

The experiences of geography teachers of a teacher preparation programme at the University of Zambia

By

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Submitted in fulfilment of the requirements for the degree
Philosophiae Doctor
in Geography Education

in the

Faculty of Education at the

University of Pretoria
South Africa

Supervisor

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September 2024

Declaration of Authorship

I, Matilda Kanyampa Nakazwe, declare that this thesis, which I hereby submit for the degree Philosophiae Doctor in Geography Education at the University of Pretoria, is my work and has not previously been submitted by me for a degree at this or any other University, although it has informed the production of a journal article written by the same author. See:

Nakazwe, M. K., & van der Merwe, C. D. (2024). Newly Qualified Teachers and their Preparedness as Geography Teachers in Zambia. *Didáctica Geográfica*, (25), 181-196. <https://doi.org/10.21138/DG.705>

Signature



.....

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Supervisor's Approval

As the candidate's supervisor, I agree to the submission of this thesis.



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INVESTIGATOR	Ms Matilda Kanyampa Nakazwe
DEPARTMENT	Humanities Education
APPROVAL TO COMMENCE STUDY	18 June 2021
DATE OF CLEARANCE CERTIFICATE	23 November 2023
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Abstract

Geography student teachers in institutions of higher learning are expected to have acquired sufficient Pedagogical Content Knowledge (PCK) that should enable them to teach in secondary schools with few challenges upon employment. Studies have highlighted challenges experienced in geography teacher preparation that have affected the geography education community. However, most of the studies have been done in developed countries, and more needs to be done from a Southern African perspective. Therefore, the purpose of this study was to use the PCK theory and the self-efficacy theory to explore geography teachers' experiences of their undergraduate teacher preparation at the University of Zambia and upon employment in secondary schools. This study was conducted in Central, Lusaka, Southern and Western provinces of Zambia.

This study sought to answer the following research questions: What were geography teachers' experiences of their undergraduate teacher preparation and upon employment? Why did geography teachers have the experiences they had during and after teacher preparation? The data was collected purposively from nine pre-service geography teachers who had studied the subject as their major or minor teaching subject and were teaching in secondary schools. Semi-structured interview guides were employed as data-collecting instruments.

The findings of the study revealed that geography teachers' experiences with physical and human geography content varied depending on their self-efficacy beliefs, and some of their experiences related to their prior knowledge in secondary senior school geography. The findings of this study revealed that geography teachers acquired in-depth and wide knowledge that was considered more than enough for geography teaching, which made them feel well-prepared. However, more geography teachers who studied the subject as their minor felt human geography needed to be more adequately covered. Geography teachers also indicated a need to improve the practical learning aspects in methodology and other practical-based courses. This study suggests that higher learning institutions should enrol student teachers with a background in senior secondary geography and an interest in the subject.

Geography teacher preparation programmes should focus on balancing physical and human geography courses and consider offering the same courses to student teachers to improve their self-efficacy in all the components of the school curriculum in Geography.

Keywords: Teacher preparation, Programme, Geography Education, Pedagogical Content Knowledge, Self-efficacy, and Curriculum.

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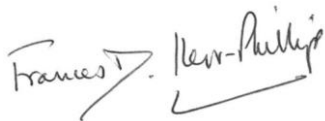
THE EXPERIENCES OF GEOGRAPHY TEACHERS OF A TEACHER PREPARATION PROGRAMME AT THE UNIVERSITY OF ZAMBIA

by

MATILDA KANYAMPA NAKAZWE

Supervisor: Prof. Clinton van der Merwe

This document certifies that I have edited the dissertation indicated above for English language, grammar, spelling, sentence construction, and clarity.



Frances Kerr-Phillips

Dedication

I dedicate this work to my mother, Belita Nachalwe; my father, Kakungu Kephas Sikazwe; my husband, Tobby Chibwe Kumbwa; and my children, Kabalika Saya Kumbwa, Tasheni Chibwe Kumbwa and Wankumbu Kutemwa Kumbwa.

Acknowledgements

I want to thank my God for seeing me through from when I started my studies until completion. The PhD journey was lonely and stressful, but my belief in God gave me the strength to persevere. My heartfelt gratitude goes to my employer, the University of Zambia, for allowing me to study on full-time paid leave, which enabled me to study with less financial stress. Further appreciation is extended to the University of Pretoria for granting me a bursary for the first three years of my study, which further reduced my financial stress.

My heartfelt gratitude goes to my supervisor, Prof. Clinton van der Merwe, for his unending encouragement and steady, professional guidance during the entire period that I was embarking on this journey.

Further appreciation goes to the head of the Department of Humanities Education, Prof. Wassermann, for reviewing my thesis and providing valuable feedback, which has been instrumental in refining my work and ensuring it meets acceptable academic standards.

I would also like to thank my dear friends, Dr Lilian Chipatu, Dr Nelly Mwale, Dr Pilira Tembo, and Dr Mubanga Mofu. They sacrificed their time to assist me with my thesis and offer emotional support. I would also like to thank Yvonne Kabombwe, Providence Warinda, Dr Pauline Monde, Dr Steriah Simooya and Cecilia Kulyambanino for their emotional support during my studies.

I am writing to convey my deepest and special gratitude to my husband, Toby Chibwe Kumbwa, for assisting me with transcribing and editing my work. I had emotional and hands-on support throughout the study. For the many times I could not take up my responsibilities, you have always taken great care of our girls. Even though I started this work while I was six months pregnant, your undivided support made my challenges feel lighter and manageable. I am truly humbled by all that you have done for me. I cannot afford to pay you back, so I pray that God grants you all your heart's desires for the kind and loving person you have been to me and everyone around you. Furthermore, I would like to state my gratitude to my children Kabalika Saya Kumbwa, Tasheni Chibwe Kumbwa and Wankumbu Kutemwa Kumbwa for being understanding and independent when I was unable to meet my

responsibilities as a mother while concentrating on this project. I sincerely thank my sisters, Charity Nakazwe, Maureen Nakazwe, Lolana Nakazwe and Dorcas Nakazwe, for their emotional support throughout this journey.

Lastly, I acknowledge the geography teachers, secondary school managers, and district education boards in different provinces who enabled me to fulfil the requirements for this doctoral study.

Ethics Statement

The author has obtained the applicable research ethics approval for the research described in this work. The author, therefore, declares that she has observed the ethical standards required in terms of the University of Pretoria's code of ethics for researchers and the policy guidelines for responsible research.

LIST OF ACRONYMS

B.A.Ed.: Bachelor of Arts with Education

CDC: Curriculum Development Centre

COSETCO: Copperbelt Secondary Teachers College

CICT: Centre for Information and Communication Technologies

PCK: Pedagogical Content Knowledge

SADC: Southern Africa Development Community

SACE: South African Council for Educators

UNESCO: United Nations Educational, Scientific and Cultural Organization.

UNZA: University of Zambia

ZESSTA: Zambia Education Sector Support Technical Assistance

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CHAPTER 1

INTRODUCTION AND OVERVIEW OF THE STUDY

1.1. Introduction

Chapter 1 of this thesis introduces the study that explored geography teachers' experiences of the undergraduate teacher preparation programme at the University of Zambia. The study was focused on establishing the experiences of geography teachers who had studied the subject as their major and those who had studied it as their minor. This study intended to understand the geography teacher preparation programme offered by the University of Zambia using geography teachers' experiences. The aim of the study was to explore geography teachers' experiences with geography Pedagogical Content Knowledge (PCK) during their undergraduate teacher preparation and after employment. Geography teachers who had undergone undergraduate teacher preparation promised to offer in-depth information on the teacher preparation programme, considering that they also had to apply what they had learnt during employment. The study utilised the self-efficacy theory in attempting to understand geography teachers' experiences with pedagogical content knowledge during and after their teacher preparation.

The chapter highlights issues faced in teacher preparation in general and further presents specific information on geography teacher preparation in developed and developing countries. The background and context of the study have been included in this chapter to bring out information on teacher preparation in Zambia, and geography teacher preparation with a special focus on the University of Zambia. The rationale and motivation for exploring geography teachers' experiences of undergraduate geography teacher preparation have also been explained in this chapter. The chapter further provides information given the purpose and focus of the study and the research questions that guided the study. This chapter ends with an explanation of the research design and methodology, the thesis structure and the chapter conclusion.

1.2. Background and context of the study

Worldwide, teacher preparation programmes aim to equip trainee teachers with relevant knowledge and skills that enable them to take up a teaching career with minimal difficulties (Mulenga, 2015). According to Darling-Hammond (2017), one of the key building blocks in developing teacher effectiveness is teacher preparation. Perraton (2010) explains that the functions of teacher preparation programmes include the development of trainee teachers' theoretical and practical knowledge of particular subjects, pedagogy, and knowledge of learners and the learning process.

The importance of having effective teachers has made both developed and developing countries continuously strive to find the best ways to prepare their student teachers for the classroom. Different nations follow different teacher preparation systems, and it is common to find countries preparing their future teachers the same way (Darling-Hammond, 2017; Dorinda, Richmond & Stroupe, 2017). A teacher in Finland is expected to have acquired a master's degree with powerful content knowledge and methodology (Darling-Hammond, 2017). According to Tapsfield (2016), initial teacher education in England is provided by university and school-led alliances, with the university-led programme focusing on providing teaching experience and mentoring, while school-led routes also focus on training and recruitment. The two types of training provided by universities and schools in England require student teachers to learn through teaching practice in schools (Tapsfield, 2016). In the United States, teachers are prepared using different pathways, with one pathway requiring more in-depth coursework combined with classroom experiences before certification. The other form provides short periods of intensive initial preparation with subsequent on-the-job mentoring and support (Dorinda et al., 2017). Macbeth (2012) points to how education and teachers' issues and priorities are diverse despite globalisation.

Although teachers are prepared using different systems, teacher preparation programmes are expected to produce effective teachers teaching their subjects. However, that is not always the case: public dissatisfaction with the quality of graduate teachers coming from institutions of higher learning is not new in many countries (Townsend & Bates, 2007; Mulenga, 2015 ;). The effectiveness of teacher preparation programmes in meeting the needs of schools and society has been questioned (Hénard & Roseveare, 2012; Mulenga, 2015).

Universities are increasingly pressured to find ways of proving their worth in preparing students, providing programmes relevant to society and accounting for the quality of their graduates (Hénard and Roseveare, 2012).

Townsend and Bates (2007) point to training institutions as the most criticised for reports of poorly trained teachers. Some teacher preparation programmes were considered to have had teacher educators who could not display the best examples of good teaching because they provided inadequate or irrelevant content to their learners (Ingiaimo, 2012; Mulenga, 2015). Darling-Hammond (2017) projected that teacher preparation programmes would continue to have challenges in creating the correct balance between knowledge and application, provision of adequate resources for effective preparation, and developing consolidated teacher education programmes.

Geography teacher preparation programmes are not an exception to the issues affecting teacher preparation in institutions of higher learning. Tapsfield (2016) reports that initial geography teacher education in England was affected by the increase in school-led teacher training, which saw fewer courses provided by universities due to reduced cohorts. Tapsfield (2016) also highlights the reduced quality of geography teacher education in school-led training caused by some alliances that depend on non-specific geography training when faced with the unavailability of a devoted geography mentor. Evidence from inspection showed that student teachers needed to acquire subject-specific content knowledge from qualified geography educators in school-led teacher training subjects (Ofsted, 2020). Tapsfield (2016) further explains that the increase in school-led geography teacher training comes with challenges of inconsistency in the quality of mentoring, considering the differences in individual demands of time and geography knowledge bases of mentors. Furthermore, geography education in England is faced with challenges of having inadequate geography teacher educators in school-led teacher preparation programmes, a lack of specialist geography teachers in schools, and failure to retain qualified geography teachers (Biddulph and Kinder, 2020).

