) (Favish & McMillan, 2009). A picture would be painted to students that the university is their home where they are entitled to

make decisions. It would also show that knowledge is not produced only by the university but also by those involved in the university (Favish & McMillan, 2009).

Academics in Africa have long fought for an African university (Castells, Muller, Cloete, & van Schalkwyk, 2017). This means that a modernised institution of higher education was instituted and placed in an indigenous African setting where supposedly a university for Africa should be located. This also suggests that the university in Africa is a university transferred from the European modernised university (Ndlovu-Gatsheni, 2017). African students who attend these so-called African universities are at the point of being mis-informed as they pay educational visits to universities that mythically claim to be rooted in African intelligence (NaseLebakeng & Phalane, 2006). Frankly put, an African university must not be a borrowed university, but must be in existence on its own, and embody African ideals.

In an African context, the university has come to be labelled the "renaissance university, the enlightenment university and the current corporate university" (Ndlovu-Gatsheni, 2013, p. 48). The university in the African academic space does not qualify to be named an African university because it is one that illuminates the state of Europe, shedding light on backward minds in Africa at a price to provide such enlightenment. It is useless to fight for an African university if it is going to be similar to that of the current university where Africans are objectified as consumers of knowledge that is typically exotic (O'Halloran, 2016).

The need to decolonise for an African university begins from that it must be different from other universities. Ndlovu-Gatsheni (2013) argues that African academies need to be drastically converted into universities for Africa through the reviewing of curriculum and formal structures of operation. Decolonising the universities in Africa proceeds by decolonising the curriculum, and extends even to decolonising its ways of operation, together with its staff members.

The argument by Nyamnjoh (2019, pp. 1-2) is that "Most universities in postcolonial Africa have significantly Africanized their personnel. However, they have been less successful in Africanising their curricular, pedagogic structures, and epistemologies, despite declarations of the intention to decolonize university education through promotion of perspectives grounded in African realities and experiences." The University in Africa is at this stage intentional and in a positive light as the majority of its personnel is of African origin. It however, needs to have a

drastic change in the curriculum, teaching strategies and knowledge systems. At a broader spectrum, a large number of African universities have found it difficult to Africanise their institutions even after their states have gained their autonomous or self-rule to be called independent states. Mamdani (1993, pp. 11-15) argues that "universities have triumphantly remained universalistic and uncompromisingly foreign to local cultures, populations and predicaments." The likes of Hendricks (2013) also share with us that universities in South Africa and in Africa as a whole need to be Africanised.

To change the University in Africa and respond to the realities facing mother Africa and her people means that indigenous forms of knowing that are relevant to African must be made available in universities. It remains that curriculum transformation is not the ultimate solution to the process of Africanising or indigenising the university as it is not a one size fits all approach to problems facing higher education institutions in Africa. Looking outside the frame of scholarship through engaging with African indigenous people who have much indigenous wisdom could assist to develop a African university (Nyamnjoh, 2019).

African people outside the academy have much more to offer for indigenising the African university as they have tons of insights on indigenous knowledge. Their shared wisdom would assist in bringing knowledge within academic institutions that is up to date and relevant to the African context, which will also serve to refresh the perspectives of young prospective student teachers. In terms of transforming higher education institutions, students are accorded minimal say in curriculum decolonisation by the presumably mature academic scholarly experts as they supposedly know more than the students (Chimanikire, 2009). This should not be the case if a transformed and indigenised African university is to be developed. I now turn to the language issue in indigenising the curriculum.

2.13. The language issue in indigenising the curriculum

Questions that need to be asked are; what has to be taught? How is it to be taught? And in whose language? English is used as the main mode of learning and communication in courses at higher education except in linguistic course like. It is as important to welcome other languages so that students can develop comprehension of words unique to certain subject specialisations (Mheta et al., 2018). This means that in this process of decolonisation for an indigenous curriculum,

inclusivity of other knowledge systems and languages is also crucial. According to Mbembe (2016),

> A decolonised university in Africa should put forward languages at the centre of its teaching and learning project. Colonialism rhymes with monolingualism. The African university of tomorrow will be multilingual. It will teach (in) Shwahili, IsiZulu, IsiXhosa, Shona, Yoruba, Hausa, Lingala, Gikuyu and it will teach all those other African languages French, Portuguese or Arabic have become, while making a space for Chinese, Hindi etc (Mbembe, 2016, p. 36)

The most important issue is decolonising the current universities to a point where other languages like African languages are used for an African university to be apparent. There is need for change in higher education institution which would be aimed at allowing student teachers to voice out what stream of knowledge and language they believe would be acceptable and that they would clearly understand (Mbembe, 2015).

Indigenous knowledge systems have been ridiculed by science enthusiasts as the curriculum emphasizes importance of Maths and science whereas local languages like IsiXhosa, Setswana, Sesotho and IsiZulu are granted less emphasis (Kagoda, 2009). The less approval of local languages is worrisome as they are the main avenues to the development of indigenous knowledge in the curriculum (Kagoda, 2009). The accommodation of scientific subjects like Math leaving out the use of indigenous languages means that it will take time to develop a curriculum with indigenous knowledge systems.

A study by Mmola (2010) on students' and lecturers' views on a course on indigenous knowledge systems at the North West University revealed that 80% of students suggested that successful learning occurred when lecturers used indigenous language, like Setswana language. Indigenous knowledge holders and practitioners are available and none of the knowledge systems in existence should be taken as superior over other knowledge forms.

The nature of living in rural ecologies of South Africa means that people in these settings live off and depend on indigenous knowledge. However, colonial knowledge has been strongly present in the rural ecology leading to almost the loss of the use of indigenous knowledge, especially among the youth of today (Shizha, 2017). Student teachers are the young generation of today

who are at the edge of losing out on indigenous knowledge as they are more in touch with the western civilized forms of knowledge (Msuya, 2007). Indigenous knowledge systems have been rejected as out of date and unscientific ideas even though they are useful for farming and as traditional medicinal herbs for lung problems, asthma and an array number of diseases among the Xhosa and Basotho people of South Africa (Shizha, 2014). This means that indigenous knowledge is a life sustaining livelihood as its use is able to provide food and come up with cures for deadly diseases.

I now turn to exploring the shift from the decolonising ideal to the indigenous imperative.

2.14. From the decolonising ideal to the indigenous imperative

A call for decolonized education in the post-colonial era is something that has become familiar in the African institutions of higher education (Nakata, Nakata, Keech & Bolt, 2012). The coming to an end of colonial rule meant a new life for Africans. This meant the building up of new independent nation-states controlling and ruling their own development. However, their knowledge order is to this day modelled on colonial modernity (Radcliffe, 2017). To come to a stage of indigeneity, more research ought to be carried out on indigenous perspectives.

A significant body of literature focuses on decolonising perspectives and Radcliffe (2017, p. 229) states that "postcolonial Geography and decolonial scholars have critiqued the longstanding legacies of colonialism". Scant research has been done on indigenising perspectives and on students' understanding of an indigenized curriculum. This study investigates indigenous views through Geography student teachers 'opinions of indigenising the curriculum, in particular the Climatology module.

Notwithstanding the above, substantial literature focuses on ways teachers can teach indigenous knowledge (Brown, Muzirambi & Pabale, 2006; Seehawer, 2018; Shizha, 2007; and Santoro et al, 2011). Researchers show less concern on students taking an indigenised curriculum as they focus on expected teacher duties when teaching indigenous knowledge to students. Scholars suggest that transformation is long overdue, not only from a South African point of view, but even in US and Canada, as in these countries, "Present day schooling has been a white supremacist project" (Tuck & Gaztambide-Fernandez, 2013, p. 75). Students then are in

educational space where their voices have not been listened to for long, and change to such a discourse is seemingly unapparent. The research study sought to bring about change in the educational arena where students 'voices are excluded. This was done by exploring Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education Institution.

Curriculum specialists need to consider students 'understandings on having an indigenous curriculum (Bolt & Bezemer, 2009). Granting students, a chance to share their views on indigenous curriculum is a crucial because it emancipates students to learn through their own thinking and in indigenous ways of knowing that traditionally go beyond the imperialist ways of knowing (Nakata et al, 2012). Transformation is, however, steadily happening in some parts of the world as in the case of Australia where indigenous views are embedded in course material in all of the faculties of Australian universities (McLaughlin & Whatman, 2007).

Higher education institutions of Australia have realised the need to indigenize curriculum and students can enjoy meaningful education consistent with their native indigenous design. A study by Bolt & Bezemer (2009) on colonial education in Sub-Saharan Africa and in other countries shows indigenisation in New Zealand and North American universities. In the study, students indicated that an indigenous curriculum allowed them to use traditional modes of reasoning compared to using ones that are not their traditional modes of knowing. Discussing with students on their understanding of an indigenised curriculum is critical so that students learn of a knowledge that is relates to their immediate life. Asking students for their views on an indigenised programme of study would make students less submissive in lecture venues.

In the background of the study (see page 4) it was revealed that there are few studies focusing on Geography student teachers views on indigenising the curriculum specifically within the field of Climatology. From these studies, a number of them point to indigenising the Mathematics curriculum while others are general with no specifics (Nyoni, 2014; Mudlay, 2018). This study was therefore done to further knowledge on Geography student teachers' understanding of indigenising a Climatology module in a South African Higher Education Institution.

2.15. Conclusion

In this chapter, I clarified the concept indigenous knowledge so that the reader can have a sense of this term as it is used throughout the study. The definition of the term differed according to the views and debates of the different scholars. I focused on indigenisation. I outlined the views on knowledge integration. I thereafter discussed how indigenous knowledge is responsive to the African setting. I thereafter fore-grounded the debates on curriculum and curriculum as reproduction. In the calls for indigenising curricula, particularly for this study, indigenising the Climatology module, I discussed the availability of indigenous knowledge in a teacher education institution of South Africa. In the chapter that follows, I discuss and the theoretical lenses I employed in the study.

Chapter Three
Theoretical Framework

3.1. Introduction

In the previous chapter, I argued that universities in Africa have to be remained, as much of the content and curriculum of universities have failed to provide indigenous knowledge for students. In this chapter, I centre discussion on the theoretical framework used in the study. I begin by explaining what a theoretical framework is, highlighting in particular, the rationale for using the particular theoretical lenses I chose to use in this study. I thereafter, discuss the African Renaissance theory where focus is on its background, how it aligns to the European Renaissance, the way I used it in my study, its use in education, as well as its shortcomings. I end the chapter by summing up what is discussed in the overall chapter.

3.2. On defining a theoretical framework

A theoretical framework is one of the crucial elements of research. A theoretical framework is a fabric that one uses to formulate their study and depends on a formal theory to explore or define issues happening in society (Grant & Osanloo, 2014). From this, one learns that a theoretical framework is foundation of the study which uses a formal theory to explore the phenomenon the study wishes to research on. The theoretical framework is mostly taken as a blueprint because it informs the analysis, research methodology, and type of data to be generated and the research topic of a research project (Heale & Noble, 2019). Grant & Osanloo (2014) says;

> The theoretical framework is the foundation from which all knowledge is constructed (metaphorically and literally) for a research study. It serves as the structure and support for the rationale for the study, the problem statement, the purpose, the significance, and the research questions. The theoretical framework provides a grounding base, or an anchor, for the literature review, and most importantly, the methods and analysis (Grant & Osanloo, 2014, p. 12).

The argument put forward by Grant & Osanloo (2014) is that a theoretical framework acts as a foundation for the research study when reviewing literature, and in particular, defines the useable

methods of analysis. The theoretical framework moreover acts as a supporting system to the rationale of the study, significance, purpose and the research questions. It is evident that a theoretical framework at its totality houses and directs the research study and gives it its rigour.

A theoretical framework embodies how one will go about doing their study. This is also suggested by Casanave & Li (2015, p. 107) who state that "a theoretical framework is a more or less abstract idea that encircles the study the way a frame encircles a picture and provides a space in which it is situated." This means that a theoretical framework defines the boundaries of the study in terms of how one will go about doing it.

In a different view, some authors (Grant & Osanloo, 2014; Heale & Noble, 2019 and Casanave & Li, 2015), say a theoretical framework acts as an amalgam of ideas of experts in the research field as they relate to one's research work, and one understands the ideas behind the theories and utilises them to make sense of information generated from the field (Kivunja, 2018). A theoretical framework is a blend of views from specialists in the research world whose theoretical understandings can be used by those engaged in research. I now turn to looking into the African Renaissance theory, how it came about, its use in education and the way I have used it in my study.

3.3. The history of the African Renaissance theory

The African Renaissance has, and continues to be, a popular theory that has become a catch all phrase. The idea of the African Renaissance was widely popularized in the 1940s by a historian, politician and anthropologist from Senegal, Cheik Anta Diop (Ndlovu-Gatsheni, 2019). It was further popularized by former South African president Thabo Mbeki in the 1990s and 2000s in South African politics (Nabudere, 2001).

The African Renaissance as a theory seeks to improve African lives by enabling African people to redefine their identities and come up with new ones as they have been dehumanized by colonial Europe and Western regimes (Dartey-Baah & Amponsah-Tawiah, 2011). The African renaissance responds to epistemic violence, which refers to the silencing of other people's knowledges and cultures (Ndlovu-Gatsheni, 2016. Dehumanisation came in the form of epistemic violence where African people were not at liberty to use their African ways of

perceiving reality but European ones (Eze, 2014). The African renaissance also placed importance on making Africa relevant in this day and age of globalisation.

The African Renaissance aims to establish what has been called a united state of Africa, where African countries come together to reinvent Africa because it has been regarded as backward and in need of modernisation (Harman & Brown, 2013). Two theories of development were initiated for the development of Africa, namely; the modernisation theory and the dependency theory. I discuss what the modernisation and the dependency theory entails, and thereafter, show how the African Renaissance argued its case against these two models of development.

The modernisation theory is an economic model that draws from capitalism and holds that knowledge must be passed down to what was historically considered "primitive" African societies so that they can be enlightened (modernized) as they are in the dark, and thereafter, achieve economic prosperity" (Matunhu, 2011, p. 66). In other words, modernisation is about European nations dictating, owning and controlling a path that African countries must follow in order to reach developmental stages that European nations have reached and be labelled as modernized. This comes down as a form of European universalisation (Lenhardt, 2002; Kamwendo, 2010).

The dependency theory argues that the modernisation theory has been a failure in revealing the conventional relationship between developed regions and poor regions (Kennedy, 2010). The dependency theory argues that the modernisation theory does not show how developed nations foster the development of poor nations. The dependency theory then posits that Africa can develop through a Western cultural project where African issues are understood through the economies of Western-European expansion (Nabudere, 2002).

The above idea only furthers the African crisis because the development of Western-European economies depends on exploiting African economies, human and man-made resources, as well as an African educated work force intelligent enough to solve the African condition. They do this by using African ideas of development like the African Renaissance rather than relying on the modernisation and dependency models of development that are clearly not working for the African situation.

The African Renaissance theory evolved as a response to both the modernisation and dependency theories of development, as both theories are founded on ideas that are not suitable for African problems, but rather exacerbate them. The African renaissance evolved to suggest that African development can take place through the collective unity of Africans where they come together to work on African problems for their greater good to reclaim their Africaness through using African proposed solutions (Matunhu, 2011). The African Renaissance was used in this study for the greater good of reclaiming African identities in a higher education institution by seeking for students' understanding of an African indigenous Climatology module.

3.4. The African Renaissance theory and the European renaissance

The theory framing this study is the African Renaissance theory. At the beginning of the current century, most African scholars began to look for an education that is based on African ideologies and beliefs (Msila, 2009). At most, these scholars were focused on an education that would contain indigenous knowledge systems (Higgs & Van Wyk, 2007). For the education system in Africa to have African cultural elements, the African Renaissance theory, as an African educational theory, can introduce the renewal of the knowledge systems present in the knowledge spaces of Africa (Luckett, 2010). The word renaissance is a European terminology originally aimed at the transformation of the economies, politics and education of Europe. It then gave birth to the African Renaissance as it relationally took philosophies and values from the European Renaissance (Tikly, 2003).

The renaissance theory began as a European phenomenon which led to development of the African Renaissance. Both the African Renaissance and the European Renaissance focus on transforming the politics, economies and education of their continents. Unlike the European Renaissance, the African Renaissance focuses on humanism, which is one of the reasons the African Renaissance is believed to be leaning towards Pan Africanism as Pan Africanist ideas largely uphold the ideal of humanism (Higgs, 2012). Reihling (2008, p. 1) argues that "the idea of the renaissance of Africa is as old as the Pan-Africanist movement and its struggle for a regeneration of the continent after slavery and colonialism." From this we learn that the African Renaissance came to brush off colonialism just as the forthcoming of the pan Africanist movements.

3.5. The Renaissance and the Pan Africanism Nexus

The African Renaissance came in part to fix the attempted failures of Pan Africanism to bring about the unrealised African aspirations of the African people (Liebenberg, 1998; Oginni & Moitui, 2015). The historical lived experiences of African people and their struggle to re-awaken the African continent means that this is an African century (Msila, 2009). This century is largely affected by these two movements; the African Renaissance and Pan Africanism. Pan Africanism, as a movement calls for continental unity in order to achieve humanity, freedom and the liberation of African people from exploitation (Kasanda, 2016).

The African Renaissance feeds from Pan Africanism in that it also aims to develop the African continent based on unity to construct an Africa with common values (Ndlovu-Gatsheni, 2014). The African Renaissance and Pan Africanism speak to one another in the sense that the African Renaissance "speaks for the purpose of achieving a continental re-birth and the actualisation of Pan-African dreams" (Daudu & Asuelime, 2019, p. 164). The huge expectations brought by these movements are, in part, inspired by the attempt to break the dependency syndrome on Europe; be it for knowledge production, economic or technological advancement.

The African Renaissance was used in this study to attempt to break this dependency syndrome, especially on knowledge production in universities. This means that African universities have to depend on knowledge's that are produced in Africa, in other words a Pan Africanist university. A Pan Africanist university is considered necessary and the African Renaissance adheres to such, as it aims to restore Africa by availing indigenous knowledge in African universities (Ahluwalia, 2002; Bunda, Zipin & Brennan, 2012).

According to Nabudere (2003, p. 1), "the establishment of the Pan-African university should have as its overall goal the provision of opportunities to produce education and deliver it to students and adult learners in the context of a new African-based epistemology and methodology." The argument implies that, with the establishment of a new Pan-Africanist university, students' and adult learners' needs will be catered for. Its knowledge and its methods will be African centered and constitute a true African Renaissance. A new Pan-Africanist

university is what is needed because the adopted models of universities in Africa are totally unfit for use to university students in Africa.

We have to be critical of the development of a Pan-Africanist university that would lead to the Renaissance (rebirth) of Africa and its universities. The dominant Euro-Western interest groups and specialists can challenge this doing as they may find it undermining Euro-Western ways of knowing, seeing and being (Sesanti, 2016). It is a matter of utmost importance to develop a new university based on Pan-Africanism and on the African Renaissance ideals (Dastile & Ndlovu-Gatsheni, 2013).

Among the things that a Pan-Africanist university has to do "it has to play the vital role of freeing knowledge production from narrow class, technical and instrumental dominance by a few specialists to a broader theatre of recognition of other producers of knowledge which matters in their lives and has validity in their cultural contexts" (Nabudere, 2003, p. 2). This means that a Pan-Africanist university has to be established within a wider scope of acknowledging that knowledge's are equally valid and are fitting to contexts of their people. Knowledge production should therefore, not be specialized to fewer individuals.

The African Renaissance project attempts to establish African indigenous ways of knowing in higher education institutions of South Africa. Previously, I showed how the wave of the African Renaissance took place from 1940 to 1960 and the second in the 1990s and the last being in the 21st century, the current century. According to Nabudere (2001, p. 22), "these three moments do not locate the true origins of the struggle for an African Renaissance correctly". For some, the reawakening of Africa through the renaissance has to begin by looking at the causes of the dire periods in Africa like slavery and colonisation (Lazarus, 2004; Fashola, 2014).

The struggle to overcome the dire issues facing Africa is what led to the African Renaissance. However, the African Renaissance as an African project came into place because the African continent is not what African people imagine it to be (see Bribena, 2018). Daudu & Asuelime (2019) argue that a true African Renaissance is yet to be realised as African elites are faced with a huge task to develop previously colonized fragile states into strong African states. Besides the lingering effects of slavery, colonisation and inherited fragile states, Nkomo (2011) argues that

unethical African leadership is another problem causing the underdevelopment of Africa and delaying the achievement of an African Renaissance.

The African renaissance model nonetheless remains important for postcolonial Africa because it does, not only aim to solve socio-political issues in Africa, but also to free it from epistemic colonisation (Zeleza, 2009). Epistemic colonisation is when people in power speak of a phenomenon or issue that they have never experienced (keet, 2014). The African Renaissance was a useful theoretical lens in exploring the Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education Institution.

Higgs (2010) argues that the African Renaissance is an important project in education with the demanding calls to recognize and include indigenous knowledge in the higher education system of South Africa. This study argues for the inclusion of indigenous knowledge systems in higher education by eliciting Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education Institution.

3.6. Reimagining African education through the African renaissance

The African Renaissance has developed to become a theory aimed at giving rebirth and restoration to African ideas through the availing of African traditional knowledge systems in the curriculum (Botha, 2010). A knowledge gap is evident in education as there is brain drain (the emigration of intellectuals from one nation to another) of African intellectuals. The African Renaissance is therefore, a necessary theory to rehabilitate African knowledge systems, as it speaks to even African scholars working outside their nations of birth because of the brain drain (Mbeki, 1999; Koma, 2018). The African renaissance also pleads with African intellectuals working outside this continent to come and assist with their knowledge to develop Africa. Noticeable is the African Renaissance theory's intention is to revitalize African ideas in the knowledge debate. However, criticism has come against this theory. Tilky (2003) suggests that,

> The African Renaissance idea that is at its most recent incarnation it has leant towards a modernist view of the renaissance project. This, so it is argued, contradicts a cultural interpretation of the African Renaissance which has at its centre the rediscovery of an African essence and the assertion on the world stage of African culture and values as an antidote

> to the dominance since colonial times of western ones(Tikly, 2003, p. 549)

In the above quotation, Tilky (2003) argues that intentions and aims do not click as the African Renaissance is in contrast with the reimagining of Africa as it developed as a project that was mostly based on European ideas. This implies that not much change can be brought to meet the needs of an indigenised curriculum or broadly an indigenous knowledge system in higher education institutions. The African Renaissance however, is at the start of rediscovering Africa and is not a stand-alone project.

Reihling (2008, p. 1) argues that "in South Africa the African Renaissance coincides with a nation building project which promotes the revitalisation of local knowledge." The present study promotes local knowledge in the Geography curriculum and specifically in the Climatology module, as it explores students' understanding of indigenous knowledge systems relevance in the Climatology module. Ramose (2004) stipulates that indigenous driven interests have to begin from below, meaning that students have to play centre stage in the fight for reinstituting African ideas in the curriculum as they are the ones who mostly face challenges with the knowledge they learn.

The African education system of this time is entirely not indigenized as there is an endless interest to have African indigenous knowledge systems of thinking in higher education (Msila, 2009). This is because the education system in Africa is still exposed and challenged as the African Renaissance follows the European Renaissance model of education. Nevertheless, the African Renaissance has come to allow Africans to define their future and to solve their African realities with an Africanized education, which revitalises African voices in knowledge spaces (Bitzer & Menkveld, 2004).

The African Renaissance has gained prominence as it attempts to validate African indigenous knowledge systems invalidated by western ways of knowing (Hoppers, 2001; Seepe, 2004). The African Renaissance coming to reclaim African values in the education discourse also pushes for the insertion of indigenous knowledge systems which are believed to have some effect on liberation (Sitas, 2006). The African Renaissance theory serves an emancipatory purpose in the

development of knowledge, as it allows Africans to define themselves as Africans while recovering African values and placing indigenous knowledge systems in the discourse of education.

The need for an African Renaissance in the African education system is much more than what has been stated. According to Higgs (2012),

> The African Renaissance is founded on the perception that the overall character of much of educational theory, practice, and research in Africa is overwhelmingly either European or Eurocentric. In other words, much of what is taken for education in Africa is in fact not African, but rather a reflection of Europe in Africa (Higgs, 2012, p. 38).

The above argument by Higgs (2012) means that the African Renaissance was developed on the idea that education in Africa is not actually an African based education but an education modelled from Europe. The African Renaissance theory is suitable for this study because it acts as an antithesis to a European modelled education, and hopes to have an African indigenous education. The African renaissance theory is also a theory that is based on re-orienting African education in order to embed African values in the higher education curriculum (Ezumah, 2019; Maphalala & Mpofu, 2018). As a result, the latter theory enabled the exploration of Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education Institution.