In the United States, Brysch (2014) explains the following as among the challenges affecting geography education: complex teacher preparation in social studies and geography education, the mismatch between school and university geography,

inadequate studies on teaching geography, and the limited number of geography educators. Other studies also highlight the challenges the gap between university and school geography poses. Ferreira (2018) and He, Tani & Yang (2022) in Germany and China, respectively, reveal a mismatch between the objectives of teacher preparation programmes and the needs of schools, which affects the effectiveness of geography education in different countries. In the case of England, Tapsfield (2016) explains that the positive relationship between universities and schools has become more competitive and has affected geography teachers' networks and professional development.

Catling (2016) points to the geographic literacy of pre-service primary teachers in England and elsewhere as a major concern for geography education. In the Netherlands, inadequate time and insufficient focus on content knowledge were significant factors impeding the quality of geography education (Blankman, Van der Schee, Volman & Boogaard, 2015). Tredinnick (2018) explains how secondary school geography teachers have been left behind, struggling with finding their identity, while academic-level geographers have moved on to tackle large, relevant issues as a concern in geography education. Kerr, Collins, Monroe-Ossi, Ray, Whitcraft, Solem and Stoltman (2013) have called for geographers to take an interest in how secondary school teachers are trained to teach geography in schools.

A literature review shows that challenges faced in geography teacher preparation have come from many years back. Boehm et al. (1994) explained that geography teacher preparation programmes were unresponsive to the requirements of schools, and schools needed to be clearer about the kind of skills and knowledge they wanted in prospective teachers, even though both aimed at improving geography. Gilsbach (1997) points to geography teachers needing more training in content and methodology courses during pre-service teacher preparation.

Challenges in teacher preparation faced by developed countries seem similar in certain instances in developing countries: in Tanzania and Kenya, geography teachers felt inadequately prepared by teacher preparation programmes (Ingiaimo, 2012; Muchiri & Iddrisu, 2019). Kenya's geography teacher training programme was considered irrelevant to producing competent geography teachers in pedagogy

(Muchiri and Iddrisu, 2019). Manik (2018) points to how geography education literature from Africa is limited, especially in the southern African region.

Even with the many challenges faced in geography teacher education in the past and present, researchers have not been short of solutions. Geography educators have suggested different solutions to help improve the quality of geography education. Gilsbach (1997) proposed that professional geographers, teachers and teacher educators should work together to improve geography education. The writer further called for changes in how geography teachers were being prepared for future geography teaching. Geography education scholars in the United States outlined a decade-long plan called 'A Road Map for 21st Century Geography Education' to conduct noteworthy studies that would enhance the teaching and learning of the subject (Brysch, 2014). Teachers who are geographically literate and effectively communicate the subject to the learners are the ones to teach geography effectively, if good geography education is to be achieved (Gilsbach, 1997). Given the overview of teacher preparation above, in general and specific to geography, it is imperative at this stage to provide an overview of teacher preparation in Zambia and at the University of Zambia, which is the focus of this study.

1.2.1. Teacher preparation in Zambia

Like in many countries, having well-prepared teachers and a good education system is crucial to Zambia. Zambia's third major policy document, titled 'Educating Our Future' (1996), emphasises the value of teachers (Ministry of Education, 1996). The policy explains that an education system's quality and effectiveness depend heavily on its teachers' quality, and the welfare of the learners in schools depends heavily on the teachers' capabilities, dedication and inventiveness in teaching and learning (Ministry of Education, 1996).

At the time of independence in 1964, Zambia inherited a dual education system from its colonial masters which racially segregated Africans from non-Africans but followed the British system (Kelly, 1999; Manchishi & Hamweete, 2018). The education system favoured settlers compared to native Zambians and, as such, very few Africans were represented at all levels of education, and the country had few educational facilities (Carmody, 2004). The new government led by the first president, Kenneth Kaunda of the United National Independence Party, saw

education as an important vehicle for developing the country's political and social institutions (Carmody, 2004). The education system needed a more skilled workforce to teach at different levels of education after independence and this made the government focus on ensuring that more Zambians could acquire knowledge and skills, especially at secondary and tertiary levels, so that they could lead the country politically and socially. In teacher education institutions, student teachers studied knowledge they would teach upon employment in schools, and they also had practical experience in schools, in their second year of study (Kalimaposo, 2022).

After independence, Zambia was privileged to have had a thriving economy from the sale of copper, which was doing well on the world market and making the country earn foreign exchange at a time when it was focused on expanding the education system, especially secondary education (Carmody, 2004). However, in the mid-1970s, copper prices declined on the world market, and there was an increase in oil prices (Mukalula-Kalumbi, Mulenga & Siankanga, 2018). The agriculture sector was also affected by poor rainfall, which negatively affected the Zambian economy and its developmental projects, including education. While teacher preparation had started expanding when the economy was doing well, a dwindling economy now saw a reduction in resources, which also affected the quality of teacher preparation (Carmody, 2004). Kalimaposo (2022) explains that in 1970 National In-service Teachers' College at Chalimbana (now called Chalimbana University) was created to improve in-service teachers' ability to adapt to the changing curriculum and Zambia Institute for Special Education Needs was opened in 1971 to manage pupils with special needs. Secondary school education was overlooked before independence in Zambia and most secondary school teachers were mainly trained outside the country, with few being Zambians (Mwanakatwe, 1974). In 1973 the country became a one-party state, which saw the government allocating limited resources to education and other social services, while the government was financing its political activities (Mukalula-Kalumbi et al., 2018). The educational orientation of the country under the one-party state was mainly based on socialist ideologies (Moonga, Changala & Lisulo, 2018).

A growing demand for Zambian teachers in secondary schools and colleges in the country saw the services of the In-service Teachers' College move to the University of Zambia, which was established in 1966 (Kalimaposo, 2022). To increase the

number of Zambian secondary school teachers, 30 percent of university students were required to enrol in the B.A. (Ed.) and BSc (Ed.) (Carmody, 2020.). Graduate students who wanted to enrol in educational studies enrolled in a Postgraduate Certificate in Education offered by the School of Education at the University of Zambia. In 1974, Copperbelt Secondary Teachers' College (COSETCO), now called Mukuba University, was opened to provide a single major in Mathematics, Science and Home craft. The University of Zambia was responsible for advising and supervising both Nkrumah College (now Nkrumah University) and COSETCO and their diplomas were underwritten by it (Kalimaposo, 2022). Teachers produced during the time the economy was declining and tertiary institutions that were struggling to survive were seen to have been insufficiently prepared to take up teaching in schools (Carmody, 2004; Kalimaposo, 2022).

In 1991, a new government that introduced multi-party democracy from the previous one-party state was voted into power and this government came with a free market ideology (Moonga et al., 2018). At this point, the education system was in a poor state, and the country had debt repayment, making it difficult to allocate adequate resources for improving teacher education. With regards to secondary school teacher education, a policy document developed in 1992 called 'Focus on Learning', whose main focus in teacher education was on improving primary teacher education, explained that the quality of teachers in schools impacted the quality of schools, while teacher education colleges and universities had a bearing on teachers' performance in schools (MoE; 1992). The policy further explained that successful teacher education institutions were expected to produce capable and devoted secondary teachers, and that necessitated the need to continuously review teacher preparation programmes to address the needs of schools (MoE, 1992).

After focusing on learning, a policy document was developed in 1996 called 'Educating Our Future'. Primary teacher education saw a reduction in content courses in preference for methodology courses, emphasising student-centred teaching and learning (Kalimaposo, 2022). The policy 'Educating Our Future' gave guidelines for teacher education (Mulenga, 2015), which highlighted the responsibility of teachers to ensure that the education system was effective (MoE, 1996). The policy highlighted the importance of having competent teachers for a successful education system. In 2011, a new government came into power, which

found that education had started improving after Zambia's debt was cancelled in 2002. There was an improvement in copper prices, which saw more resources channelled to improve education (Kalimaposo, 2022). Despite having an economy that was improving, the country still had challenges in meeting the demand for teachers in schools, especially in secondary schools.

Zambia has not been an exception to the many challenges different countries face in preparing teachers. For this reason, the country continued and has continued to emphasise the importance of having quality teacher preparation programmes in colleges and universities through the creation of the Teaching Council of Zambia, which aims to improve the performance of teachers, lecturers and school managers (CDC, 2013). The Zambian government established the Teaching Council of Zambia to enhance the expertise and performance of teachers, lecturers and school managers nationwide. An Act of Parliament in 2013 established the Teaching Council of Zambia (Zambia Education Sector Support Technical Assistance (ZESSTA), 2018). Consequently, in consultation with different stakeholders, the Ministry of General Education, the Teaching Service Commission and the Teaching Council of Zambia have developed standards of practice for the teaching profession (Ministry of General Education, 2019). The 'Standards of Practice for the Teaching Profession in Zambia' framework has six areas of practice which capture the principle areas of responsibility of education professionals, and these are informed by the Southern Africa Development Community (SADC) 'Regional Framework for Teacher Professional Standards and Competences' (Ministry of General Education, 2019). According to the Ministry of General Education in Zambia (2019:1), "standards of practice for the teaching profession will be used to assess teachers' knowledge of their content areas and skills to deal with a wide range of teaching approaches to cater for different learning needs of every learner".

Although not yet implemented, the development of standards of practice shows that the government is interested in improving the quality of teaching in schools by establishing standards of practice for the teaching profession. Teacher assessment goes hand in hand with teacher preparation since teachers are expected to have learned everything they need to know by the time teacher training is concluded.

Currently in Zambia, pre-service teachers are expected to have undergone teacher preparation for at least three years to obtain a diploma and four years to obtain a

degree, while in-service teachers are expected to obtain their qualifications in a shorter period (CDC, 2013). Teacher education courses are offered at three levels: Early Childhood Teacher Education, Primary School Teacher Education and Secondary School Teacher Education (CDC, 2013). Early childhood has no grade levels but is for learners aged three to six, primary school is from grades 1 to 7, and secondary school is from grades 8 to 12. Universities and colleges offer teacher preparation programmes, with universities offering undergraduate and postgraduate degree programmes and colleges mostly offering diploma programmes (Curriculum Development Centre (CDC), 2013).

School teachers who obtain a diploma in secondary school teacher preparation are expected to teach junior secondary from grades 8 to 9. Perraton, Creed & Robinson (2002) explain that a teacher's basic or first level of qualification may be taken as a pre-service or in-service programme. A student teacher who has graduated from a teacher education programme gets a qualified teacher status according to the official standards of a country (Perraton et al., 2002).

Teachers at all levels in Zambia are expected to have the following key competencies: *Understanding content, skills in different teaching methodologies, educational foundations, creativity, constructiveness, and innovation (Skills acquired), and providing competent leadership* (CDC, 2013, p. 49).

In teacher education, the number of years spent in tertiary education, also called higher education, depends on the qualification one will obtain upon completion of studies (CDC, 2013). School leavers who wish to teach children between the ages of 3 and 6 are enrolled in early childhood teacher education programmes, and those who wish to teach grades 1 to 7 are enrolled in primary school teacher education programmes (CDC, 2013). Secondary school teacher preparation is offered to student teachers who want to teach pupils in grades 8 to 12. A Grade 12 school leaver who wishes to pursue a diploma in teacher training will spend three years studying to become a teacher, whilst one who wishes to pursue a degree in teaching will spend four years in an institution of higher learning (Muchanga & Nakazwe, 2015). Graduate teachers who complete a degree programme are expected to teach junior and senior secondary classes, while diploma-holder teachers are qualified to teach junior secondary classes (CDC, 2013).

The Curriculum Development Centre (CDC, 2013, p. 52) provides an outline for the education-based courses that should be offered for the senior secondary teacher education curriculum, which include the following: Education Administration, History and Philosophy of Education, Psychology and Sociology of Education, Special Education, Guidance and Counselling, Curriculum Studies, Teaching Methods, Entrepreneurship Education, Research Methods, and Information and Communications Technology Education. Apart from the above subjects, the Zambian framework for education also guides institutions of higher learning, preparing teachers to ensure that student teachers select two teaching subjects of their choice that are also offered in the secondary school in which they will be teaching (CDC, 2013).