Academia in South Africa is focused on producing knowledge be it through Non-Governmental Organisations (NGO's), research or community work (Botha, 2010; Sita, 2006). The Centre for African Renaissance Studies (CARS), located at the University of South Africa, is taken as an academy of learning as it is an organisation assigned with the task of promoting knowledge (Hoppers, 2006). Change generation in producing knowledge is therefore, happening and has begun to be introduced through establishments such as the CARS aligned with the renaissance theory.

The African Renaissance has come to renew Africa and make African education inclusive of African knowledge systems (Saayman, 2015). The African Renaissance theory is therefore a theory that can used by educated elites of Africa to assist the continent of Africa to re-establish

itself, outline its future endeavours and participate in the world economy (Cossa, 2009). This means that the African Renaissance can eventually be a means to decolonising the higher education curriculum.

3.7. African Renaissance as a decoloniality

With the ongoing attempts towards Africanising the curriculum, one cannot afford to neglect the debates on decoloniality. Mashau (2018, p. 3) defines decoloniality as "an epistemological and political movement, one which speaks to the deepening and widening of decolonisation movements in those spaces that experienced the slave trade, imperialism, colonialism, apartheid, Neo-colonialism and under-development." The definition means that decoloniality is part of a movement that seeks to break coloniality in knowledge as well as in politics. I understand decoloniality to be about reversing Africa's underdevelopment in areas like knowledge and politics. The African Renaissance aligns with the decoloniality movement because it seeks to develop Africa economically, politically and on the knowledge front (Motsaathebe, 2011)

Decolonising the curriculum also forms part of the African Renaissance theory because decoloniality is based on principles that aim to re-invent the curriculum in such a way that it can have indigenous knowledge systems (Morreira, 2017). Decoloniality is based on principles that align with the African renaissance. According to Ndlovu-Gatsheni (2015, p. 489-490), "decoloniality is based on three concepts or unit of analysis of which are coloniality of power (which is both in economic and political) and coloniality of knowledge and being."

Decoloniality is based on breaking barriers that constitute coloniality; which are coloniality of power, being and knowledge. Indigenous people's knowledges are considered in a minimalist way within higher education institutions as they are labelled powerless, non-human and with no knowledge. It is for these reasons that there is a recognised need to decolonize curriculum in order to create a curriculum with indigenous knowledge and indigenous experiences (Harvey &RussleMundine, 2019). In order for indigenous people to move from a zone of non-being to a zone of being, recognising their indigenous knowledge, the decolonisation movement is a necessary one.

According to Motsaathebe (2011),

> At the turn of the century there was sheer optimism that 'Africa's time' to address all its problems had come, and as a result the 21st century was widely hailed as the 'African century'. This pronouncement was accompanied by the parallel call for the African Renaissance, which challenged many institutions to align themselves with this 'crucial phase' in the history of Africa. In the process, expressions such as 'deWesternisation','Africanisation', 'indigenisation' and 'domestication' became buzz-words (Motsaathebe, 2011, p. 381).

The argument by Motsaathebe (2011) means that the current century is a time to address African problems and involves addressing problems in every aspect, even those in education. Higher education institutions in Africa are urged to be part of this wave of addressing African problems within the African Renaissance period where institutions are to place African experiences at the center. This process involves implementing catch phrases such decolonising, Africanising and indigenising which are different but address similar African problems. I used the African Renaissance as a theoretical lens to understand Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education Institution.

Decolonial debates have made no mention of indigenous ways of living and indigenous literate people have been given little chance to make contributions to the ways of going about the decolonial journey (Tuck & Yang, 2012). Decolonial thinkers have to give a chance to indigenous people to share their ideas on how to decolonize the curriculum. The African Renaissance also suggests that indigenous people have to make contributions on decolonising curriculum by defining their life worlds and their experiences as well as their histories (Lebakeng, 2018).

Decolonial attempts have been made to reverse the crisis facing Africa, and the African Renaissance, in part, fulfils this task (Morreira, 2015). Lebakeng (2018) suggests that:

> The African Renaissance is a newer attempt similar to decolonising at addressing the state of affairs characterised by poverty, instability, dictatorship and growing social inequality on the continent since the beginning of the 20th century. Considering the above situation, the social sciences and humanities have been found wanting with regard to the process of reviving and regenerating Africa because such disciplines remain steeped in their Eurocentric origins (Lebakeng, 2018, p. 247).

Decolonisation has been in effect for some time. However, a newer wave came in which is the African Renaissance which also aims to address the same issues decoloniality tried to address. Disciplines like the social science and humanities however are still covered in the very same European heritages of knowing that constructed these disciplines. It is therefore, appropriate to decolonise curriculum of these disciplines. This study sought to explore Geography student teachers' understandings of indigenising the Climatology module in a South African Higher Education Institution and used the African Renaissance as reference point.

3.8. Conclusion

In this chapter, I explained the theory informing my study. To do this, I defined and elaborated on the theoretical framework. I then provided the background of the African Renaissance theory and how it is related to the European Renaissance. I thereafter, went on to show the relationship between the African Renaissance and Pan-Africanism. I then illustrated and theorised how I used the African Renaissance theory in my study. I thereafter focused on the use of the African Renaissance, particularly in education. Criticisms levelled against the African Renaissance were also revealed in this chapter. In the following chapter, I now focus on the research design and methodology of the study.

Chapter Four
Research Design and Methodology

4.1. Introduction

In the previous chapter, I looked at the theoretical lenses that were adopted in the study. The current chapter focuses on the interpretive paradigm, research design, the qualitative method, and the research methodology. Thereafter the single case study, sample type used in the study and the methods of data generation are discussed. Thematic analysis is explained and is explained in chapter five when analyzing students' responses. In the end, the limitations of the study, ethical considerations, and trustworthiness are explained. The researcher summarizes all that was explained in the chapter in order to come to a conclusion of the chapter.

4.2. Interpretive paradigm

A paradigm indicates a set of perceptions existing amongst researchers, shared ideas on how to understand the eventualities of life, and the perspective lenses we use to look into the world and do research (Rahi, 2017). Paradigms most commonly include the interpretive, positivist and the critical paradigm. Paradigms are mostly in opposition to one another and have their discipline of focus. The Interpretive paradigm originates from the social science discipline and is in opposition to the positivist paradigm (Brooke, 2013). The opposition begins where positivists believe that truth is singular and can be discovered through hypotheses and theory testing while interpretivists believe that there are multiple truths discovered through examining and describing phenomena (Henning, Rensburg, & Smit, 2004).

Research of a qualitative nature is at many times, parallel to interpretivism even though other options are available (Goldkuhl, 2012). The interpretive paradigm relates well with the study which is conducted within qualitative research and situated in the social science discipline. An interpretive research involves studying people and their experiences, interpretations, meanings, morals and definitions of the world they live in (Hussain, Elyas & Nasseef, 2013). The people

studied here were student teachers to get their experiences regarding indigenising the Climatology module in a South African Higher Education Institution.

Interpretive research builds up enough information on the topic under study as it involves human participants, which allows the researcher to gain a substantial understanding of the reality being studied (McKenzie & Knipe, 2006; Stahl, 2014). This study was set to probe Geography students on their understanding of indigenising the Climatology module and their explanations of having such conceptions, hence; it was advantageous to use the interpretive paradigm as human participants were part of the study. The study was able to gain enough information about Geography student teachers' understanding of indigenising the Climatology module. Rahman (2017) argues that qualitative research methods like Interpretivism entirely understand the experiences of people even in specified contexts. This means that Interpretivism can be used in a variety of settings.

Despite the advantages of the interpretive research in giving extensive information and providing a profound understanding of the phenomenon under study, criticism has been levelled against the interpretive paradigm. In the understanding of Mertens (2005), interpretive research is seen as too subjective and outcomes may not be what is expected, which means that there might be concerns on the part of transferability of outcomes to other contexts. This means that interpretive research may not be transferrable to other contexts because participants can be subjective and share information that is only applicable to their context.

4.3. Research design

A research design is "a plan or blueprint of how you intend conducting the research" (Babbie & Mouton, 2001, p. 74). Babbie & Mouton (2001) state that a research design is a foundation, and a building process that allows the research to layout the desired end product. A research design is a plan on how to find what a researcher is looking for. A more comprehensive definition of a research design is provided by Williams (2007) who asserts that a research design is an outline detailing and describing the execution of the research study, and responding to the research question.

The research design is developed as a systematic way of finding evidence responding to the research questions posed in a study (Bertram & Christiansen, 2014). Ritchie, Lewis, Nicholls & Ormston (2013) suggest that a research design is an all enclosing umbrella. This means that a research design is the overall way one uses to do the study from generating the data, to eventually analysing the data generated.

A similar position to Ritchie et al. (2013) is shared by Creswell (2003) who asserts that a research design is an overall determinant of what the finished research artefact will look like. Research questions demand different types of research design; either quantitative or qualitative or both as mixed methods (Silverman, 2013). This study employed the qualitative research approach.

4.3.1. Single case study

A case study is defined as a research method that explores a real life case in a specified setting (Yin, 2003). The real life case being explored in this study is the Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education Institution. Yazan (2015, p. 138) defines a single case study comprehensively as "a contemporary phenomenon within its real life context, especially when the boundaries between a phenomenon and context are not clear and the researcher has little or no control over the phenomenon or context." The case study is highlighted as an appropriate approach for this study because the researcher has no control over what the students will voice out as their views of an indigenous curriculum.

Case study research is most flexible for exploring resource availability in organisational departments and is a method for evaluating and learning in organisations (Dawidowicz, 2011). Denzin (2009) argues that case studies are a meaningful way to explore social realities as constructed by human beings and case studies explore human needs in their contextual realities. The case study was selected for use in this study. Case study research designs are research methods most commonly applied across disciplines but have been remarkably used in education, sociology, psychology and the health sciences (Hyett, Kenny & Dickson-Swift, 2014). The case study is a qualitative descriptive research approach that is used to study individuals, groups or a whole community in terms of their experiences or ways of perceiving (Thomas, 2011). Using the

case study method was appropriate for this study because it is a qualitative study and its intention was to explore a group of Geography student teachers' understanding of indigenising the climatology module in a South African higher education institution

A case study is an important method in conducting research because it does not only fulfil one purpose but many. The case study "allows the researcher to explore individuals and organisations and supports the deconstruction and construction of various phenomenons" (Baxter & Jack, 2008, p. 544). Case studies are also used to examine complex issues (Almutairi, Gardner & McCarthy, 2014), and the call for an indigenised curriculum (Hauser, Howlett & Matthews, 2009) is a complex one but complementary to the deconstruction and reconstruction of knowledge in higher education institutions.

The point of deconstruction and construction of knowledge is critically important because case studies provide a solid foundation for the development of and the deconstruction of countless situations (Baxter & Jack, 2008). Case studies are a fitting research design for this study because the construction of an indigenised curriculum is a complex undertaking but it also ultimately leads to the deconstruction of the dominant knowledge in curriculum.

Case studies have come to be classified as exploratory, descriptive, intrinsic, instrumental collective as well as single or multiple (Baxter & Jack, 2008). The single case study design was used in this study, and is defined as a unit of analyzing a case from the many perspectives of individuals (Starman, 2013). The case as a unit of analysis will be the Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education institution. Case studies are a family of the qualitative approaches and are not similar to quantitative approaches that use single data sources. Qualitative case studies either as multiple or single case studies use more than one data source which give credibility to the data (Yin, 1994). Adding to the latter point is Almuntairi, Gardner & McCarthy (2014) who state that the use of two data sources allows the researcher to explore the problem with an angle of comprehensiveness.

Similarly, Baxter & Jack (2008, p. 344) observe that "qualitative single case study is an approach to research that facilitates exploration of a phenomena within its context using a variety of data sources".

The single case study is an appropriate method because it allows the researcher to use two or more research instruments; of which this study uses the semi-structured interviews and focus groups. Single case studies can be used for reviewing or examining a case based on criticality, extremity, representativeness, typicality or even revelatory (Baskarada, 2014). The single case study was selected for use in this research project to examine the case of representing indigenous knowledge in curriculum.

Qualitative case studies are also used for the creation of theories with the multiple perspectives of participants as well as for the testing of theories that have dominance and frequency of use in business, information systems, political science and the social science (Eisenhardt & Graebner, 2007). Qualitative research has essential features which validate cases studies 'use, namely; holistic, empirical, interpretive and empathetic features (Yazan, 2015). This study is interpretive which qualifies the case study as appropriate for the study. According to Dawidowicz (2011, p. 7), case studies allow "researchers to identify the influence individuals have on issues, including differences in attitude and how differing attitudes may have impacted the overall results." Case study research was proper to this because the student may have similar and different attitudes towards indigenising the Climatology module which will have an impact on the overall results of the data.