According to the Ministry of Education (1996), teacher preparation requires lengthy and careful attention for teachers to understand their field, just like it takes many long years of arduous preparation for medical doctors to understand their field. Therefore, the value and responsibility given to teachers justify the importance of assessing teacher preparation programmes for improvement and accountability (Brysch, 2014; Mulenga, 2015). CDC (2013) explains that the focus of teacher preparation programmes is to produce teachers with high levels of competence in the knowledge to be taught, skills in eclectic teaching methodologies, and an understanding of educational foundations. Public universities are regulated by the Higher Education Act, which was promulgated in 2013, with the responsibility of ensuring that quality education is provided by institutions of higher learning (Masaiti and Simuyaba, 2018).

Evidence from some studies done by other scholars in teacher education in Zambia (Manchishi & Masaiti, 2011; Mulenga, 2015; Manchishi & Mwanza, 2018; Banja & Mulenga, 2019) reveals that there is a need for the quality of teacher preparation to be enhanced for the quality of teaching taking place in secondary schools to improve. In geography education, Mubita, Mundende, Milupi & Kalimaposo (2023) highlighted the lack of teacher training, limited time to teach, and insufficient teaching and learning resources in schools as some of the challenges faced by learners and geography teachers in Luapula and Lusaka provinces of Zambia. Another study done in geography education at the University of Zambia by Mubita, Kalimaposo,

Mundende, Sikayomya, Milupi and Haambokoma (2022) established that teaching methods were insufficiently covered, and a difference was noted between the geography content students acquired during teacher preparation, and the subject knowledge they were expected to deliver to the learners in schools.

Drawing upon studies done in Zambia and at the University of Zambia, which is the highest institution of learning in the country, different authors have questioned the quality of teacher preparation in general and in different subject disciplines, and others have emphasised the need to improve teacher preparation programmes in general (Banja & Mulenga, 2019; Manchishi & Masaiti, 2011, Manchishi & Mwanza, 2018). The Ministry of Education (1996) acknowledged the initial teacher preparation as being among the pillars on which the following professional competence of the teacher rests. From this background, this study explored geography teachers' experiences of their undergraduate preparation at the University of Zambia. Information on geography teacher preparation at the University of Zambia, which is the main interest of the study, is explained in the next section.

1.2.2. Geography teacher preparation at the University of Zambia

The School of Education offers different teacher preparation programmes, with most student teachers enrolled in the Bachelor of Arts in Education (B.A.Ed.) programme (Mulenga, 2015). The Department of Languages and Social Sciences Education which offers most of the teacher education programmes was created when the School of Education was restructured in 1989 (UNZA, 2018). Theoretical preparation of student teachers at the University of Zambia requires students to have a teaching subject major and minor and coursework in education-based content. At the same time, practical experience is gained through teaching practice in the schools (Banja & Mulenga, 2019). Teacher preparation programmes offer different teaching subjects in line with the secondary school curriculum, and students are required to choose at least two teaching subjects (CDC, 2013).

Geography is among the subjects offered in the Bachelor of Arts degree programme at the University of Zambia (UNZA, 2014) and a student who studies geography as their teaching subject is expected to become a geography teacher in a secondary school upon completion of the programme. Geography student teachers take geography content courses from the Department of Geography and Environmental

Studies in the School of Natural Sciences. In contrast, Geography Methodology and Education courses are taken from the School of Education where the teacher preparation programme is housed. Geography courses taken from Natural Sciences are called Content courses, whilst courses from the School of Education are called Methodology and Education courses. A brief history of the Department of Geography shows that it is amongst the founding departments which were initially under the School of Humanities and Social Sciences, however, for administrative purposes, the department was moved to the School of Education in 1973 (UNZA, 2018). In 1982, the Department of Geography was again shifted to the School of Natural Sciences, where it is currently situated (UNZA, 2018).

Although the Department of Geography and Environmental Studies offers geography content courses to student teachers in the School of Education, it does not have programmes in teacher preparation. The Department of Geography and Environmental Studies enrolls students who want to be rural development specialists, hydrologists, climate change specialists, resource scientists, conservationists and energy economists (UNZA, 2018).

Geography teachers are not listed as among the professionals produced by the department because teacher preparation programmes are offered in the School of Education despite depending on the School of Natural Sciences for geography content courses. According to some studies done at the University of Zambia, the offering of content courses by other schools whose purpose differs from the ones held by the School of Education mandated in training teachers frequently resulted in student teachers acquiring content irrelevant to secondary school teaching (Manchishi & Masaiti, 2011; Manchishi & Mwanza, 2013; Mulenga, 2015; Mulenga & Luangala, 2015).

Student teachers enrolled in teacher preparation programmes like the Bachelor of Arts with Education (B.A.Ed.) programme are expected to select two teaching subjects, one as their subject major and the other as their subject minor (UNZA, 2014). The subject major is a student's area of specialisation and the subject they want to be identified as their main teaching subject. Park and Huynh (2015), explain a subject major as a student's main subject of focus during their undergraduate preparation. Student teachers who take geography as their subject minor complete

their study of geography content courses and geography teaching methodology courses at the end of their third year, while those who take the subject as their major further select another geography teaching methodology course, and content courses of their choice in their fourth year which is the final year of study.

Regardless of the pathway chosen by geography students, upon graduation, they are employed in schools as geography teachers and given the same status and responsibilities. A close look at the programme structure followed at the University of Zambia in teacher preparation seems to indicate that students who take geography as their subject major receive a deep knowledge base since they take more courses than those who take geography as their minor.

Geography education literature within the country reveals that geography teachers still struggle with teaching some components of the subject, especially in physical geography, even after undergoing teacher preparation in institutions of higher learning (Mubita et al., 2023; Nakazwe, 2011). Moreover, secondary school geography results have also shown that pupils perform poorly, as many geography pupils need help with understanding physical geography concepts like map reading, movements, landforms and time calculation (Examination Council of Zambia, 2013; 2022). In Zambia, geography is one of the subjects that has had unsatisfactory performance for some years (Mundende and Namafe, 2019). Examination Council of Zambia (ECZ) (2022) recommends that geography teachers find practical teaching methods to help pupils better understand difficult concepts like map reading. The current state of affairs in geography education calls for more research to be conducted to improve learners' understanding of the subject to enhance performance.

Improvement of the school geography education rests heavily on pedagogical content knowledge acquired during teacher preparation. Understanding geography teachers' experiences of their undergraduate teacher preparation programme provides in-depth feedback on the relevance or effectiveness of the programme in preparing students for teaching in secondary schools upon employment.

Even though some studies (Banja, 2016; Chabatama, 2012; Manchishi & Masaiti, 2011; Manchishi & Mwanza, 2018; Mulenga, 2015; Mwanza & Manchishi, 2016) have explored and examined some aspects of teacher preparation and, in some cases as subject disciplines at the University of Zambia, to the knowledge of the researcher, a study to specifically establish the geography teacher preparation programme by exploring geography teachers experiences of the undergraduate teacher preparation and upon employment has not been done at the time of this study. Furthermore, all the studies treated the student teachers as students who had studied their coursework the same way when, in actuality, students had studied different subjects using different pathways, making them different in their abilities in some way with the world currently facing environmental problems, improvement and interest in geography education both at secondary and tertiary level promises to offer some solutions through improved geography teacher preparation. Moreover, Sustainable Development Goal 4 highlights the importance of having a quality education system by 2030. With the above background, the researcher saw it fit to explore the experiences of geography teachers who were trained in geography at the University of Zambia, both during undergraduate teacher preparation and upon employment in secondary schools.

1.3. Rationale and motivation for studying experiences of geography teachers

My motivation and rationale for engaging in this study are based on professional, conceptual and scholarly reasons. Based on my interest in geography during my secondary school days, I decided to pursue the subject as my teaching subject at both undergraduate and master's degree levels. Professionally, as a teacher educator, my interest in exploring geography teachers' experiences of their undergraduate teacher preparation emanated from the experiences I had while observing student teachers during their peer teaching sessions and teaching practice in secondary schools. I noticed a difference in how student teachers taught the subject; some were enthusiastic, while others could barely teach. The differences in how student teachers related to geography content and pedagogy motivated me to engage in a study that would explore undergraduate geography teacher preparation. The programme structure at the University of Zambia, which offers more content courses to students who study the subject as their major and fewer to those who study the subject as their minor, indirectly suggests that one has to study the subject one is more interested in than the subject one has less interest in, even though all will be given the same duties upon employment.

As a person involved in teaching the subject, my interest was in understanding geography teachers' experiences of a programme I am teaching in and how beneficial it is to them upon employment in secondary schools. Furthermore, through my experience as a teacher educator, I questioned myself about what influences students when selecting their teaching subjects and how their decision may influence their performance and effectiveness upon employment. With many unanswered questions, the researcher developed an interest in exploring geography teachers' experiences of their undergraduate teacher preparation programme.

The responsibility of teacher preparation in ensuring quality education is achieved and a literate citizenry is produced forms the academic rationale for conducting this study. Several scholars have highlighted the need to improve research in geography education as it seems to be under-researched (Bednarz & Heffron, 2013; Brysch, 2014; Kerr et al., 2013; Manik, 2018; Tredinnick, 2018). Internationally, different researchers have looked at teacher preparation in geography education, with some studies focusing on primary school teacher preparation and a few on secondary teacher preparation (Catling, 2016; Harte & Reitano, 2015; Kocalar & Demirkaya,

2017; Martin & Dismuke, 2018; Mohan, 2009, Muchiri & Iddrissu, 2019, Nuwategeka & Odama, 2020). Primary geography teacher preparation, in most instances, differs from how secondary geography teachers are prepared due to the general nature of how primary school teachers are prepared. Studies done in developed and developing countries in geography give insights into geography teacher preparation issues (Catling, 2016; Harte & Reitano, 2015; Kocalar & Demirkaya, 2017; Martin & Dismuke, 2018; Mohan, 2009, Muchiri & Iddrissu, 2019, Nuwategeka & Odama, 2020). The relevance of geography secondary school teacher preparation studies remains contextualised to where studies were done, with the focus of most studies being different from what this study aimed to establish.

A search for literature shows that geography education is under-researched in most Southern African countries, and Zambia is no exception. Research in geography education in the southern African region, Zambia inclusive, is further encouraged by Manik (2018), who points to the need for more research examining and tracing the status of geography education considering post-colonial curriculum changes and upcoming innovations. Studies conducted in geography education in Zambia remain minimal and mostly done by postgraduate students and teacher educators in institutions of higher learning (Mubita et al., 2022; Mubita et al., 2023; Mulemi, 2011; Nakazwe, 2011). While studies on the subject are minimal, challenges in the subject continue to exist; for example, examination reports of secondary school pupils show that some components of the subject were not well understood by the learners (ECZ, 2013; ECZ, 2022), and geography teachers had insufficient knowledge of some aspects of the subject (Nakazwe, 2011; Mubita et al., 2023), both being issues that provided bases for engaging in this study. An exploration of geography teachers' experiences of their undergraduate teacher preparation programme at the University of Zambia, which is the highest institution of learning in Zambia, was cardinal in attempting to establish different aspects of teacher preparation that may be influencing the quality of geography teaching in secondary schools. Being products of the teacher preparation programme, geography teachers had a detailed knowledge of the programme as they experienced the issue under study.

The theoretical and conceptual rationale of conducting this study aligns with the understanding that geography student teachers' experiences of their undergraduate teacher preparation are related to their effectiveness in teaching the subject upon

employment. Unless research is done to explore the state of geography teachers experiences of the undergraduate geography teacher preparation programme at the University of Zambia and the teaching that takes place in secondary schools by such student teachers upon graduation, it is difficult to conclude how geography education was fairing at the University of Zambia and in Zambian secondary schools. Consequently, the geography teacher education programme at the University of Zambia could produce graduate teachers who were lacking in certain competencies due to teacher preparation and thus affect the quality of teaching and learning in geography secondary schools. This study came at a very important time when departments at the University of Zambia discouraged students from taking more than the required courses to complete a programme, considering that the payment mode for tuition fees depended on the number of courses a student selects. The study findings may bring forward information useful for curriculum developers in pre-service teacher preparation. Research findings would help the Ministry of General Education, which is in charge of ensuring that effective teaching takes place in secondary schools and teacher training colleges and in universities involved in teacher preparation which are given the responsibility of producing competent graduate teachers. Furthermore, this study promised to add knowledge in Geography and teacher education. Unanswered questions and gaps in the literature highlighted in this section necessitated the need to carry out this study to understand and improve the teaching and learning of geography.

When using qualitative research methods, the role of the researcher is important and should be identified in the study, considering that it can affect the research process and the study's results (Maree, 2012; Yin, 2014). Mohan (2009) explains that to fully understand the lens through which the interpretation of the data occurred, the researcher needs to identify their own experiences and biases with the phenomena under the study in a process called bracketing. In this study, I identify myself as a geography education lecturer at the University of Zambia and my interest in this study comes from my experience as a geography student and also as a geography teacher educator. My experience as a geography student and geography teacher educator meant that I came with some level of bias, considering that I was already interested in the topic of study with certain assumptions. I understand the implication of bias in qualitative research and have avoided compromising the study findings by following all the requirements of the qualitative research approach. Furthermore, I

followed all the ethical requirements to ensure the study was trustworthy. Instead of looking at the experience as a cause of bias, my experience could be considered an aid in understanding familiar phenomena at the data collection stage, transcription, and analysis in a familiar environment. The next section explains the purpose and focus of the study.

1.3.1. Purpose and focus

The purpose of this study was to explore geography teachers' experiences of their undergraduate geography teacher preparation programme at the University of Zambia and upon employment. The study intended to explore the experiences of geography teachers who had studied the subject both as their major teaching subject and those who had studied it as their minor. The focus of the study was to establish how geography teachers' experiences during their undergraduate teacher preparation were related to their teaching of the subject upon employment. The focus was on establishing geography teachers' engagement with the pedagogical content knowledge that they were expected to acquire during teacher preparation. With the purpose and focus of the study established, the following research questions and secondary research questions were derived.

1.4. Research question

In consideration of the study's rationale, purpose and focus of the study explained above, this study had a primary research question and secondary research questions which it sought to address.

1.4.1. Primary research questions:

The study aimed to address the following main research question:

What were the experiences of geography teachers of their undergraduate teacher preparation programme at the University of Zambia, and upon employment in secondary schools?

The primary research question was further divided into the following secondary research questions:

1.4.2. Secondary research questions:

- Why did geography teachers have the experiences they had during their undergraduate teacher preparation?
- How are geography student teachers at the University of Zambia prepared as future geography teachers?
- What are the views of geography teachers on the quality of the geography teacher preparation programme offered by the University of Zambia?
- What are the experiences of geography teachers in teaching geography in secondary schools?

1.5. Clarification of key concepts

This section provides clarification of concepts that were employed and considered cardinal in this study.

1.5.1. Geography teachers' experience

In this study, experience refers to geography teachers' interaction with pedagogical content knowledge during their undergraduate teacher preparation and upon employment. This has to do with what geography teachers felt was positive or negative engagement in their acquisition of pedagogical content knowledge during their undergraduate teacher preparation. Geography teachers' experiences during their undergraduate teacher preparation were cardinal in understanding how the geography teacher preparation programme at the University of Zambia was fairing in producing effective teachers.

1.5.2. Programme

In the context of this study, the word "programme" entails the content knowledge, methodology and skills that geography teachers were expected to acquire during their undergraduate preparation, which would further earn them a qualification as geography teachers upon completion. "Programme" entails all that has been systematically put in place for student teachers to acquire by institutions of higher learning.

1.5.3. Geography teacher preparation

In this study, geography teacher preparation is the process of imparting the geography content knowledge, skills and values to geography student teachers from the time they enter college or university to the time they complete their studies. This entails all the activities done by student teachers during their undergraduate learning that add to the requirements needed by institutions of higher learning for one to be called a geography teacher upon completion.

1.5.4. Teacher education

In this study, teacher education refers to the formal teaching and learning that teachers are expected to undergo before being certified as teachers. Institutions of higher learning have programmes which aim to produce teachers, who will be teaching in schools.

1.6. Overview of the research design and methodology

The study followed the qualitative research approach in order to address the research questions of the study. This section presents a brief explanation of the methodology that was followed in this study, while an in-depth discussion of the methodology is provided in Chapter 3 of this thesis. This section explains in brief the paradigm, the research approach, the research design, data collecting instrument, the sample and sampling technique, and the data analysis that were utilised in the study.

1.6.1. Research Paradigm

The Interpretivist paradigm guided this study. Interpretivists believe individuals with backgrounds and experiences construct reality through social interaction (Lincoln et al., 2011 Wahyuni, 2012). Reality is seen from multiple perspectives, as different people and groups perceive the world differently (Willis, 2007). There is no objective knowledge independent of thinking and human reasoning for interpretation, but knowledge and meaning are products of interpretation (Gephart, 1999). Thanh and Thanh (2015) explain how, theoretically, the researcher views the world using participants' perceptions and experiences. The interpretive paradigm was best suited for exploring geography teachers' experiences of the teacher preparation programme as experiences enabled the researcher to obtain their views and understanding.

Considering the purpose and research questions of this study, the interpretive paradigm was best suited to address the needs of the study. Thanh and Thanh (2015) explain how the crucial purpose of the interpretive paradigm is for researchers to get 'insight' and 'in-depth' information. The needs of the study were more subjective, as participants' unique experiences were paramount in the provision of information in this study.

1.6.2. Research approach

To understand geography teachers' experiences of their teacher preparation programme at the University of Zambia, this study was based on the interpretive paradigm, which sees reality as subjective and viewed from multiple perspectives (Hammersley, 2013; Lan, 2018). Given that the study is situated in the interpretive paradigm, the researcher saw it fit to utilise the qualitative approach to understand geography teacher preparation from individual geography teachers' experiences of the programme. Qualitative research is "a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem" (Creswell 2014: p. 32). Yin (2011) explains that concepts revealed from qualitative research arise from explanations given by people who have experienced them. Geography teachers provided the best information on geography teacher preparation at the University of Zambia as they experienced the programme first-hand.

1.6.3. Study design

This study employed the case study design. Creswell (2002) explains the case study design as an issue that needs to be researched to comprehend the case, which involves understanding the phenomenon thoroughly. According to McMillan and Schumacher (2001), a case study investigates a programme, system or case in detail by utilising different data sources in the environment. According to Berg (2001), the case plays an encouraging part against which real research interest takes place. It aims to assist a researcher in better understanding some external challenges as a case becomes less important (Berg, 2001). An instrumental case study was best suited for this study because it enabled the researcher to collect rich information on the preparation of geography teachers at the University of Zambia through their experiences. Furthermore, a case study is helpful when attempting to understand imperfectly understood circumstances (Leedy and Ormrod, 2001).

1.6.4. Sample and sampling technique

In qualitative studies, the sampling techniques required do not allow individuals in the study population to have equal chances of being picked as a sample (Cresswell, 2012; Mugera, 2013). The study targeted geography teachers who had graduated from the University of Zambia from 2014 - 2020 and had taught in secondary schools for at most six years. Furthermore, the study targeted Geography teachers who were enrolled as pre-service student teachers at the University of Zambia at the time of their teacher training. Secondary schools with geography teachers trained at the University of Zambia were purposively selected, and this information was obtained from the Lusaka District Education Office. Participants selected for this study were well-versed in the information required to understand the research questions. Based on the nature of qualitative studies and research requirements, data for this study were collected from nine geography teachers who had taught for not more than six years in secondary schools in Zambia using quota and snowball sampling. Data was collected from four provinces: Lusaka, Central, Southern and Western provinces of Zambia in order to ensure that a wide representation of geography teachers' experiences of geography teaching in urban and rural secondary schools was achieved. Quota sampling, a non-probability type of sampling employed in qualitative studies (Cresswell, 2014), was employed to come up with geography teachers who took geography as their major and those who took the subject as their minor were represented in the study. Furthermore, snowball sampling was used when accessing geography teachers who had studied the subject as their minor became difficult.

1.6.5. Data generation and collection

This study utilised a semi-structured interview schedule and document analysis to collect data. Information from geography teachers was collected through my interaction with geography teachers during the interview. Semi-structured interviews assist researchers in collecting in-depth data about peoples' experiences (Evans & Lewis, 2018). Interviews allow for a greater scope of asking probing questions (Mulenga, 2015; Neuman, 2006). This study used a semi-structured interview schedule as the main data collecting instrument, considering that the research questions of the study were best responded to by geography teachers who had lived the phenomena under study (geography teacher preparation programme). The data-collecting instrument brought out more important and in-depth information cardinal in

this study that no other instrument could have provided. The study also employed document analysis as a data-collecting method and a document review guide as a tool. The documents reviewed included course materials and the secondary school geography syllabus.

1.6.6. Methods and data analysis

The study utilised qualitative data analysis techniques. Qualitative data was organised and managed manually and using Microsoft Word, after which the data was analysed thematically. Thematic analysis entails identifying major concepts or themes, which are then categorised into related topics (Braun and Clarke, 2006). Braun and Clarke (2006) explain that thematic analysis is popular with many researchers because of its independence from any theoretical approach or epistemological persuasion.

1.7. Thesis structure

Several decisions were made to develop a well-planned research project to establish geography teachers' experiences of undergraduate geography teacher preparation. The structure of the thesis gives an overview of the information in each chapter of this thesis.

Chapter 1: Introduction

The thesis begins with Chapter 1, which provides an overview of the study and introduces the topic under discussion. The chapter starts with an introduction followed by a background to the study. The background to the study explains some issues surrounding teacher preparation in general, after which specific issues and challenges in geography teacher preparation at both international and regional levels are discussed. In the background of the study, an explanation of how teachers are prepared at the University of Zambia and other studies is provided. The study's motivation, rationale, purpose and focus, and research questions form part of Chapter 1 and are written after the background to the study. Finally, the chapter clarifies concepts and provides an overview of the research methodology adopted in this study.

Chapter 2: Literature Review

The review of literature, which is the second chapter, comes immediately after Chapter 1. In this chapter, the researcher has provided information on teacher preparation at both international and local levels. The chapter is discussed under different themes that align with Pedagogical Content Knowledge (PCK) proposed by Schulman (1986), which is the kind of knowledge teachers are expected to acquire during teacher preparation. The themes developed for Chapter 2 are focused on PCK, considering that this study explored geography teachers' experiences of their teacher preparation programme at the University of Zambia in line with the Pedagogical Content Knowledge that they were expected to acquire. Several studies in geography teacher preparation with their unique focus have been highlighted under different but related subheadings to help understand the present research. Programme structures followed by different institutions of higher learning involved in teacher preparation have also been discussed.

Chapter 3: Theoretical framework

The theories adopted to answer the research question have been explained in the theoretical framework, which forms Chapter 3 of this thesis. The study employed knowledge bases for teachers developed by Shulman's (1986) PCK Theory and Bandura's (1977) self-efficacy theory. The PCK theory by Schulman outlines the knowledge base teachers need for effective teaching in schools. In contrast, the self-efficacy theory explains how people's beliefs and judgement of their competencies to execute particular tasks influence their output (Bandura, 1977). The PCK theory guided this study with what needed to be focused on when exploring geography teachers' experiences of their undergraduate teacher preparation programme at the University of Zambia. Bandura's (1977) self-efficacy theory was utilised as a lens through which the researcher opted to understand the research questions. The theoretical framework provided a perspective from which the researcher thought the research questions would be best understood.