4.3.2. The qualitative research design

There are many approaches of conducting research, the two widely used research designs are the qualitative and quantitative research approaches. Their main difference is that quantitative research has been the main approach used in research for over 100 years while the qualitative approach is relatively new in the field of research (McCusker & Gunaydin, 2015). The qualitative research approach was used in this study and is therefore, explained. Researchers working in the social science fields like education, developmental studies and the human resource have tended to plan for, and use this kind of approach in their studies (Hennings et al, 2004).

Qualitative research is concerned with understanding the perspectives of people on research topics and or issues in particular contexts (Szyjka, 2012. In qualitative research, we are not only

concerned about individual's feelings on a situation but also about what, how and why the situation occurs (McCkusker & Gunaydin, 2015). In intending to understand the what, how and why questions as part of qualitative research, it is fundamentally important to pay attention to detail. Hennings et al. (2004) say this happens by observing gestures, unspoken actions, spoken views and written down notes in the interviews and focus group discussions. The use of qualitative research in this study will allow the researcher to pay attention to detail because the researcher will be able to pick up any unusual gestures or views.

Qualitative research is done in natural sites unlike in quantitative research where laboratories are required (Creswell, 2009). Qualitative research adds value to education and contributes answers to hard pressing issues within the area of education. Anderson (2010, p. 1) state that "qualitative research can sometimes provide a better understanding of the nature of educational problems and thus add to insights into teaching and learning contexts." Using qualitative research in this study hence offers the possibility to respond to the hard pressing issue in question within education, the quest for an indigenised curriculum. The use of qualitative research in this study also offers us an opportunity to identify with Geography student teachers understandings of an indigenised Climatology module.

4.4. Research methodology

Research methodology is a synergy of two words, research and methodology. Research is defined as the systematic processes used to find solutions to a problem (Peffers, Tuunanen, Rothenberger& Chatterjee, 2007). However, methodology refers to the procedures or the techniques drawn upon in finding responses to a problem that needs solutions (Kumar, 2019). A research methodology is a way of thinking about solutions to a problem while using certain techniques in responding to a problem. Leedy & Ormord (2001) assert that a research methodology is the wide-ranging tactic the researcher employs in conducting their academic project. We learn from this that a research methodology is the general strategy the researcher uses in doing their study of research.

Similar views have been shared by (Briks & Mills, 2011) on what a research methodology is. They state that a methodology is the elementary outline of how the research study will go about.

In essence the research methodology is a schemed idea proposed on how one will go about conducting their study in researching a particular phenomenon. A research methodology summarises how the research project will proceed in doing what it sets to do.

Recently, decolonial scholars have started to problematise the notion of "researching" as a colonial mode of seeing; thinking and believing (see for example Smith, 2013, Ndlovu-Gatsheni, 2017). For example, Ndlovu-Gatsheni (2017) notes that,

> It underscores the fact that "re-searching" involves the activity of undressing other people so as to see them naked. It is also a process of reducing some people to the level of micro-organism: putting them under a magnifying glass to peep into their private lives, secrets, taboos, thinking, and their sacred worlds… (Ndlovu-Gatsheni, 2017, p. 186).

In the above quotation, Ndlovu-Gatsheni (2017) is building from the work of influential Maori anthropologist Smith (2013) who calls for us to pay careful attention to what she refers to as the "dirty word", that is, research on how the colonial project was interested in re-searching people in ways that were not only inhumane, intrusive but also epistemically violent;

> For indigenous peoples the beginning of a new century is really a caution of a struggle that began five centuries ago. The optimism that prevails is based on the belief the now more than ever before in the last 500 years indigenous people are better able to respond…some of the attempts made by indigenous peoples to re-position strategically around international alliances in ways which have reinforced a sense of movement towards a positive future. But that is an optimistic view. The pessimistic view is that we are dying and that the legacy of the presence of indigenous peoples on earth will be liberated. Indigenous peoples are positioned along both ends of the continuum. It is not surprising that in New Zealand the renewed focus on warrior traditions has come at a time when Maori people sense a turning point which could either go forward or backward. For Maori that tradition is to be found in the often quoted saying of the chief Rewi Maniapoto, Ka whawhaitonumatou, aketonuake, 'we will fight on forever and ever'. The context of change, instability and uncertainty faced by postindustrial societies positions indigenous peoples and indigenous issues in different sorts of spaces with different possibilities. For many indigenous leaders these possibilities are hopeful, the spaces are spaces to be claimed. In the process of global changes indigenous peoples are socially interested activists rather than passive bystanders. Perhaps it is this positioning that offers greater possibility for survival of indigenous peoples. While the language of imperialism and colonialism has changed, the sites of struggle remain (Smith, 2013, p. 104).

In the above paragraph, both Smith (2013) and Ndlovu-Gatsheni (2017) caution us to look at the activity of *re-searching* as a colonial activity because researchers undertake this discourse to look into people's lives and their ways of living in the world and ultimately think for them. I support this view because researchers make people their subject of study and think for them rather than letting them own their issues of study because they know best and hence can share the best of views on these issues.

4.4.1. Sampling

Under sampling, I define the concept 'sampling' in relation to the concept of 'population' and list several sampling methods and indicate the method I used. "Sampling is a technique (procedure or device) employed by a researcher to systematically select a relatively smaller number of representative items or individuals (a subset) from a pre-defined population to serve as subjects (data source) for observation or experimentation as per objectives of his or her study" (Sharma, 2017, p. 749). A sample is hence a group or a portion of people that represent the whole population. It is crucial to have a sample and a method of generating data and the researcher needs to question themselves from whom the data will be generated, in order to make a sensible data analysis. While doing so researchers can use several sampling methods and to mention a few these can be the random, purposive, convenience and snowball sampling methods.

Purposive sampling was used in this study to explore Geography Student teachers' understanding of indigenising the Climatology module in a South African Higher Education Institution. According to Etikan (2016, p. 2), purposive sampling is a type of sampling where participants are knowingly chosen because of "knowledge and experience and the capacity to share encounters and ideas in a fluent and reflective mind." Purposive sampling was used in this study to include participants in the study because they had specific qualities needed by the researcher to do the study (Zhi, 2014). Simply put, using purposive sampling means the researcher sets out a purpose of what has to be studied and deliberately finds and includes people in the study by having typical characteristics related to knowledge or experience of a problem being studied (Cresswell & Plano Clark, 2011).

The researcher decided to use purposive sampling on the basis that the participants had experienced some form of knowledge about Climatology in one of the semesters in their final

year of Geography study, and would therefore, be able to reflect and share their ideas about indigenising the Climatology module. In using purposive sampling, the researcher's center of focus is on people who can greatly help with the proceeding of the research (Suri, 2011). This study focused on Geography students because they were informed on Climatology and indigenous knowledge which meant they were better equipped to assist in conducting the research undertaking of exploring for an indigenous curriculum.

"Purposive sampling is useful when there are not enough funds and other resources. Purposive sampling can be more realistic than randomisation in terms of time, effort and cost needed in finding informants" (Tongco, 2007, p. 154). Purposive sampling was chosen for use in this study to decrease the time constraints and to save costs as the budget for this study was slender. Purposive sampling was cost effective and saved time in that the researcher had to select only the participants that aligned with the purpose of the study hence avoiding having to travel and list appropriate participants for this study (Sharma, 2017).

The consideration of using purposive sampling in this study was also made in line with other research methods used in the study. The focus group had 8 participants to generate extensive data which is also in harmony with the use of purposive sampling where its application is for "information rich cases" (Palinkas et al, 2015. P. 534). Over and above that, purposive sampling proved appropriately fitting for this study because it also employs the case study design and has a small population clustered within the institution as the context of study to even consider random sampling.

The table below gives a profile of the research participants who took part in the study;

Pseudonym/ assumed name	**Race**	**Gender**
Baruti	Black	Male
Mzukisi	Black	Male
Maeli	Black	Male
Aneliswa	Black	Female
Wandi	Black	Male
Amogelang	Black	Female

Nkanyiso	Black	Male
Alani	Black	Female
Amadi	Black	Female
Anathi	Black	Male
Lindo	Black	Female
Nokulunga	Black	Female
Nokuthaba	Black	Female
Thulani	Black	Male
Babalwa	Black	Female
Golemo	Black	Female

Figure 4.4.2: The profile of the research participants who took part in the study.

4.4.3. Data generation methods

Initially a pilot study was conducted before using the two data generation methods employed in this study. The pilot study is explained before using it in terms of how it proceeded and its rationale.

4.4.3.1. Piloting before using focus group discussions

A pilot study is a small-scale study, in which research instruments and methods can be tested (van Teijlingen & Hundley, 2002). Eldridge, et al. (2016) argue that pilot studies focus on a steady development before a much bigger development takes place for use in the near future. A pilot study was done to determine whether the research tools used in this study were suitable. Besides checking research instruments and methodology, Doody & Doody (2015) say that a pilot study also shows the dilemma of ethical issues and whether a tool is practical or may hinder the progress of the research activity. A pilot study was also done to address ethical issues, and questions that the participants found as too sensitive or difficult to respond to were changed.

Before generating the data, a pilot study was conducted so as to trial out the relevance and need to use focus group discussions to gather data from the research participants of this study. This gave an opportunity for the researcher to rework the questions so that participants would comfortably understand what was required of them in the focus group. All this was done to strengthen shortcomings found in the focus group questions before the time of data generation. The researcher of this study gave the respondents the focus group questions before engaging in the actual data generation process.

Doing this was for the purposes of allowing the researcher to explain to students partaking in the pilot study the questions in simpler terms if they found them difficult and to go back and review any problematic questions the students anticipated during the pilot study. The students in the pilot study appeared untroubled by the focus group questions.

After the pilot study, some of the students agreed to be part of the study. The focus group questions were piloted so as to lessen any misunderstanding and misinterpretation of the questions by the student participants in the initial data gathering stage. This was also to save time by avoiding the lengthy process of clarifying questions during the main study. Two data generation instruments; focus group discussions and semi structured-interviews, were used. Discussed below are the two techniques of data generation as they were employed in this study.

4.4.3.2. Using focus group discussions

According to Dilshad & Latif (2013), a focus group is a group composed of people sharing similar attributes on a topic. There are seven types of focus groups namely; the single focus group, two way focus group, dual moderator focus group, dueling moderator focus group, respondent moderator focus group, mini focus group, and online focus groups (Nyumba, Wilson, Derrick & Mckherjee, 2018). The single focus group is described as an interchange of views on an issue of research by a group of respondents with the researcher in the same place. It has been employed by scholarly researchers and experts over wide ranging disciplines (Morgan, 1996; Lunt & Livingstone, 1996; & Wilkson, 1998, Krueger, 2014).

The single focus group was applied in this study with students discussing in an interactive manner about indigenising the Climatology module whilst the researcher minimally engaged

with them. The main goal of focus group discussions is to generate ideas, conceptions and hopes of participants about particular issues (Nyumba et al, 2018). The focus group discussions were used in this study for the students to discuss in groups their insights of understanding the indigenising the Geography curriculum in general and the Climatology module. The perspectives, feelings and thoughts were obtained as the focus group discussion proceeded rather than directly given to the researcher as in the question and answer format of semi-structured interviews (Gibson, 2012).

4.4.3.3. Using semi-structured interviews

It has been acknowledged that in qualitative research, the quality and trustworthiness of the research outcomes highly depend on the data generation procedures (Kallio, 2016). Semi structured interviews were one of the data generation measures used in this study to solicit data from participants. Sixteen questions were developed for use in the semi-structured interviews. Mclntosh & Morse (2012, p. 1) state that the purpose of semi-structured interviews is to ascertain participants' perspectives regarding an experience pertaining to the research topic

Having experienced the teaching and learning of Climatology in the Geography curriculum, the students were asked to reveal their opinions of having an indigenous Climatology module within their higher education institution. One of the merits of semi-structured interviews is that they enable the development of a mutual relationship between interviewer and interviewee allowing the interviewer to probe more questions based on the answers interviewees provide (Campblee, Quincy, Osserman & Pedersen, 2013). Semi-structured interviews were used in this study to ask Geography students to share their ideas on indigenising the Climatology module and the Geography curriculum in general. They were also asked for the reasons of having these ideas and follow up questions were asked based on their responses.