Chapter 4: Methodology

Chapter 4 is the methodology section, which provides information on the methodology employed in this study to establish responses to the research questions. The chapter is divided into other sections that explain important issues

that help develop a sound research project. The first three sections of the chapter explain the research paradigm, approach, and design adopted in this study. Other important parts of the research methodology chapter include a discussion of the sample and sampling technique, data collecting instruments and data analysis. Chapter 4 ends with information on ethical considerations and the researcher's biographical data.

Chapter 5: Presentation of findings

Chapter 5 of the study presents the findings collected through semi-structured interviews and document analysis of course materials. The chapter provides details of the data collected from nine pre-service geography teachers who were the participants in this study. Thematic analysis was utilised to analyse the data presented in this chapter. The study's findings are presented in five themes that respond to the research questions of this study. Details of what was established in the study and how it relates to the purpose of the study and the research questions have also been provided.

Chapter 6: Discussion of findings

The findings that have been presented in Chapter 5 are discussed in Chapter 6. The chapter discusses the study's findings under the themes developed in Chapter 5. The literature review and the theoretical framework are the basis and support for the discussion of findings. The chapter ends with a summary of the discussion highlighting the main findings and the new knowledge the study brought forth based on the findings.

Chapter 7: Conclusion and recommendations

This thesis ends with Chapter 7, which highlights the conclusion and recommendations of the study. The chapter presents the summary of the chapters, after which the conclusions based on the research questions are discussed. Furthermore, the chapter provides a discussion of the theoretical implications of the study and the practical implications of the findings. Recommendations for future studies and a conclusion on the entire study have also been presented in Chapter 7.

1.8. Conclusion

This chapter introduced the study, whose aim was to explore geography teachers' experiences of their undergraduate geography teacher preparation at the University of Zambia. The chapter provides an overview of the challenges experienced in teacher preparation before highlighting challenges in geography teacher preparation. The chapter presented the background to the study, the purpose and focus of the study and the research questions. In addition, the chapter discussed the researcher's rationale and motivation for conducting this research and the researcher's role in the study. Furthermore, Chapter 1 discussed the overview of the research methodology and ended with a presentation of the thesis structure. In establishing the experiences of geography teachers during their undergraduate studies and upon employment, it was cardinal for the researcher to conduct a literature review. To further provide an understanding of this study, the next chapter presents the literature review.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

This chapter provides a review of the literature on geography teacher preparation worldwide. A literature review, an important aspect of any research project, entails critically examining and analysing secondary knowledge to inform the researcher on the topic and processes in their field of study (Jesson, Matheson & Lacey, 2012). This chapter of the thesis is explained and discussed under different themes. Cresswell (2014) points to how discussing literature under different themes logically connects ideas, opinions and perspectives. Ridley (2012) explains how reviewing literature in any study is significant in helping researchers develop in-depth information on what is known and unknown on a research topic. Reviewing literature helps researchers identify research gaps; more deeply understand research topics and further point other researchers to future research avenues (Paul & Rialp, 2020).

To carry out an informed and relevant study, the literature reviewed for this study was collected from journal articles, books, government documents, research reports, PhD theses and master's dissertations. Government documents like the school syllabus and the policy documents were significant in providing information that would further help in understanding the importance of geography teacher preparation and issues that affect teacher preparation. The literature reviewed in this study provided a deeper insight into the research topic, theoretical framework, and research methodology and further provided information that aided the discussion of the study's findings, conclusions and recommendations.

This chapter on the literature reviewed concentrates on information and issues that relate to the preparation of teachers in general and geography teachers, specifically. Knowledge, skills and attitudes in teaching that graduate teachers are expected to have acquired during their teacher preparation formed a very important part of this chapter. Literature on teacher preparation in institutions of higher learning and literature on secondary school geography teaching is discussed under different themes, as earlier stated, to make the chapter meaningful and easy to follow. The

chapter ends with a discussion summary that points to the gap the present study attempted to fill.

It is important to note that exploring geography teachers' experiences of their undergraduate teacher preparation is a complex task; as such, this study focused on the role of undergraduate geography teacher education in equipping geography teachers with appropriate and sound Pedagogical Content Knowledge (PCK).

2.2. Teacher preparation in institutions of higher learning

Worldwide, universities and colleges involved in teacher preparation are expected to have the best practices to help student teachers become effective upon completion. Teacher preparation is undertaken according to the objectives and preferences of institutions of higher learning which equally follow the needs of a country (Dan & Liu, 2021). However, teacher preparation programmes and expectations may differ from one institution to another and one country to another, although finding similar programmes is also possible (Syke, Bird & Kennedy, 2010). According to Darling-Hammond (2020), in the case of the United States, teacher preparation programmes may differ in content, structure and quality across states considering that they are controlled in distinct ways. However, Syke et al. (2010) claim that teacher preparation programmes have become standardised through history, culture and institutional processes but not around common occupational competence. A search through the literature on the quality of teacher preparation in institutions of higher learning brings out information on issues that affect teacher preparation and the quality of teachers being produced. Some teacher preparation programmes have been labelled counterproductive because of their emphasis on theory rather than practice, while other studies have continued to claim that teachers lack adequate content and pedagogical knowledge in their teaching subjects (Darling-Hammond, 2020; Hénard & Roseveare, 2012; Mulenga, 2015; Roofe & Miller, 2013). Universities are increasingly pressured to find ways of proving their worth in preparing students, providing programmes relevant to society and accounting for the quality of their graduates (Hénard & Roseveare, 2012). Colleges and universities involved in teacher preparation have been mandated to develop quality courses responsive to the needs of schools and society.

Teacher preparation programmes may take different pathways in preparing their teachers. However, most teacher preparation programmes include integrating theory and practice, with countries with well-established teacher preparation programmes like Finland further emphasising the integration of research and practice as an important aspect of teacher preparation (Darling Hammond, 2017).

In the United States, two pathways are followed in the preparation and certification of teachers. One pathway is a lengthy programme requiring in-depth coursework combined with classroom experiences, and the other is called a fast-track programme because it requires short, intensive initial training and on-the-job mentoring (Dorinda, Richmond & Stroupe, 2017). Darling-Hammond (2020) explains that students in these programmes are required to take courses in content and pedagogy, whose content is quite different and may be connected to teaching practice. Similarly, in England, both universities and school-led partnerships offer initial teacher preparation (Biddulph & Kinder, 2020; Tapsfield, 2016). In England, university preparation involves a lengthy four-year college degree that begins with two years of academic majors, followed by an education coursework component and teaching practice in schools (Halasz, Santiago, Ekholm, Matthews & McKenzie, 2004). However, in the State of California, as Halasz et al. (2004) explained, a prospective teacher had to take five years of training to obtain a baccalaureate degree before completing teaching credentials.

University-based teacher preparation, a common route used to prepare qualified teachers in many countries, is undermined by alternative pathways that are seen as quick fixes (Dorinda et al., 2017). Tapsfield (2016) highlights school-led initial teacher preparation lowering teacher preparation standards due to a lack of specialised teacher educators and differences in mentoring standards in school-led alliances. Goodwin & Kosnik (2013) explain that teacher educators work in unfavourable political environments where a fast-track programme is favoured while people need more confidence in university-based education. Alternative pathways like the fast-track programmes, which avoid barriers of lengthy preparation, are seen to be lowering standards for teacher preparation (Darling-Hammond, 2017; Dorinda et al., 2017) with some instructors having not attended graduate degree programmes themselves (Dorinda et al., 2017). According to Darling-Hammond (2020), the effectiveness of teacher preparation programmes in the United States is

questionable because of the different ways of preparing teachers requiring different lengths and following unique pathways. Furthermore, research shows that teachers trained through the fast-track programme desired more content-based pedagogy and higher quality student-teaching placements despite finding the short programme satisfactory (Dorinda et al., 2017). Another study by Jan, Bakx & Brok (2017) established that before starting their primary teacher training, teachers with a more theoretically based education had stronger self-efficacy beliefs than those who studied a more practical formal education.

Darling-Hammond (2017) explains that in Finland, teachers must hold a 2-year master's degree focusing on strong content knowledge and pedagogy integrated with practice and research. Similar to the Finnish approach, studies have established that teachers from the University of Toronto in Canada felt better prepared for classroom challenges after a master's degree, which had more time for teaching experiences and in-depth coursework meant for teaching all kinds of learners (Darling-Hammond, 2017). Germany gives us another example of a lengthy seven-year teacher education programme consisting of years of thorough teacher preparation development involving classroom observations, pedagogical seminars, and exhaustively supervised teaching experience after a prospective teacher has already obtained a degree (Halasz et al., 2004). Though most teacher education programmes take four years for a prospective teacher to complete a degree programme and start practising, other countries like Finland expect teachers to have two more years of a master's degree. In countries like Germany, more years are spent in practice (Halasz et al., 2004). Darling-Hammond (2017) points to teacher preparation programmes in Alberta province in Canada, focusing on aligning teacher preparation programmes with the knowledge, skills and attributes of professional teaching quality standards.

Different aspects of teacher preparation are seen to be more important than others by institutions preparing teachers. However, Darling-Hammond (2017) explains that integrating theory and practice through thoughtful subject matter knowledge and pedagogy and integrating high-quality clinical work in settings where good practice is supported will improve several teacher preparation programmes.

While developed countries have continued to strive to improve the preparation of their teachers, African countries also recognise the importance of preparing effective

teachers in order to improve their education systems. Although different in one way or another, teacher education programmes in institutions of higher learning in Africa and the world over, have the same intention of imparting knowledge, skills and values to student teachers that will make them effective teachers upon employment in schools. A common practice in the development of teacher education programmes and content of studies in many institutions of higher learning is initiated by subject departments (Shumba & Munachonga, 2017). Lecturers and academic specialists put together course content or topics according to how they know them to have been taught elsewhere or as they realise the need and importance of adding particularly new relevant knowledge and skills (Shumba & Munachonga, 2017). Departments present the developed courses to the school or faculty for approval and after faculty approval, the work is sent to higher bodies of the institution, like the senate and governing councils in the case of universities, for final approval (Shumba & Munachonga, 2017).

In Kenya, secondary school teacher preparation takes three years for those who hope to obtain a diploma from teacher education colleges, while those who want to obtain degrees take four years in universities (Melita & Katitia, 2015). As part of teacher preparation, student teachers being trained for secondary teaching are also expected to do their teaching practice in schools for three months (Melita & Katitia, 2015). Like with teacher preparation in institutions of higher learning in Western countries, teacher preparation programmes in African countries also require student teachers to acquire theoretical knowledge and practical knowledge through teaching experience (Melita & Katitia, 2015; Mulenga, 2015; Rwenjuna, 2017). The short period of time allocated to students learning through practice has been highlighted as one of the reasons teacher preparation programmes are considered inadequate in certain circumstances in Kenya (Melita and Katitia, 2015).

In the case of South Africa, students who have an interest in becoming teachers are required to enrol in a four-year Bachelor of Education programme or enrol in a one-year professional teaching programme which caps an approved undergraduate qualification to obtain a Postgraduate Certificate in Education (Gravett & Kroon, 2021). Despite institutions of higher learning and schools offering alternative pathways that require students to undergo short duration teacher preparation programmes like the one-year teacher preparation programme and fast-track

programme, such programmes are seen to be inadequate in preparing teachers with specialist knowledge for the classroom (Darling-Hammond, 2017; Dorinda, 2017; Gravett & Kroon, 2021). Like in other countries, the effectiveness of teacher preparation programmes in preparing teachers for the classroom in a fast-changing world in a country like South Africa with a difficult socio-economic context is questioned (Gravett & Kroon, 2021; Smuts, 2018). Teacher preparation programmes in South Africa are accused of inadequately preparing teachers for teaching in schools (Meierdirk, 2017; Smuts 2018).

Like with other countries, the Zambian government considers effective teachers to be important in the development of the education system. Effective and reliable teachers are more likely to be products of a good quality teacher preparation programme, and teachers are amongst the most important people influencing the education system's quality. According to Zambia's second policy document of 1992, *Focus on Learning*;

The quality of Zambia's schools reflected the quality of the teachers leading these schools, while the quality of the teachers reflects the effectiveness of the institutions that train them. The focus of concern in an effective teacher education institution is on transforming its students into competent and committed teachers. Therefore, the teacher education programme must be constantly reviewed to ensure that it responds to the real needs of Zambia's schools (MoE, 1992, p.97).

The statement above proves that teacher education institutions have been tasked with preparing teachers for effective teaching in schools. The importance of teachers and education institutions in Zambia and every other country cannot be overemphasised. Thus, it is expected that for someone to be called a qualified teacher they should have undergone and completed a teacher education programme at a college or university. A student teacher who has graduated from a teacher education programme gets a qualified teacher status according to the official standards of a country (Perraton, Creed & Robinson, 2002). A teacher's basic or first level of qualification may be taken as a pre-service or in-service programme (Perraton et al., 2002).

The Zambian Ministry of Education *National Implementation Framework* of 2008 to 2010 highlights the quality of teacher preparation programmes, cost-effectiveness

and teacher working conditions as among the challenges affecting the education system (Ministry of Education, 2007). Non-responsiveness and lack of relevance to individual, community and national needs are highlighted as among the challenges facing universities (Ministry of Education, 2007). Considering teacher preparation programmes at the University of Zambia, Manchishi & Mwanza (2018) argued that teacher preparation provided by the University of Zambia needed to strengthen the structure and coordination of content and methodology. Teacher education studies done at the University of Zambia also point to the influence that teacher preparation programmes have on teaching taking place in secondary schools. In looking at the English language teacher preparation programme at the University of Zambia, Mulenga (2015) established that student teachers needed to be more adequately prepared in subject content, which affected their understanding of the pedagogical content knowledge of the subject.

Furthermore, the study established no difference in how pre-service and in-service students were affected, even though in-service students already had diploma qualifications in education (Mulenga, 2015). In looking at the teaching of history, Chabatama (2012) also points to how knowledge and skills acquired by graduates from the University of Zambia are outside the school syllabus. A more generalised study on the responsiveness of University of Zambia teacher preparation to the needs of society was conducted by Manchishi and Masaiti (2011), and their findings established that there was a gap between what was being offered at UNZA and what was expected in secondary school. In a similar study, though not teacher education-specific, Banja (2012) established that the education offered by the University of Zambia and the Copperbelt University was more theoretical than practical, and graduates needed more hands-on practical experience during training.

Studies on teacher preparation at the University of Zambia have yet to address all the gaps in teacher preparation exhaustively. Mulenga (2015) and Chabatama (2012) addressed issues relating to teacher preparation with a focus on particular subjects, like English language and history, respectively. Furthermore, none of the studies focused on establishing the differences in responses between those who took the subjects as majors and those who took the subjects as their minor considering the differences they experienced during preparation.

Manchishi and Masaiti's (2011) study focused on teacher education programmes in general, which makes it difficult to establish the actual issues to focus on programmes. Banja (2012) is also too general, focusing on general university education. The findings for both studies cannot provide in-depth information to apply in improving geography teacher preparation or any specific programme because of their broad focus.

Amongst some of the studies done in Zambia in geography education is a study by Mubita et al. (2023), who explored learners' and geography teachers' perspectives on the benefits, challenges and prospects of learning and teaching geography in schools. The study utilised a qualitative research approach that revealed that the subject geography developed critical thinking skills, global awareness and a sense of environmental responsibility in learners (Mubita et al., 2023). Mubita et al. (2023) explain that lack of teacher training and inadequate time and resources are some of the challenges learners and geography teachers face in the Luapula and Lusaka provinces of Zambia. Mubita et al (2023) highlight the lack of teacher training, which is of interest to this study as one of the challenges, to be explored. Despite highlighting the need for teacher training, the study did not provide information on institutions from which the four interviewed geography teachers were trained, considering the differences that teacher preparation institutions may have that may have influenced the response. On the contrary, the present study was interested in collecting data from geography teachers trained at the University of Zambia. Furthermore, this study needed a detailed discussion that would have provided a good understanding of this problem.

Mundende et al. (2023) also explored ways to teach and learn geography in selected schools of the Livingstone district in Zambia. The study's findings indicate a need to improve pedagogical approaches in geography teaching. The study indicated that geography teaching was affected by a lack of teachers, absenteeism amongst teachers and learners, and a lack of teaching and learning materials. The government of Zambia recognises the importance of having adequate and well-motivated teachers in schools (Ministry of Education, 2007). Mundende et al. (2023) suggested that well-organised fieldwork excursions, presentations and discussions could improve the teaching and learning of geography. Despite bringing in important

data needed in geography education, the study needed a clearer focus on the problem as some of the findings needed to align with the study's objectives. It should also be mentioned that despite the Mundende et al. (2023) study focusing on geography education in the Zambian context, it did not respond to the current study's research questions. The study was interested in geography teachers trained from different institutions of higher learning, while this study's interest was in geography teachers trained at the University of Zambia, considering that teacher preparation institutions could influence findings.

Another study that has already been discussed by Mubita et al. (2022) explored University of Zambia student teachers' experiences teaching in secondary school during the internship programme. The focus and context of the studies done in geography education do not provide information that responds to the research questions of the study at hand. Much of the information on the experiences of geography teachers during their undergraduate preparation and upon employment in secondary schools remains to be discovered, hence the context of the present study.

Mulenga (2015), who focused his teacher education study on English, ended his study by recommending research to be carried out in teacher preparation with a focus on other subject disciplines at the University of Zambia. Mulenga's (2015) recommendation was one of the reasons this study was conducted: to get in-depth information on the experiences of geography teachers during their undergraduate preparation at the University of Zambia and upon employment in schools.

2.3. Geography teacher preparation in institutions of higher learning

In exploring geography teachers' experiences of their undergraduate teacher preparation programme, literature based on the preparation of geography teachers was considered relevant in this study. This section considered the knowledge base for geography teachers to be an important factor in discussion surrounding geography teacher preparation.

2.3.1. Knowledge base for geography teaching

Exploration of teachers' experiences of their undergraduate preparation for teaching in secondary schools entails understanding the kind of knowledge student teachers are expected to acquire. Prerequisite knowledge needed by all teachers on how best to teach learners, regardless of subject specialisation, is coined by Shulman (1986) as Pedagogical Content Knowledge (PCK). Pedagogical content knowledge, widely accepted as a knowledge base for teachers, generally combines content and pedagogy that belongs to the universe of teachers (Shulman, 1986). According to Hong, Harris, Jo, & Keller (2018), it represents blending content and pedagogy and adapting it to learners' diverse interests and abilities. The teacher's knowledge of explaining or simplifying difficult concepts allows learners to easily understand or comprehend the information (Shulman, 1986). In the context of geography education, Mohan (2009) defines pedagogical content knowledge as unique knowledge that is possessed by teachers on the best ways that geography content should be taught.

According to Shulman (1986), a teacher should acquire three forms of knowledge: content knowledge, pedagogical content knowledge and curricula knowledge. Shulman (1986) explains content knowledge as the teacher's deep understanding of the subject matter. Knowledge about curriculum, teaching methods, lesson planning, learners and strategies for assessing them is coined as pedagogical knowledge (Shulman, 1986). The third type of knowledge proposed by Shulman (1986) that a teacher should possess is curricular knowledge, which has to do with the teacher's knowledge of national and state standards required for each subject. PCK dictates what we teach, when we teach and why we teach geography, the way we do. PCK develops with teaching experience.

In the context of geography education, Bednarz et al. (2005), in consultation with Shulman's (1986) PCK, explain three types of knowledge that a geography teacher should possess and doubtfully contemplate the addition of a fourth. The knowledge proposed includes pedagogical knowledge, content knowledge, pedagogical content knowledge and practical professional knowledge. Although Shulman (1986) and Bednarz et al. (2005) point to three forms of knowledge, only some are the same. Bednarz et al. (2005) explain content knowledge as subject matter and how it is practised. Furthermore, content knowledge is seen as understanding key concepts and ideas of geography, how it is structured and organised, and knowing how to do geography (Bednarz et al., 2005). Another form of knowledge explained by Bednarz et al. (2005) is pedagogical knowledge, which is explained as the knowledge that should be acquired by a geography teacher and is concerned with curriculum issues, lesson planning, assessment and instructional strategies. Pedagogical content knowledge is amongst the knowledge bases proposed by Bednarz et al. (2005), which points to a combination of content and pedagogical knowledge. Lastly, the authors add practical professional knowledge which is like Shulman's (1986) curricular knowledge. It entails geography teachers' knowledge of the rules, routines, and rituals that should enable them to function as school community members (Bednarz et al., 2005).

Mohan (2009) explains that pedagogy, content and curriculum should be optimal in helping geography teachers understand how these three types of knowledge work together. Geography teachers must acquire pedagogical content knowledge to understand how to teach subject matter (Bednarz et al., 2005). Vajoczki (2008) proposed what should be considered good geography teaching in institutions of higher learning and schools. According to Vajoczki (2008), effective teaching in geography is impacted by eight interconnected parameters: discipline, knowledge and course organisation, delivery of instruction, student/instructor interaction, assessment tasks, administration, professional development and skill development. Furthermore, skill development was emphasised as one important parameter that could bring out geography-specific skills like mapping, geographic information systems (GIS) and field techniques (Vajoczki, 2008). PCK as knowledge for teachers has been widely accepted in many studies. The next section discusses content knowledge as important knowledge that geography teachers are expected to acquire during teacher preparation.

2.3.1.1. Content Knowledge in geography teacher preparation

Studies show that prospective geography teachers are expected to acquire different kinds of geography content knowledge during teacher preparation (Bowlick & Kolden, 2013; Ferreira, 2018; Vajoczki, 2008). Generally, geography content is described as a combination of physical and human geography components by geographers and geography educators (Bowlick & Kolden, 2013; Ferreira, 2018; Selmes, McConnell & Bruce, 2022). Ferreira (2018) reveals several module topics in UK undergraduate geography curricula, such as physical and human geography. Bowlick and Kolden (2013) defined human geography courses as those involving the interaction of humans with the landscape, while those focusing on fundamental Earth systems were considered physical geography. In acquiring geography subject content, studies in developed and developing countries have highlighted student teachers' engaging with two components of the subject (physical and human geography) at the secondary and university level (Bowlick & Kolden, 2013; Ferreira, 2018; Selmes, McConnell & Bruce, 2022).

University-level geography content courses were described as broad with many topics, some of which were not taught in schools in a study conducted by Ferreira (2018). The broad nature of the human and physical components, which were seen as an advantage, needed to be better communicated to students, considering that some students found it overwhelming (Ferreira, 2018). Ferreira's (2018) study explored issues, perceptions, and experiences related to the passage of students from school to university geography. Ferreira (2018) concludes the study by suggesting an improved collaboration between schools and universities, providing professional development opportunities for teachers and teacher educators, including interesting research activities as part of the qualification, improved interaction with first-year students, and a significant concentration on students' critical reading skills. The study focused on the transition of geography learners from school to university geography in England. In contrast, the present study explored geography teachers' experiences of their undergraduate geography teacher preparation. It offered in-depth information from a wider focus and brought in an African perspective of geography teacher preparation. Though valuable, Ferreira's (2018) study could not offer solutions to the needs of the research questions for this study.