Semi-structured are also seen as leaning largely on an interpretive line of thought because they are versatile enough to allow for the disclosure of new information and make adjustments to unforeseen circumstances (Rubin & Rubin, 2005). Semi- structured interviews were suited for this study because it leant on the interpretive paradigm and whenever students provided new and unexpected information, it was recorded and taken as part of data. Semi- structured interviews

are a dynamic technique for generating data and can be used with both individualized and grouped interview methods (DiCicco-Bloom & Crabtree, 2006).

Semi-structured interviews were fitting to this study as they were not used alone but were consolidated with focus group discussions. The research study had one general theme "indigenising the Geography curriculum" and one specific theme "indigenising the Climatology module".

Semi-structured interviews give priority to or advantage to those with knowledge rather than those seeking knowledge for their particular interest. Semi structured interviews are known for "epistemologically privileging the participant as knower" (Mclntosh & Morse, 2015, p. 4). Participants were knower's in this case as they had knowledge on Climatology and were therefore, able to respond to the semi-structured questions he asked them about an indigenous Climatology module.

Semi-structured interviews do not only have merits but also have demerits. Semi-structured interviews include the generation of lengthy data during the data gathering stage, which makes transcribing, analysis and translating the data a time consuming process (Anderson, 2010). Semi structured interviews are undeniably time consuming as some participants can be well informed and provide extensive data as the research topic can be close to their hearts. Key informants and or participants also tend to disclose or volunteer out extensive data when interviewed. This study found some participants who took indigenising close to heart and disclosed a considerable volume of data. There were also key informants with first-hand knowledge on indigenising the Climatology module, who revealed far reaching data for transcription and analysis which was time consuming for the researcher.

Irvine, Drew and Sainsbury (2013) assert that the information discovered from the participants' views can be time consuming and never easy to portray in a way participants portrayed their views. The information presented by the participants was transcribed with the researcher listening to the recordings back and forth which was an extremely time consuming.

4.5. Data analysis

Data analysis is the drawing of important conclusions from the raw data as well as employing the theoretical framework to make sense of the data (Boeije, 2010). Qualitative data analysis cannot be overlooked as this study adheres to a qualitative and not a quantitative study. Qualitative data analysis means to subset or separate the raw data into various parts of the important findings to be able to draw logical conclusions from the raw data (Basit, 2003). In a comprehensive explanation Srivastava & Hopwood (2009, p. 77) state that "qualitative data analysis is constantly on the hunt for concepts and themes that, when taken together, will provide the best explanation of what's going on in an inquiry."

Qualitative data analysis is about looking for themes in the data so that when transcribed and taken for analysis, the researcher understands what the data means. In its broadest sense, qualitative data analysis is an inductive approach. "Inductive analysis means that the patterns, themes and categories of analysis come from the data, they emerge out of the data rather than being imposed on them prior to data collection and analysis" (Srivastava & Hopwood, 2009, p. 77). The qualitative content analysis conforming to an inductive approach used in this study is that of thematic analysis.

Thematic analysis was used to analyze data from focus groups as well as the semi-structured interviews in order to develop interpretations of the students' views. According to Maguire & Delahunt (2017, p. 3352) "thematic analysis is the process of identifying patterns or themes within qualitative data". One deciphers from the above quote that the aim of thematic analysis is to discover themes, that is patterns in the data that are of value or intriguing to the researchers' area of interest and uses such themes to respond to their research area of concern (Clarke & Braun, 2013; Braun & Clarke, 2006).

It is, however, not enough to locate the themes in the data; they have to be explained for meaning making (Alholjailan, 2012). Thematic analysis was used in this study because the researcher wanted to identify patterns from the students' response son the topic of focus. The researcher then interpreted the students' views for meaning-making through discussion and analysis.

Thematic analysis is an approach often used in qualitative research. However, its use can also range across research questions of different designs (Castleberry & Nole, 2018).

Nowell, Norris, White & Moules (2017, p. 2) observe that "thematic analysis is a useful method for examining the perspectives of different research participants, highlighting similarities and differences and generating unanticipated insights." Transcribed data from the semi-structured interviews and focus groups was subjected to analysis. Thematic analysis was used to examine the unique views of individual participants in the semi-structured interviews and in the focus groups accordingly. The similar and divergent views generated ideas for the study which the researcher had not anticipated. The researcher categorized the students 'views into themes and analyzed the data with the help of thematic analysis.

While analysing the data, I used the African Renaissance theory to make meaning of the data. African Renaissance theorists believe that the renaissance of African education lies in bringing indigenous education within the environment of higher education institutions (Motsaathebe, 2011; Onwu & Mosimege, 2004). I focused this study along the ideals of the African renaissance theory of having indigenous education in universities. I did this by trying to understand Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education Institution.

Together with bringing indigenous education in universities, Botha (2016) believes that an African Renaissance means bringing black student perspectives and those of black staff in the university, and allowing the production of knowledge through indigenous forms. I will use the African Renaissance theory to analyse the perspectives of students on indigenising the Climatology module to make meaning of their perspectives.

4.6. Limitations of the study

In this portion of the study, I focus discussion on the limitations I experienced while carrying out the study. This study was carried out in one university for one specific module henceforth the findings cannot be generalized to another study. This study was a small scale study, done under unique conditions, in a different academic year of which the results can only be used to make further reviews for this study.

4.7. Ethical considerations

Research ethics were considered in this research project. Vainio (2012, p. 685) posits that "the elements of research practice include informed consent and avoidance of deception, harm and exploitation regardless of the ethical approach taken". Ethical clearance was granted for this study by the Geography social sciences academic project leaders.[1] The Geography student teachers were informed by the researcher on the procedures and nature of the research study.

They were given an informed consent form;[2] with a message of caution that they are to read carefully before appending their signature on the form. The form had information on participation which was detailed to include the fact that participation was on voluntary basis, and that no financial benefit or monetary packages were to be derived from agreeing to participate in the research project. It was also explained to the participants that their basic rights were acknowledged and that should they so wish to not be part of the study after commencement, they could withdraw without further questioning. Anonymity and confidentiality of the names of the participants was protected as the participants were told that they would be given pseudonyms (Elliot, 2004). They were also told that the information that they discussed will be stored safely. The only people who will be allowed to access the information were the researcher and supervisors of this project.

4.8. Trustworthiness

Trustworthiness in qualitative research was ensured through the elements of credibility, conformability and transferability. Trustworthiness means that the findings are believable enough to receive the attention of readers of the findings in the research project (Shenton, 2004). Credibility implies the confidence or truth of the data as representing the authentic views of the participants (Korstjens & Moser, 2018).

Credibility can be met through "prolonged engagement, persistent observation, triangulation, peer debriefing, negative case analysis, referential adequacy and member checking" (Amankwaa,

[1] Please see Appendix A for ethical clearance letters.

[2] Please see Appendix B for consent letters.

2016, p. 122). Credibility was maintained through data triangulation as there were two research methods that were used for data generation: semi-structured interviews and focus groups. Credibility was also kept up with through member checking, which happens "by feeding back data, analytical categories, interpretations and conclusions to members of those groups from whom the data were originally obtained. It strengthens the data, especially because researcher and respondents look at the data with different eyes" (Korstjens & Moser, 2018, p. 121). Credibility was up-holded by doing member checking in this study, it happened by the researcher giving back the participants the interpretations and conclusions reached so that they can establish that their information presented was offering their original views. Conformability stipulates the extent to which the findings retell the analysis of data as interpretations or viewpoints of respondents and not invented biases as coming from the researcher (Cope, 2014).

The audit trail is the most common method for keeping up with the demands of conformability which is a step by step detail of how the research was conducted so that other researchers and participants can confer how the researcher reached the finding for his or her study (Creswell & Miller, 2000; Henry, 2015). The researcher did field notes, summaries and audio-recordings during the data gathering process. To ensure conformability, the researcher took the summaries of findings to the participants so that they could confirm or invalidate the accuracy of the transcriptions from the interview meeting and focus group session.

Transferability refers to the extent of which the findings of one study can be transferred to another study in a different setting (Yilmaz, 2013). Transferability can be achieved in a study through the use of thick descriptions. Thick descriptions can happen by "describing a phenomenon in sufficient detail so that one can begin to evaluate the extent to which the conclusions drawn are transferrable to other times, settings, situations and people" (Amankwaa, 2016, p.122). The conclusions drawn from this academic research are not transferrable nor are they are generalisable to other studies in different contexts, times, situations or people. This is because the study was in a uniquely different context, in a particular academic year, and participants were purposefully selected.

4.9. Conclusion

The interpretive paradigm was firstly explained as to what it is, how it fits into the study, and the way the researcher used it. The research design was defined it and having it followed by its subfamily of themes. Under the research design, the single case study type was explained and it use in the study. The qualitative approach was discussed. The research methodology was then explained and defined. Sampling and the sampling technique used in the study was explained. Thereafter, there was method triangulation used in this study. Under the data generation theme, a pilot study was conducted. The two data generation methods of focus group discussions and semi structured interviews were defined with various types and also it was explained how and why they were used in the study. Data analysis, in the form of thematic analysis was employed and applied in this study. The limitations of the study were given in order to outline the challenges the researcher experienced while conducting the research. The ethical considerations as well as the trustworthiness criteria were defined and how they were maintained and achieved in the study. The next chapter analyzes data as transcribed from the field notes, summaries, and audio recordings as generated from the field. The findings are grouped based on emerging themes from the data, and are analyzed using thematic analysis.

Chapter Five
Findings and data analysis

5.1. Introduction

The previous chapter was based on the research design as well as the research methodology used in the study. The current chapter focuses on the presentation of the data from the two data generation methods used in this research project, namely; the focus group discussions and the semi-structured interviews. The findings are discussed in accordance with the questions used in the focus group discussion and semi-structured interviews and analyzed using thematic analysis.

5.2. Thematic analysis

Here I explain what thematic analysis is and how it was applied in the study. According to Buetow (2010, p. 123), " thematic analysis attempts in general to reveal core consistencies and meanings in a text by identifying and analyzing themes, which are large, abstract categories of meaningful data segments". Brod, Tesler, & Christensen (2009) assert that thematic analysis is a qualitative medium for organising, sorting and reporting categories within a data set.

The data that emerged from the participants responses was organized into categories for analysis. According to Vaismoradi, Jones, Turunen & Snelgrove (2016), a theme is the ultimate package for analysing data for the researcher to respond to the question of study. The ideas shared by the students were categorized into themes which were the unit of analysis. Scharp & Sanders (2019) state that there are six procedures to be taken when using thematic analysis to analyse data:

- Familiarizing oneself with the data set
- Coding and segmenting the data
- Developing the themes for analysis
- Assessing and examining the themes
- Establishing and labeling the themes
- Bringing the patterns into light

The researcher familiarized himself with the data while transcribing it from the repeated reading of the field data. The data was coded and segmented through the marking of views shared by the

respondents which the researcher found interestingly significant for the study. Thereafter, the interesting views were categorized into themes. The themes were assessed through checking if they were correlating against or with the coded and segmented points of data. The themes were established and labelled on the basis of what an individual theme relayed or conveyed for the study. At the end of the analysis, the patterns were brought into light through the evidence of examples the participants provided under each theme, as they were confident enough to give examples. By so doing, the researcher understood what they were conveying.

In this chapter I suspended application of the theory and let the data speak for itself. The data was coded. I now outline the themes that came up from the data.

5.2.1. THEME 1: Indigenising as based on environmental factors

The majority of the participants stated that an indigenised Climatology module should include the use of environmental factors to predict weather related phenomenon. This means that one of the biggest components to consider when indigenising the Climatology module is environmental factors. This can be seen in the comments of one participant below:

> *Where I come from, when there are black birds in the sky known as (inkonjane), it means that there will be rain or bad luck to happen in a particular family because the birds are wondering over the roof a family household…. A person may pass away due to sickness or the coming of those birds over the roof of that family (Mzukisi).*

For other participants, an indigenised Climatology module should also include observing the environmental factors. This can be observed in their words;

> *Short seasons of rainfall are often signified by the presence of (uthingolenkosazane) which is the (rainbow) and the presence of the sun after a short rain within aparticular time. The rainbow usually goes into the river or mountains to connect with the ladyfish known as (Elopidae) or plantations in the mountains telling them that they are going to receive rainfall(Baruti).*

If it was going to be too hot the next day indigenous predictions are based on the sky being clear in the afternoon and have too many insects known as onobhobholwane or the clouds being reddish around 5:00 in the morning (Aneliswa).