A study by Harte & Reitano (2015) revealed that geography teachers were more confident in physical or human geography when exploring geography teachers' interaction with the two components of the subject. Literature from a German study and a Ghanaian study shows that human geography was considered to be easier to understand than physical geography (Fischer, 2022; Opoku, Serbeh & Amoah, 2021). According to Opoku et al. (2021), the subject was perceived as challenging because of the broad and abstract nature of the physical component. In agreement with the findings above, a study by Mundende et al. (2023) also revealed that most geography teachers were not comfortable with teaching physical geography topics like mass wasting, calculation of longitudes and latitudes, weathering, earthquakes, and weather and climate.

Contrary to the above studies, a study by Selmes et al. (2022) proved the opposite when slightly more undergraduate geography students continued to enrol in a physical/environmental programme compared to those who studied human geography. However, a study by Opoku et al. (2021) focused on senior high school learners' attitudes towards geography, while the current study explored pre-service geography teachers' experiences. Despite being focused on senior high school learners, the Opoku et al. (2021) study adds valuable information to geography education that helps to understand how learners perceive the subject of geography.

The studies above have shown that countries in Western and African countries consider both physical and human geography content to be important components in the study of geography at secondary and university level. The studies have also shown that learners from both developed and developing countries found human geography to have been easier to understand than physical geography (Fischer, 2022; Mundende et al., 2023; Opoku, 2021).

Fischer (2022) conducted a qualitative study to establish how expert teacher trainers perceived geography trainee teachers' initial school practice. The study revealed that trainee teachers had different focuses and interests in the subject, and their knowledge bases and skills varied considerably. Furthermore, the study established that trainee teachers needed help transforming PCK in practice because the great extent of the geography curricula made it difficult for them to select and structure geographical topics (Fischer, 2022). It is clear from the findings that the broad nature of the subject contributes to challenges experienced in the mastery of content

knowledge. Fischer's (2022) study contributes worthwhile knowledge to geography teacher preparation. However, it differs from this study, which endeavoured to explore geography teachers' experiences of their undergraduate teacher preparation at the University of Zambia. Participants in Fischer's (2022) study were teacher trainers whose responses could have been enhanced if trainee teachers who had undergone the actual practice were included as participants in the study. The current study collected data from geography teachers who had graduated from the programme as they proved to have had rich data considering they had undergone the teacher preparation process and had some valuable experience in the geography classroom already.

Moreover, Fischer's (2022) study focused on German geography novice geography teachers' competencies and initial training, while this study focused on pre-service geography teachers' experiences, which brings out contextualised literature that improves the understanding of geography teacher preparation from a developing country or an African perspective.

Geography content knowledge has been researched from different perspectives at various levels by geography educators. A study by Blankman et al. (2015) at the primary school level established that limited time and little focus on the subject matter were important factors impeding the quality of geography education in the Netherlands. Catling (2016) also reveals that initial teacher education courses for primary school geography teachers in England were of very mixed quality, and only some schools were noted to provide examples of effective and good geography teaching. The geographical literacy of pre-service primary teachers in England and elsewhere was a major concern for the geography education community (Catling, 2016). Although in the context of primary school teacher preparation, which differs from that of secondary school teachers, Blankman et al. (2015) and Catling (2016) highlight an important aspect of geography education that points to the need to improve content knowledge.

Studies in geography content have also been carried out in Africa: in Tanzania, a study revealed that insufficient coverage of geography content arising from limited time to cover the diploma programme negatively influenced the quality of geography education (Rwejuna, 2017). According to Rwejuna's (2017) study, geography teachers felt they needed more classes for subject content knowledge to become

better teachers. The study suggests adequate content knowledge is required in geography teacher preparation for teachers to have confidence and effectively teach the subject. Despite the study focusing on teacher preparation in geography, it focused on diploma-holder teachers whose training is different, while the present study was interested in degree-holder teachers. With the focus of the study being diploma holders trained in colleges in Tanzania, the study of geography teachers' experiences of their undergraduate teacher preparation at the University of Zambia still needs to be investigated. Another study done in Southern Africa interested in understanding students' engagement with one component of subject knowledge was conducted by Larangeira & van der Merwe (2016) in South Africa. The study investigated the challenges experienced by first-year geography student teachers in doing map work. The study revealed that 60 percent of geography student teachers failed to achieve a 50 percent mark in their final examination (Larangeira & van der Merwe, 2016). Larangeira & van der Merwe (2016) indicated that some students enrolled in the geography course had no background in senior secondary geography, while others needed better prior knowledge from their senior secondary schooling. In line with the findings, Bowlick & Kolden (2013) also revealed, among other findings, that students who had prior geography coursework perceived they had greater geographic skills and improved their skills through the course more than those who had no prior contact with the coursework. Bowlick and Kolden (2013) reported that more than 50 percent of the study participants enrolled in an introductory geography course had not studied a geography course in senior secondary school. According to Dolan, Waldron, Pike and Greenwood (2014), geography teachers' acquisition and improvement of their PCK relies on prior knowledge in the subject that should have been acquired formally.

Larangeira & van der Merwe's (2016) study brought out valid information in geography teacher preparation from a Southern African perspective. However, despite the study being conducted in the African context, the study was focused on map work, which is just one of the components of geography content knowledge to be acquired in geography. In contrast, the present study focused more on general subject knowledge when exploring pre-service geography teachers' experiences during their undergraduate degrees at the University of Zambia. Although the two studies focus on different issues, the studies are similar in the sense that they are both interested in understanding students' engagement with geography subject

knowledge at the university level. Furthermore, Larangeira & van der Merwe's (2016) study indicated that they utilised a mixed method approach and appropriate paradigms without specifying the research design or the specific paradigm employed. On the other hand, this study has explained both the paradigm and research designs utilised in understanding geography teachers' experiences of their undergraduate teacher preparation (see Sections 4.2 and 4.4, respectively).

A few examples of studies discussed above have shown that geography teachers struggle in their engagement with geography subject matter especially with physical geography components both during and after teacher preparation in both developed (Western) and developing countries (African) (Blankman et al., 2015; Catling, 2016; Fischer, 2022; Larangeira & van der Merwe, 2016; Rwenjuna, 2017). The broad nature of the subject makes student acquisition of content knowledge challenging especially in physical geography component which is considered to be more abstract (Fischer, 2022; Mundende et al., 2023; Opoku, 2021).

Teacher educators have been pointed out as among the factors that influence the student teachers' acquisition of content knowledge in teacher preparation (Cochran-Smith, 2004; Goodwin & Kosnik, 2013; Ping, Schellings & Beijaard, 2018). According to Tapsfield (2016), the quality of geography education has been affected by the absence of specialist geography teacher educators in school-led initial teacher education programmes in England, which has led to the subject being taught by non-specialists. Manchishi & Mwanza (2018) argue that teachers' competency depends on teacher educators' competency. Universities preparing teachers should have teacher educators who have acquired adequate PCK and are competent in subject knowledge and methodology (Manchishi & Mwanza, 2018). Literature has pointed to how teachers influence the quality of education in schools. In the same manner, the quality of teacher preparation in institutions of higher learning is also influenced by teacher educators who teach student teachers. According to Townsend & Bates (2017), teacher educators are often believed to be contributors to the problems associated with university students' academic progress. Teacher educators are responsible for developing teacher education curricula, teaching student teachers and engaging in research. Teacher educators' desire to reflect on their teaching is seen as one of the reasons research is an important aspect of professional learning for teacher educators (Ping et al., 2018).

According to Ping et al. (2018), teacher educators' professional development is crucial in teachers' preparation. Teacher educators' underdeveloped field needs a codified knowledge base (Goodwin & Kosnik, 2013). Even though the field is underdeveloped, a review of literature from 2000 to 2015 showed that research on the professional development of teacher educators is a growing field of interest and has become an independent field of research (Ping et al., 2018). Tapsfield (2016) highlights the importance of having committed specialised geography mentors with wide and in-depth pedagogical content knowledge in geography for worthwhile initial teacher education.

Student teachers' interaction with teacher educators remains an important aspect of student teachers' experiences during teacher preparation. Despite literature highlighting teacher educators as important factors in teacher preparation (Goodwin & Kosnik, 2013; Manchishi & Mwanza, 2018; Ping et al., 2018; Townsend & Bates, 2017), there was still a need to investigate pre-service geography teachers' experiences during their undergraduate teacher preparation at the University of Zambia considering that the focus of the study was not limited to interaction with teacher educators. Regardless of the status of a country, teacher educators are as important as teachers in influencing the quality of education in general.

Geography teachers' experiences of their undergraduate teacher preparation also influence teaching upon employment. Brooks (2006), as an external examiner for geography education in England, explained that geography content knowledge that underpinned the lesson objectives was not properly considered by Postgraduate Certificate of Education students. Brooks (2006) further relates the quality of lessons observed to initial teacher preparation and schools where the students were teaching. Brooks' (2006) study could have brought out more in-depth information if interviews followed the lesson observations conducted. The context of the study differs from the present study, which aims to explore geography teachers' experiences using interviews.

Ferreira (2018) also conducted a study in the United Kingdom to explore issues, perceptions, and experiences related to the transition from studying geography at school to university. The findings revealed that there was a need for universities to focus on developing critical reading skills in students to enhance collaboration between schools and universities, including focusing on providing training for

teachers and lecturers, improvement in orientation for first-year students by universities and provision of better and interesting geographical research as part of university preparation programme (Ferreira, 2018). The findings reveal that some of the challenges faced in geography education stem from the differences that naturally occur between school and university geography, which further influence the experiences of geography teachers, especially during teacher preparation. Ferreira's (2018) study focused on experiences related to the transition from secondary to university geography, while the present study focused on geography teachers' experiences of their undergraduate teacher preparation. Ferreira's (2018) study offers information on geography students' experiences from school geography to university geography education from a developed country perspective, while the present study proposes to add information on geography education from a developing country perspective.

In line with Ferreira's (2022) findings, He et al. (2022) revealed that more than half of the teacher educators and academic geographers were satisfied with the geography content knowledge communicated in the classrooms observed in China. The study highlights the gap between academic and school geography that is seen as negative to the development of geography education (He et al., 2022). Gaps were seen in geographical thinking, skill, knowledge depth and teaching and learning approaches (He et al., 2022). He et al. (2022) explains that a teacher's knowledge and skills affect the quality of geography education. Although this study highlights an important issue that affects geography education, its focus was on exploring the gap between academic geography and school geography, and it does not correspond to the interest of this study that explored geography teachers' experiences of their undergraduate preparation. Furthermore, the He et al. (2022) study included many academic geographers as participants who were not the best option for providing information concerning secondary geography, which was an important aspect of the study.

Literature highlights geography teachers' acquisition of content knowledge as an important aspect of teacher preparation that influences teaching (Brooks, 2006; He et al., 2022; Larangeira & van der Merwe, 2016; Rwejuna, 2017). In line with the importance of knowledge acquisition in teacher preparation, Knecht & Spurná's (2022) study attempted to establish how teachers' specialisation in geography

influenced their conceptions of geography teaching in Czechia. The study revealed that specialised teachers had in-depth geography content for teaching compared to non-specialised teachers with a restricted comprehension of the subject content (Knecht & Spurná, 2022). It is clear from the findings that specialised students had acquired content knowledge that made it easy for them to give their learners a wide range of geographical representations. A study by Knecht & Spurná (2022) brings out worthwhile information that highlights the fact that specialisation in geography education benefits an in-depth understanding of the subject. However, Knecht & Spurná's (2022) study findings did not respond to the research questions for this study as their study was focused on the influence of teacher's specialisation on their conception of geography, while this study was focused on pre-service geography teachers' experiences of their undergraduate preparation.