If a storm is to come, clouds become heavy and dark, bird sounds are also used as predictions. The dog is also another prediction method because it can sense when a storm is to come. If the dog's ears are held sharp up high by the dog and it barks while running away, it means a storm is coming which indicates that people have to prepare for a storm (Maeli).

For Baruti, Aneliswa and Maeli, environmental factors such as short seasons of rainfall, the sky and storms are important to how we understand the importance of indigenising the Climatology module. For the participants above, environmental factors were critical because they also mentioned that environmental factors were part of how they understood an indigenized Climatology module. This is indicated by Maeli who mentioned that an environmental factor such as a dog can be used to predict if a storm is approaching to warn us ahead of time.

Findings suggested that environmental factors were the most important factors to consider when indigenising the Climatology module. The majority of the students mainly felt that indigenising the Climatology module should be based on observing environmental factors such as past weather patterns, observing the sky and past temperatures. I now turn to the second theme; indigenous knowledge as reclaiming our beliefs. On this theme, I discuss the importance of beliefs in understanding indigenisation of the Climatology module. The participants indicated that they understood an indigenized Climatology module to be a module that included their beliefs.

5.2.2. THEME 2: Indigenous knowledge as reclaiming our beliefs

One of the themes that came up when I was coding the data was indigenous knowledge as reclaiming indigenous beliefs. Some participants stated that indigenising Climatology is about reclaiming their beliefs through learning about them in this module. This is apparent in the comments below:

We lose our beliefs when we do not learn about them, we believe on what is written in textbooks and lose sight of our own indigenous knowledge about Climatology...,western beliefs are ingrained in us in such a way that we lose sight of what to do when a storm comes or when it rains heavily (Lindo).

There is a need to bring indigenous knowledge into the university environment because what we are taught in the university we are not sure that it is the beliefs of western scholars. Combining the two would, without a doubt, make better sense (Babalwa).

"*White race is always the superior race in everything even if indigenous knowledge is responsive to Climatology issue, researchers from Climatology will go further and do their own research even in the presence of indigenous Climatology knowledge"(Thulani).*

Lindo, Babalwa and Thulani they understood an indigenized Climatology module to be a module that allows them to learn about their beliefs. For them, learning about western beliefs in the Climatology module was not that important. These participants understood an indigenized Climatology module to be a module that does not neglect teaching them about their beliefs. They also understood that if they were not taught about their beliefs they lost them. Another participant argued that their beliefs were not included in the textbooks they use to study Climatology.

I would like us to learn about how to predict weather and solutions to it using indigenous knowledge. Moving to higher places in times of floods and buying canned food is too costly for us as indigenous people. The solutions in prescribed textbooks are placed in a way that is biased to the western people's way of living and lifestyle and not to indigenous people (Nokuthaba).

We live in a democratic country. We all have to know about our belief...,we have to know the Zulu's beliefs and the beliefs from English people on Climatology, the door of knowledge has to be a wide ranging phenomena (Nokulunga).

Nokuthaba would like to learn about weather related issues using indigenous beliefs within the Climatology module. Nokulunga however, believed everyone should be given a chance to learn about their beliefs, which meant that the beliefs of Zulu people and English people should appear in an indigenized Climatology module. The participants also expressed that there was an

indigenous belief that indigenous people could be rain makers through going to pray in sacred places. One participant's understanding of an indigenized Climatology module was:

> *When there is no rain for a long period it is believed that woman have to go to the mountains and pray so that rain may come...it is, however, only elders like grandmothers and kept woman who are still virgins who are allowed to go and pray (Mzukisi).*

The above view suggested that through indigenous beliefs there can be generation of rain. Prayer is given importance in this indigenous rain making. It indicates that there are various approaches to rain forecasting and not only those that come from formal research practice. This renders indigenous knowledge a relevant knowledge system for studying Climatology.

The participants also indicated that there was a rain queen to whom indigenous people prayed during drought. Below are the understandings of the participants on how this belief worked:

> *My grandmother from my mother side would tell us a story where young, pure virgin girls had to go and pray in the mountain if it had not rained for long in a season. They would also plant a garden after praying and pray on the garden. The prayer would be directed to the rain god called nomkhululwane a female god which is why it was only females who had to go and pray because rain was asked for from a female goddess (Baruti).*

> *When praying for rain in the mountain to nomkhululwane the rain god, there would also be a slaughtering of a sheep and give tides to the goddess of which the money of tiding would be left in the mountain (Aneliswa).*

From the presented findings, it was evident that the participants wanted to have a Climatology module that allowed them to reclaim their indigenous beliefs. They also revealed that there were other festivities and ceremonies that happened up in the mountains while praying for rain like slaughtering a sheep and giving tides to the rain queen. All these activities were part of asking for the rain queen to give them rain and also served as a symbol of appreciation for giving them rain if it rained. The participants also revealed that after praying and doing these festivities, rain would usually come. This suggests that indigenous methods worked at that time in terms of seeking for rain. This is similar to the case in Australia where the Aboriginal people believed that

phenomena like the rain, the sun and wind came into existence because of their ancestors (Clarke, 2009).

People in central Western Australia in particular believed "Ancestors and Spirits as Weather Makers as they believed that cold frost mornings are produced by their Nyinnga (Njenga) Ancestor" (Clarke, 2009, p. 82).

The participants stated that times had changed and so had the way things were done. They expressed that the money given as tides to the rain queen was to be left in the mountains but nowadays pastors come along in prayer and money is given to them which is something that would not happen in the past. In addition to this, the students were of the view that these practices were rarely carried out, and rarely does rain come without these practices being initiated. Participants felt that indigenising the Climatology module would be a way of reclaiming their indigenous beliefs and practices. I now turn to theme three on indigenising as affirming African languages.

5.2.3. THEME 3: Indigenising as affirming African languages

A large number of participants spoke about the importance of language when indigenising the Climatology module. Some of the participants passionately felt that there should be a space within the curriculum to incorporate the African languages for use in the Climatology module. This can be seen in their comments:

> *There is not much that universities can do because English is the only means of communication for us to understand one another, like Xhosa's, Zulu's and Sesotho's can understand one another through English...Universities should teach work to us in a way that would accommodate us all as students and not assume that we all know western forms of knowledge because that's not the point, I don't know how they can do it but they should...maybe through teaching methods that would accommodate us all (Golemo).*

In the above quotation, Golemo speaks about the importance of language. For Golemo, it is about using more than one language to understand the Climatology module better. Golemo argued that to accommodate all students when studying Climatology, African languages like IsiZulu, IsiXhosa or Sesotho can be used.

I will also be able to gain knowledge on what was happening back then as I was not present so the knowledge that the elders pass to us would make it easier for me to know more about climate related phenomena's such as hurricanes which is inkanyamaba in IsiZulu as to why it does not like shiny things like corrugated iron which is a belief of the community where I come from (Mzukisi).

The participant felt that having the African languages incorporated into the curriculum would allow them to know more about the things they study in the Climatology module. The participants suggested that indigenising the Climatology module includes creating a space in the curriculum for their indigenous languages like isiXhosa or IsiZulu and other languages for them to understand this module better. The students argued that part of indigenising the Climatology module should be about affirming African languages. I now turn to theme four; indigenous knowledge as responding to the ecological crisis. In this theme, the students understood the importance of an indigenised Climatology module as one of responding to the ecological crisis.

5.2.4. THEME 4: Indigenous knowledge as responding to the ecological crisis

Some students mentioned that indigenous knowledge has a critical role to play in responding to the ecological crisis facing the planet at the moment. Students argued that there are indigenous ways to respond to the ecological crisis. Below are their arguments:

When a hurricane of which we call the rain snake comes, indigenous solutions are to cover everything that is shiny like wall mirrors because it is attracted to these things of which when it comes it blows away everything. Other indigenous adaptations include painting corrugated iron, silver door handles and resorting to having a thatched roof than having it with corrugated iron…everything that is shining must be covered within the house...thatched roof also serve as protection against heat as houses roofed in corrugated iron are warm and can cause weather and climate related frustrations (Maeli).

To protect from lightning, a stick called abafana is used to chase the lightning away, or have car tyres on the roof. Other things used are indigenous medicine called ichibi or manyazini. The umnazaretha clothing is also another way to protect from lightning of

which is white clothing that one wears and goes outside the house and pray for the lightning to go away (Wandi).

The students also shared that prayer has been a dominant way of responding to the ecological crisis. This was evident in the view of one participant

The umnazaretha clothing is particularly used to pray to the Nazareth God and therefore have to wear the white clothing as a sign of that they speaking to their earth God who can protect them against anything or give them anything they ask for in prayer (Aneliswa).

Another participant mentioned that indigenous herbs and traditional medicine can also be used to respond to the ecological crisis.

Traditional herbs are mixed in a bucket with water to make ichicbi or a traditional medicine called manyazini is poured in the bucket with water and then are used as a traditional medicine for chasing away lightning from coming in the yard of a household or to just chase away bad luck (Baruti).

From the views of the participants, it is evident that indigenous knowledge systems can be used to respond to the ecological crisis. Participants shared a number of views on indigenous knowledge systems being used to respond to the ecological crisis. They stated that one of the ways of indigenising the Climatology module was by having indigenous ways of responding to the ecological crisis being included in the curriculum. I now turn to theme five; indigenising as heritage. Here, the participants understood the importance of an indigenised Climatology module to be on indigenising as their heritage.

5.2.5. THEME 5: Indigenising as our heritage

Under this theme, participants mentioned that indigenising the Climatology module is about having their heritage within the module. One participant reflected about the challenges of not including indigenous knowledge that forms part of their heritage in the Climatology module. The participant said;

In Geography, we are taught to not stand near trees when there is lightning, walk on the road of which is what we also know from our indigenous knowledge systems. The only

thing that is lacking in Geography is being specific on which tree to not stand under in lightning conditions. We know from our indigenous background that you are not to walk under barriers (umjimjolo) tree and peaches (ishlahlasamampentshisi) tree but also there are trees that prevent lightning such as the lekwata and mhananadi tree of which are we not taught about in Climatology nor are they specified (Aneliswa).

One of the participants particularly complained that knowledge systems that are not part of their heritage kept on imposing themselves on the ways in which indigenous people do things. This can be observed in the comment below.

The housing design is not the same for us in Africa as we use blocks which takes time to rebuild and are costly compared to people in the west who use planks which are easy to repair and not costly (Nkanyiso).

The participant's response suggested that indigenising the Climatology module should be based on knowledge that they inherited from their indigenous backgrounds. The participants mainly expressed complaints about non-indigenous knowledge system imposing themselves on the way in which indigenous people do things. They also expressed annoyance at not being taught about specific information in the Climatology module that is part of their heritage. The participants proposed that indigenising the Climatology module cover information that comes from their indigenous background and speaks about their heritage. Theme six developed as indigenous knowledge as the alternative, in this theme; the students argue that the importance of an indigenised Climatology module is that it will allow indigenous knowledge systems to be used as alternative knowledge systems.

5.2.6. THEME 6: Indigenous knowledge as the alternative

The students suggested that indigenous knowledge is an alternative knowledge system that can be used when studying Climatology as they had seen the methods of this knowledge system successfully working. For one student, indigenous knowledge has successfully worked in subsistence farming:

Back at home, we do subsistence farming known as ukutshala or ukulima in IsiZulu but in doing it, we use traditional fertilizers such as chicken manure where we take chicken faeces and use it to enrich soil nutrients for our plantations to grow (Amogelang).

For the participant above, using indigenous knowledge as an alternative to do farming includes using traditional methods to enrich the soil. These methods include using traditional fertilizers such as chicken waste to allow plants to grow. Another participant also experienced indigenous knowledge to be an alternative.

We also use other various animal waste as manure or fertiliser when farming like goat waste known as umquba is very good for us back at home when we plant vegetables and other various crops (Amogelang).

For Amogelang, using various animal wastes like goat waste is important in indigenising the Climatology module. Indigenous knowledge is an alternative because it can provide various methods towards the practice of farming. The findings suggested that indigenous knowledge is an alternative knowledge system that can be used for farming, and may well be used for teaching the Climatology module, particularly when focusing on farming. I now turn to theme seven; an indigenised Climatology module as a waste of time. Participants reflected on how they do not agree to the course of indigenising the Climatology module and believed that it is a waste of time.

5.2.7. THEME 7: Indigenising as a waste of time

Although they were in the minority, some participants reflected around how they did not agree to indigenising as they thought it is a waste of time and did not think it possible. This can be seen in the participant's response below:

The problem with bringing Indigenous knowledge systems within university modules like Climatology is that they would be too judged by people who do not practise them and do not believe that they work (Nkanyiso).

For another participant, indigenising would be a waste of time because it would impose difficulty for some students doing the Climatology module.

A Climatology module embodying indigenous knowledge systems would make it difficult for students coming from backgrounds where the indigenous knowledge included in Climatology is not practised or do not believe in it (Alani).

In this theme, the participants suggested that in an attempt to indigenise the Climatology Module in a South African Higher Education Institution, one of the challenges could be that it may well be a waste of time. This was due to a number of reasons, like some people not believing that indigenous knowledge practices work. I now turn to theme eight; indigenising the Climatology module as an opportunity.

5.2.8. Indigenising as an opportunity

A large number of the participants indicated that indigenising the Climatology module in a South African Higher Education Institutions presented them with opportunities. This can be seen in their responses below.

We should have traditional African knowledge systems at university and in modules like Climatology so we can know our traditions, values and morals and singayaziinmvelaphiyethu (we can know where we are coming from (Amadi).

For Amadi, indigenising the Climatology module was important because it presented students with opportunities to learn and know about their traditions, values and morals or basically their background. For other participants, indigenising the Climatology module meant that they would get an opportunity to achieve higher marks than the usual marks they get. This was evident in their words:

Having indigenous knowledge would mean that there would be a high pass rate for a majority of black African students because we would not be studying through knowledge that benefits certain types of people (Amogelang).

Black people face difficulties when coming to study at university, bringing indigenous knowledge would emancipate black people and they would feel like they own a portion of knowledge and it would initiate fairness either than only having knowledge that is not indigenous. We would also enjoy going to university as we will not feel oppressed when

using our own ways of explaining world realties such as those of climate...it would also feel as if I am at home and welcomed within the university (Nkanyisoi).

The above suggests that indigenous knowledge systems into the university brings opportunities for Climatology students. The opportunity reflected on by the above participant was that they could be emancipated and feel are part of the university. They also see an opportunity to achieve higher marks than they usually get if they learn from a Climatology module that is indigenised.

For one participant, indigenising the Climatology module presents an opportunity for students to learn about the indigenous beliefs of other students.

Some indigenous beliefs are similar...like you find that Indians are Tamil and Hindu of which some of their beliefs are similar to those of other African cultural groups. Like when a person dies due climate and weather related issues, they put a stick with a flag next to the grave of the person so that it does not happen again of which the Basotho people also practice it (Anathi).

The participants in this study argued that indigenising the Climatology module comes with great opportunities for them. These included that they can be able to learn about their realities, achieve higher marks than they normally do, and be emancipated to know more about themselves and about others coming from different indigenous groups. I now conclude the chapter and state what each theme was about and summarise the whole chapter.

5.9. Conclusion

In this chapter I presented data on the participants' understanding of indigenising the Climatology module from the focus group discussions and in semi-structured interviews. I began by explaining thematic analysis and the coding of data according to themes for discussion and analysis. Findings indicated that indigenising the Climatology module allowed for affirmation of African languages and for reclaiming indigenous beliefs. In the following chapter, I theorise the findings of the study.

Chapter Six

Theorising the findings

6.1. Introduction

In the previous chapter, I analysed the data on Geography student teachers' understanding of indigenisation of the Climatology module in a South African higher education institution. In this chapter, I theorise the data by drawing from scholars' discussions on the African renaissance theory and from literature on indigenous knowledge systems in higher education. I use the African renaissance theory in conjunction with the literature to provide a theoretical discussion of the Geography student teachers' understanding of indigenising the Climatology module in a South Africa Higher Education Institution.

6.2. An African renaissance based on experience

In the theoretical chapter (see page 50), it was mentioned that the African renaissance is based on the historical lived experiences of African people. Experience is defined as encountering an activity, holding information about a subject, or having ideas in mind which all lead to the build up of knowledge (Breidlid, 2009). This means that experience is a building block to knowledge. This is particularly true as one cannot be knowledgeable about something without experience. In fact, educational theorists argue that experience plays a key role in contributing to the philosophy of education (Elrich, 2003; Jonas, 2012). Experience is important for education because it contributes to a discipline's way of thinking.

In a broader sense, experience is defined as "the actual living through an event, the real life as contrasted with the ideal or imaginary. Other senses refer to experience as the knowledge, skill or technique that result from the experience" (Elrich, 2003, p. 1126). Experience is based on the encounters one has lived through and also the skills, techniques or knowledge gained from this lived encounter. From the findings, some of the participants'' understandings came from their experiences and they presented them as knowledge towards indigenising the Climatology module.

"In Geography, we are taught to not stand near trees when there is lightning, walk on the road of which is what we also know from our indigenous knowledge systems. The only thing that is lacking in Geography is being specific on which tree to not stand under in lightning conditions. We know from our indigenous background that you are not to walk under barriers (umjimjolo) tree and peaches (ishlahlasamampentshisi) tree but also there are trees that prevent lightning such as the lekwata and mhananadi tree of which are we not taught about in Climatology nor are they specified"(Aneliswa).

African beliefs are a critical matter for African indigenous people because they symbolise things important to their lives and well-being. In the theoretical chapter (see page 50), I mentioned that the African Renaissance was developed for the upliftment of African people's lives and the African continent as it has been for long assumed to be a dark continent needing enlightenment. This is particularly shown by the understanding of one participant,

"*Where I come from, when there are black birds in the sky known as (inkonjane) it means that there will be rain or bad luck to happen in a particular family because the birds are wondering over the roof a family household... A person may pass away due to sickness or the coming of those birds over the roof of that family" (Mzukisi).*

. It was apparent that the student shared understandings that were based on experience. Their experiences came as historical because some of their knowledge about indigenisation was passed down to them by the older generation. However, they also encountered some experiences themselves. Their experiences were therefore, not based on individual experience alone but also on shared experiences. With the participants in this study being African, and their experiences being historically lived, it means that they were part of the renaissance project as the African renaissance is also based on historically lived experiences.

The students also shared that they longed to understand some of the things they experienced and those that they did not know about. This was evident in the view of one participant as revealed below.

"I will also be able to gain knowledge on what was happening back then as I was not present so the knowledge that the elders pass to us would make it easier for me to know more about climate related phenomena's such as hurricanes which is inkanyamaba in

IsiZulu as to why it does not like shiny things like corrugated iron which is a belief of the community where I come from" (Mzukisi).

From the above, it can be seen that the students had many understandings related to indigenising the Climatology module. This is evident from the experiences they shared. Engaging with participants on research based on their experiences and understandings yielded valuable data as they would have encountered these experiences.

6.3. Rejection

Literature suggests that the use of Eurocentric knowledge in curricular defines the rejection of African descendants, their knowledge systems and their views of reality (Hall & Tandon, 2017). The African Renaissance is a cultural project that disproves of anything that is not of African descent; be it the interpretation of reality, knowledge or life skills (Mami, 2013). This means that the African Renaissance rejects anything outside the periphery of Africa.

The students shared their understanding of indigenising the Climatology which rejected anything non-African.

"*We lose our beliefs when we do not learn about them, we believe on what is written in textbooks and lose sight of our own indigenous knowledge about Climatology...western beliefs are ingrained on us in such a way that we lose sight of what to do when a storm comes, when it rains heavily" (Lindo).*

The African Renaissance is a contextual project developed to harmonize the African continent, be interdependent, and develop relevant ideas to the African condition (Ayivor, 2003). The ideas shared by the student teachers on indigenising a Climatology module in a South African Higher Education institution were understood through the theoretical lenses of the African Renaissance theory. The participants came as agents, annoyed by ideas that were neither helpful nor ideal to what they imagined for Africa. Ideal solutions to the African crisis characterized by disease, poverty and hunger, can only be contextually proposed by African people as they are the very first people to experience them(Nathan, 2013). One participant rejected the use of the western

knowledge system because it was not fitting to the contextual issues that indigenous people faced.

Students' rejection of non-indigenous knowledge systems places them in a struggle that says indigenous ways of knowing must be used in their African indigenous contexts (DeWall & Bushman, 2011). This is particularly true as most of the evinced a rejection of western knowledge systems. Indigenous knowledge systems are central to the lives of participants (Grosfoguel, 2013) considering their responses.

6.4. Knowledge undressing

In the research methodology and design (see chapter four page 66), it was mentioned that research is an activity that involves undressing people of their lives and ways of thinking. This means that research is an activity that seeks to think for people rather than allowing them to use their own knowledge to think for themselves. From an African renaissance theoretical perspective, African people are to use African indigenous knowledge systems to analyse contextual issues and not know ledges foreign to their context (Girad & Girad, 2015).

Knowledge undressing is thinking for, and analysing the lived experiences of people, using knowledge outside their experiences while depriving them to do the same (Skaerbaek, 2010). From the generated data of this study which focuses on Geography student teachers' understanding of indigenising the Climatology module in a South African higher education institution, the students shared understandings that revealed them being subjected to knowledge undressing. Here is one of the views of the participants understanding as showing knowledge undressing:

> "*White race is always the superior race in everything even if indigenous knowledge is responsive to Climatology issues, researchers from Climatology will go further and do their own research even in the presence of indigenous Climatology knowledge" (Thulani).*

The participants felt that they were deprived using their own indigenous knowledge systems to study and analyse Climatology and its issues. The participants posited white superiority where white Climatology researchers go beyond indigenous knowledge to do their more advanced

research even if indigenous knowledge is a working knowledge system for Climatology. Participants understood knowledge undressing to be the side-lining of their own ways of thinking while those unfamiliar with their ways of thinking and knowing tended to think for them.

6.5. Decolonising for indigenous knowledge systems

In the theory chapter, epistemic violence was explained (see chapter three, page 53). To clarify concepts, I define an epistemicide. Epistemicide is understood to be the silencing and or "the killing of knowledge systems" (Hall & tendon, 2017, p. 6). From this definition, one can deduce that epistemicide refers to elimination of knowledge systems. Higher education spaces today ignore and exclude a variety of knowledge systems like indigenous knowledge systems (Blodgett, Crowell & Lahaise, 2005).

The exclusion of indigenous knowledge systems from curriculum in higher education institutions means that there is need to decolonise knowledge itself within these institutions. Historically, students have mobilised against this exclusion since the 1990s and they have done so again recently in the 2014-2015 fallist fees must fall movements. In fact, some scholars have engaged on research about this. For Fataar (2018)

> The politics of knowledge in South African universities has recently witnessed a radical discursive rupture. The call for decolonising education was a cornerstone of student's recognition struggles at universities. Mobilising on the basis of their demand for free education, students across the university sector expressed the need for change in university knowledge and curricula in the light of what they described as their exposure to Eurocenritc, racist and sexist knowledge at untransformed institutions. They argue such a knowledge orientation is at the heart of their experience of alienation at the university. They suggest that only the complete overhaul of the curriculum on the basis of a decolonising approach would provide them the type of educational access that addresses their emerging African-centred humanness (Fataar, 2018, p. vi).

The argument by Fataar (2018) suggests that the struggle to decolonise knowledge in South African universities is a tough one. Students are active in this tough struggle as they have been calling for a decolonized fee free education. This is because they believe that the knowledge they

receive from curriculum is too European and does not conform to their African lives. They are calling for a total transformation of their universities and the know ledges they receive from curriculum so that it can be inclusive of their emergent African lives.

With the disapproval of indigenous ways of thinking in curriculum, Acton, Salter, Lenoy& Stevenson (2017), the African renaissance has evolved to be a restorative project, as it seeks to place African values at the heart of learning; and reinstate indigenous know ledges within the higher education curriculum because they are of significance to indigenous people (Oginni & Moitui, 2016). This places the African renaissance as part and parcel of decolonising knowledge in higher education institutions.

This study focused on Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education Institution. From the data generated, the students felt that indigenising should also involve the decolonisation of knowledge within higher education institutions. Below are the students shared understandings towards indigenisation which show that they felt part of indigenisation should include decolonising knowledge in their university:

> "*Black people face difficulties when coming to study at university, bringing indigenous knowledge would emancipate black people and they would feel like they own a portion of knowledge and it would initiate fairness either than only having knowledge that is not indigenous. We would also enjoy going to university as we will not feel oppressed when using our own ways of explaining world realties such as those of climate, .it would also feel as if I am at home and welcomed within the university" (Nkanyiso).*

> *"Having indigenous knowledge would mean that there would be a high pass rate for a majority of black African students because we would not be studying through knowledge that benefits certain types of people" (Amogelang).*

The students shared the understanding that indigenising the Climatology module in a South African university includes decolonising knowledge. They believed that from this they can be beneficiaries in many ways. They felt that one of the ways they can be beneficiaries is having indigenous knowledge systems in the curriculum. Their difficulties and worries as Black students

can be put to rest, and they can enjoy attending transformed universities based on black emancipation.

The students also mentioned that learning through indigenous knowledge systems would not be a new thing for them as they had encountered learning through such knowledge systems. They also shared that having indigenous knowledge in modules like Climatology would mean greater chances for them to achieve higher results because they would no longer be learning through knowledge that conforms to Eurocentisim but also to Afrocentricism. From the above, it was observed that students valued decolonising knowledge in higher education institutions in order to do away with the killing and elimination of indigenous knowledge systems.

6.6. Restorative justice and indigenous knowledge

The commonly shared idea was that some of the indigenous beliefs were similar and therefore indigenous knowledge systems should be taught within universities in such a way that would accommodate all students of different races and ethnic ties. Scholars such as Chitindigu & Mkhize (2016) argue that in the case where indigenous people's knowledge are considered invalid for learning and knowing, they become abandoned people with no self-determination. To overthrow this idea of abandonment, the African renaissance seeks to restore African indigenous ways of knowing and knowledge production (Wright, 2005; Jonas, 2012). In restoring African ways of knowing restorative justice is significant. Restorative justice is defined as undoing the harm inflicted on people and transforming their lives (Hand, Hankes & House, 2012).

Restorative justice, in this case, involves undoing the damage caused to people and bringing about social change to people's lives. Restorative justice to indigenous peoples would involve restoring indigenous knowledge to produce knowledge in higher education. Daly (2002, p. 55) argues that "restorative justice uses indigenous justice practices to respond to any situation oppressing or suppressing inherent indigenous people's practices." Indigenous knowledge is an inherent knowledge to indigenous people as it is naturally inborn to indigenous people. Having indigenous knowledge within higher education would constitute restorative justice.

"There is not much that universities can do because English is the only means of communication for us to understand one another, like Xhosa's, Zulu's and Sotho's can understand one another through English...Universities should teach work to us in a way that would accommodate us all as students and not assume that we all know western forms of knowledge because that's not the point, I don't know how they can do it but they should...maybe through teaching methods that would accommodate us all" (Golemo).

"Some indigenous beliefs are similar .like you find that Indians are Tamil and Hindu of which some of their beliefs are similar to those of other African cultural groups. Like when a person dies due climate and weather related issues, they put a stick with a flag next to the grave of the person so that it does not happen again of which the Basotho people also practice it" (Anathi).

Responses indicated that participants longed for some form of justice, in this case, restorative justice. They saw the need to also have indigenous knowledge systems within higher education. They cautioned universities not to assume that all students conformed to, and understood or believed in western forms of knowledge production. This was evident in the words of *Golemo* who stated that "*Universities should teach work to us in a way that would accommodate us all as students and not assume that we all know western forms of knowledge because that's not the point".* The students believed that restorative justice would not be as difficult, given that some indigenous practices and beliefs are similar for people coming from different ethnic and cultural groups. They argued that universities should accommodate all students by making various knowledge systems available in their curriculum.

6.7. Conclusion

In conclusion, in this chapter, I provided a theoretical discussion of the data. I used the lenses of the African renaissance theory. With the study being based on Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education institution, participants shared understandings that I broke down into themes in the theoretical chapter. I then discussed the African renaissance based on experience, and moved on to rejection, and then knowledge undressing. Thereafter, I discussed decolonising knowledge for indigenous

knowledge systems and went on to restorative justice and indigenous knowledge. In the next chapter, I provide the summary, recommendations and conclusions of the study.

Chapter Seven

Summary, recommendations and conclusions

7.1. Introduction

In this study, I was interested in exploring Geography student teachers' understanding of indigenising the Climatology Module in a South African Higher Education Institution. The research questions developed were intended to understand the student teachers' ideas on indigenising the Climatology module, and the reasons behind them having such ideas towards indigenising. The study was located in a South African higher education institution at the province of KwaZulu-Natal.

The Geography student teachers were purposively selected as they had experience of learning Climatology in their final year of study, and so would be able to share their understanding on indigenising this module and the Geography curriculum. In this chapter, I firstly began with the intention of the study so that I could remind my audience what I had set out to do in the study and show if I achieved the intention of the study. I then went on to summarize the study by capturing the key findings and discussions as shared by the participants. This was important to do because it reminded the reader what was key in the study and also that the study aligned as a whole. In the following section, I show the gap I saw in conducting my study, recommend further research, and conclude the chapter and the study as a whole.

7.2. The intention of the study

This study explored Geography student teachers' understanding of indigenising the Climatology module in a South African Higher Education Institution. This was done with the purpose of giving students a chance to develop their voices within the academy so that their take on indigenising knowledge systems within their higher education institution can be considered. This is one of the reasons student teachers were given an opportunity to share their views with the researcher on indigenising the Climatology module.

7.3. Summary of the study

The students shared similar views in some instances in the focus group discussions and in the semi structured interviews. The students particularly had similar views in the semi-structured interviews and focus group discussions on rainmaking and praying to the rain queen. They were also positive about indigenous knowledge being used to respond to the ecological crisis. Students showed less confidence in western knowledge systems as they saw it them as too theoretical and impractical. It was interesting to note that the students saw indigenous knowledge systems as an opportunity to enhance their pass rate and it was paralleled with the findings from literature.

A majority of the students felt that indigenous knowledge systems were not being valued enough and were criticized by Climatology scholars from the global north. They argued that even when indigenous knowledge systems proved to be providing answers to issues facing Climatology, scholars from the global north would go beyond indigenous answers and seek solutions using western knowledge systems. It was a common feature of the study to hear students appealing for indigenous knowledge systems in their learning and study of Climatology.

Students' culture and belief systems appeared important as they believed that learning through western knowledge systems makes them to lose their culture and belief systems. In addition to this, they believed that learning using their own indigenous knowledge systems would allow them to retain their indigenous beliefs and cultures and also discover beliefs of the older generations that they possibly did not know about. Some students also identified a knowledge gap within the Geography curriculum and pleaded for climate specific information. They wanted the Geography content to be arranged in line with their expectations.

A majority of the students revealed that having indigenous knowledge systems within higher education institutions would be a waste of time. Some of the students were of the view that not all students would be able to grasp indigenous knowledge because some of them came from areas where it might not be practiced and believed in. Some students, however, saw it as an opportunity as having indigenous knowledge systems within a module like Climatology would emancipate black students and make them feel part of the university.

Indigenising universities has become particularly important to affirm blackness and its knowledge systems and this is suggested by the focus of research within the academy on indigenising,
Africanising and even decolonising the curriculum. Indigenisation was generally seen as a need by the participants. I now present the recommendations and thereafter the conclusion of the chapter and the whole study.

7.4. Recommendations

Presented here are the key issues that emerged in the research study. I recommend that they be addressed through research in the near future:

- The students' outcry about western knowledge systems not being practical and being too theoretical means that they are having negative experiences while learning about Climatology through these knowledge systems. Conversely, the students expressed that indigenous knowledge systems were practical and more like everyday experiences as they experienced them in their home settings. Although research has been done on the integration of indigenous knowledge systems and western science, further research on the integration of these knowledge systems is needed (Drennan, 1999; Overmars, 2010).
- The value of indigenous knowledge systems has been widely recognized in literature and students were also aware of this. This has led to the renewal of the age-long call for the integration of indigenous knowledge systems and scientific knowledge. A framework of doing this has, however, been a challenging issue. More research on the framework of integrating these two knowledge systems should be conducted. This can be done using tools and methods like action research or emancipatory research because which allow student or indigenous communities to immediately work with researchers to find a working framework for integration.
- While most African people and students alike respect and value their knowledge systems and cultures, it appears that they are being marginalized and overlooked by western thinkers, and considered incapable of contributing to the production of knowledge and intellectual thinking about Climatology. Future research can be based on the value of indigenous knowledge systems within South African higher education institutions so that

light can be shed on whether indigenous knowledge systems have or any contribution to the production of knowledge and thinking about disciplines like Geography and the specialisation of Climatology.

7.5. Conclusion

In this chapter, I focused on what was happening in the study in general as I presented the intention of the study and the summary. I also further elaborated on gaps I identified in my study and recommended future research on those knowledge gaps. I pursued this study with an interest on Geography student teachers' understanding the indigenisation of the Climatology module in a South African Higher Education institution. I am of the view that student teachers' voices, views and opinions are important when it comes to the knowledge systems offered in the university curriculum. They are students with thinking capability and should considerably be allowed to voice out whether they see the knowledge system offered at their university as fruitful for their learning and understanding as the consequences of failure is directed to them when they do not understand what they are being taught. Students' views are important for universities to become aware of what constitutes understandable teaching and learning for students. It allows learning to be relational and would greatly help students in their learning if their calls for indigenized modules are heeded.

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APPENDIX A: ETHICAL CLEARANCE.

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

19 June 2019

Mr Mlamuli Hlatshwayo 59225
Ms Thabile Zondi
School of Education
Edgewood Campus

Dear Mr Hlatshwayo and Mr Zondi

Protocol reference number: HSS/0240/019
Project Title: RE-centering and re-presenting students' and lecturers voices in the South African higher education curriculum and transformation discourses.

Full Approval – Expedited Application

Your application dated 04 April 2019, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL.**

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

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

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

Yours faithfully

[redacted]

.....
Dr Rosemary Sibanda (Chair)

/px

cc Academic Leader Research: Dr A Pillay
cc School Administrators: Ms S Jeenarain, Ms M Ngcobo, Ms N Dlamini and Mr SN Mthembu

Humanities & Social Sciences Research Ethics Committee
Dr Rosemary Sibanda (Chair)
Westville Campus, Govan Mbeki Building
Postal Address: Private Bag X54001, Durban 4000
Telephone: +27 (0) 31 260 3587/8350/4557 **Facsimile:** +27 (0) 31 260 4609 **Email:** [redacted]
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APPENDIX B: INFORMED CONSENT

University of Kwa Zulu-Natal
College of Humanities
School of Education
Geography Education

Dear prospective applicant

INFORMED CONSENT LETTER

My name is Zamokuhle Magubane. I am a Masters candidate at the University of KwaZulu-Natal, School of Education. I intend doing research aimed at exploring Geography Student Teachers' understanding of Indigenising the Climatology module in a South African Higher Education Institution. With this letter, I would like to request your permission to participate in this research study. Should you agree, your participation in the study will take an hour or less per session in the form of a semi-structured interview and a focus group discussion. The times and dates session are negotiable to ensure that you are not distracted from your duties.

Please note that:

- You are given a choice to participate or not participate in this study. Furthermore, you have a right to stop participating at any time. You will not be penalised so, nor expected to provide a reason for your withdrawal.
- Any information that you share cannot be used against you, and the generated data will be used for purposes of this research only.
- When participating in this study, your confidentiality is guaranteed since I will use pseudonyms when reporting findings.
- The generated data will be stored in secure storage and destroyed after five years.
- Your involvement is purely for academic purposes, and there are no financial benefits involved.

If you agree to participate in the interview sessions, please indicate (by ticking as applicable) whether you agree to the audio recording of the session:

	willing	Not willing
Audio recording		

If you have any concerns or questions, please feel to contact me at:
E-mail: magubanezw@gmail.com
Cellphone: 083 786 6500

My supervisors are Dr Mlamuli Hlatshwayo and Ms. Thabile Zondi. They are located at the School of Education, Edgewood Campus of the University of KwaZulu-Natal. Their contact details are as follows:

Dr Mlamuli Hlatshwayo
E-mail: Hlatshwayom@ukzn.ac.za
Tel: 031 260 3927

Ms. Thabile Zondi
E-mail: Zondit2@ukzn.ac.za
Tel: 031 260 1379

You may also contact the Research Office through:
Ms. Duduzile Dlamini
HSSREC Research Office administrator
E-mail: hssrec@ukzn.ac.za
Tel: 031 260 4557

Thank you for your contribution to this research study.

DECLARATION

I…… (Full name and surname of participant) at this moment confirm that I understand the contents of this document and the nature of the research study, and I consent to participate in the research study

I am aware that I am at liberty to withdraw from the study at any time, should I wish to, and a copy of this document is available upon request.

Signature of participant **Date**

_____ _____