Moreover, this study employed a case study design that brought out in-depth information compared to the survey employed by Knecht & Spurná (2022). In line with Knecht & Spurná's (2022) findings, a study by Kidman (2017) in Australia revealed that some geography teachers admitted to lacking expert content knowledge in certain topics and were still not eager to work on such weaknesses. Lack of expert knowledge and pedagogy made geography teachers utilise instructive teaching modes that demotivated learners (Kidman, 2017). Kidman's (2017) study brings important information on what interests learners and teachers in geography. Kidman's (2017) study brought important information to the present study. However, Kidman's work did not respond to the needs of the research question for the present study, which necessitated the need to carry out this study. Apart from that, the study's focus differed from this study, which utilised knowledge of geography teacher preparation from the Zambian context using geography teacher experiences.

Geography teachers' acquisition of content knowledge is one of the important tasks of teacher preparation institutions. However, it is not the only important knowledge that geography teachers should acquire. Pedagogy is another form of knowledge that is needed for effective geography teaching. The next section discusses pedagogical knowledge as an important form of knowledge that needs to be acquired by geography teachers during their undergraduate preparation.

2.3.1.2. Pedagogical Knowledge in geography

Pedagogical knowledge, which a geography teacher should acquire, was of cardinal interest to this study. Teachers' pedagogical knowledge, like content knowledge, also influences the quality of geography education at all levels. According to Jüttner, Boone, Park & Neuhaus (2013), teachers' knowledge of pedagogy includes the organisation of learning outcomes, lesson planning and teacher facilitation of interactive learning. Teachers with little or no pedagogical experience possess superficial and incomplete pedagogical content knowledge (Cochran-Smith, King & DeRuiter, 1991). Teacher educators do different activities involving teaching and assessment of learning to ensure students acquire pedagogical knowledge. Lecturers use different methods to transmit geographical knowledge to students. Some of the methods highlighted by literature that relate well with the teaching of geography include lecture method, fieldwork, practical or laboratory method, question and answer, role play, student presentations, debate and group discussion (Ari, 2020; Bowlick & Kolden, 2013; Kidman, 2017;; Opoku et al., 2021; Simonyi & Homoki, 2020). Teacher educators like secondary school teachers utilize both learners centred and teacher centred methods. Learner centred pedagogy according to Shah (2020) is associated with terms like experiential learning, flexible learning, self-directed learning, while teacher centred pedagogy is focused on teachers transmission of subject knowledge to learners. Du Plessis (2020) also highlights terms like active learning, construction of own knowledge and learner commitment as among the principles of learner centred pedagogies. In learner centred teaching, the focus of instruction is on the learner (Du Plessis, 2020).

According to Shah (2020) learner centred teaching is increasingly being encouraged compared to teacher centred teaching. The paradigm shift from teaching to learning is based on the benefits associated with learner centred methods (Shah, 2020)

In the use of both teacher and learner centred methods, teachers knowledge remain significant. Sakata, Candappa and Oketch (2021), in a study on learner centred methods, a focus on pupil-teacher relationship showed that pupils considered teachers to have been respected source of knowledge. Effective teacher preparations in the use of instructional strategies is significant in ensuring effective teaching in schools. A study by Yli-Panula, Jeronen and Lemmetty (2019) on the teaching methods that promote sustainability in geography education highlighted

group work, teacher presentations, teacher inquiry, group discussion, fieldwork, games, debates, and role play as among the methods that different geography teachers utilised. Although Yli-Panula et al. (2019) concentrated on geography teaching methods that geography teachers employed in teaching topics to do with sustainability, most of the teaching methods highlighted are also employed to teach other topics in geography. The Yli-Panula et al. (2019) study highlights important issues relating to teaching methods utilised in promoting sustainability in geography; while this study had a wider focus, it was also interested in establishing geography teachers' experiences with teaching methods utilised during their undergraduate teacher preparation. Yli-Panula (2019), though of great value, did not respond to the needs of the present study, hence the need to proceed with this study.

Dolan et al. (2014), in their study of the Republic of Ireland and Northern Ireland primary education student teachers' prior experiences with the subject and their perception of the subject, established that student teachers' experiences with the subject were mostly positive. Interesting and motivated teachers and learner-centred methods were the reasons for the positive attitude towards the subject. At the same time, textbook-based teaching and the need to memorise content were associated with negative experiences (Dolan et al., 2014). Though this study was done with primary school student teachers, it brought in important information that should guide the teaching of the subject. However, the study is limited by its focus on positive and negative experiences and using a questionnaire and focus group as data collecting instruments in a study that could have been enhanced with interviews. While the Dolan et al. (2014) study provides worthwhile information on geography education, it focused on primary school student teachers in a developed country, while this study focused on secondary school geography teachers in a developing country and offered an African perspective.

Al-lasaqa and Sahin (2022) revealed that geography teachers in Libya mainly utilised traditional teaching methods like lectures, group discussions, and questioning to transfer knowledge to their learners. The study claimed that geography teachers' traditional teaching methods reflected what they had acquired during their teacher preparation (Al-lasaqa & Sahin, 2022). Although highlighting some of the important issues about the geography teaching methods utilised in Libya, Al-lasaqa & Sahin (2022) conducted their research among primary school geography teachers whose

teacher preparation is different from secondary school teachers who were the focus of the present study. Furthermore, the responses to Al-lasaqa & Sahin's (2022) research questions show a need for more detailed responses, as expected in a qualitative study. Besides the focus group discussions, the study findings could have been strengthened using interviews as a data-collecting instrument. Like other studies, Al-lasaqa & Sahin (2022) focused on teaching methods in geography, which is an important component of the present study but not the only issue considering that the present study was interested in exploring geography teachers' experiences of their undergraduate teacher preparation programme at the University of Zambia.

While learner centred methods are encouraged and associated with effective learning experiences (Kidman, 2017; Opoku et al., 2021; Simonyi & Homoki, 2020, Shah, 2020, Sakata et al., 2020), teachers also have challenges in using them. A study by Du Plessis (2020) in South Africa revealed that students had insufficient understanding of learner-centred teaching. According to Du Plessis (<https://doi.org/10.21138/DG.705020>), the use of learner centred methods was affected by student teachers lack of knowledge and skills in understanding the benefits of using learner centred teaching, overcrowded classrooms and challenges with managing discipline in the classroom. Benefits of using learner centred methods can only be achieved if teachers know how to effectively use them. The study highlights the need for teacher educator's support and involvement, reflection and accountable intervention of mentor teachers as solutions to the problem (Du Plessis, 2020). Du Plessis (2020) also highlights the need for teacher educators to ensure student learners are adequately prepared in understanding and using learner centred methods. It should be noted that Du Plessis (2020) study was focused on student teachers perceptions, experiences, and challenges regarding learner-centred teaching, while the present study focused on geography teachers experiences during teacher preparation. Du Plessis 2020 study explains important information related to teaching and learning in higher education, which critical for present study.

In line with teacher's knowledge of learner centred methods, Martinez (2022) revealed that teachers had insufficient knowledge and skill on how to implement project-based learning. When asked to rate their level of expertise with project based learning, 68 percent rated themselves as beginners while 31 considered themselves to have been at the intermediate level, despite being in-service teachers (Martinez,

2022). Furthermore, Martinez (2022) established that 50 percent of the teachers did not acquire knowledge on project based learning or inquiry based instructional strategies during their teacher preparation, while the other 50 percent only acquired basic knowledge about PBL within the previous five years. The study which was focused on developing 21st century teaching skills through examining teachers' professional learning experiences in a graduate-level course showed that teachers understood the connection between Project-based Learning approach and the development of 21st century skills in their classrooms (Martinez, 2022).

While learner centred methods have more advantages than teacher centred methods, teachers still have challenges of using them for effective teaching to take place (Du Plessis 2020, Martinez 2022). Learner centred methods like the project based learning which was considered as the most effective instructional model for delivering a strong curriculum linked to 21st century skills and work based learning opportunities, in Martinez (2022) study, will continue to be underutilised by teachers due to lack of knowledge and skill. Teacher educators have a huge responsibility of ensuring that student teachers acquire sufficient knowledge and skill on how to use different kinds of learner centred methods if effective teaching is to take place in schools.

Considering that we have many and varied teaching methods in geography, only a few will be discussed. The lecture method involves the lecturer being at the centre stage of transmitting knowledge to learners and has been described as a common method at university level (Opoku et al., 2021). Kidman (2017) argues that learners relate geography lessons with meaningless memorisation when the lecture method is utilised. The Opoku et al. (2021) study in Ghana describes the constant use of lecture methods with the rare use of fieldwork and audio-visual techniques as one of the reasons students dislike the subject. Teaching methods that actively involve the participation of learners have been more effective, according to the literature (Kidman, 2017; Opoku et al., 2021; Simonyi & Homoki, 2020). In Tanzania, Sakata et al. (2021) revealed that learners considered learner-centred methods like group work, discussion, pupil-initiated question and answer to have been some of their favourite classroom activities. Learner centred methods remain an important aspect of effective geography teaching in schools.

The Zambia Education Curriculum Framework 2013 also strongly encourages teachers and teacher educators to employ thought-provoking learner-centred methods and engage learners in actively participating in their learning (CDC, 2013). Kidman (2017) describes a misalignment in pedagogical selection between the interest of the teachers and that of the students. Apart from the lecture method being an important method in geography, fieldwork is also of great interest in teaching geography. Literature shows that teaching methods utilised in developing countries are not different from those being used in developed countries. While teacher-centred methods remain important in the teaching and learning process, learner-centred pedagogies are being encouraged by both developed and developing countries (CDC, 2013 Opoku et al., 2021; Simonyi & Homoki, 2020).

Fieldwork is a powerful method of teaching and learning in geography, considering the practical nature of the subject (France & Haigh, 2018; Nakazwe, 2011). According to Stokes, Magnier & Weaver (2011), learning through fieldwork promotes permanent knowledge acquisition by allowing learners to retain and recall knowledge acquired through fieldwork activities. Dhakal (2019) explains fieldwork as one of the teaching and learning methods considered to be interesting and delightful by both the teacher and the learners. Despite fieldwork being considered an important method in geography, it comes with challenges (Nakazwe, 2011). Stokes et al. (2011) argue that while fieldwork is seen as an important educational approach in geography, conducting effective fieldwork is increasingly problematic. In Turkey, Ari (2020) established that fieldwork in Turkish universities was not contributing to the education of geographers because it was not systematically done, and learning outcomes that students were expected to gain were usually not written down or assessed. Wilson, Leydon and Wincentak (2017) reported that limited fieldwork activities were included in the undergraduate geography programmes due to resource restrictions in Canada. Stokes et al. (2011) established that there were mismatches between learners and lecturers in their understanding of fieldwork, which they claimed had implications for teaching the subject at the undergraduate level in the United Kingdom.

In Zambia, the geography field project proved ineffective because some geography teachers needed more knowledge of the subject (Mundende et al., 2023; Nakazwe, 2011). Learners are offered a chance to learn through practical fieldwork experience

despite this being seen as an involving and challenging method (Ari, 2020; Mundende et al., 2023; Nakazwe, 2011). Wilson et al. (2017) argue that the absence of fieldwork in acquiring human and physical geography content affects the quality of geography undergraduate programmes. Despite having varied purposes, the studies discussed above focused on fieldwork as an important pedagogy in geography education. However, the present study was interested in pre-service geography teachers' experiences during their undergraduate preparation, in which experiences with different pedagogical approaches were interesting. This study focused on fieldwork and geography teachers' experiences with pedagogical approaches used during their undergraduate preparation.

The project or laboratory method is another method used to transmit geographical concepts to students at university. Bowlick & Kolden (2013) call it the 'lab component', which focuses on the learner's knowledge acquisition through hands-on supplemental physical geography learning. In a study done by Simonyi & Homoki (2020), the project method was among the teaching methods rarely used by the schools that participated in the study.

As explained above, geography is taught using both learner-centred and teacher-centred methods. Geography teachers' decisions to utilise particular teaching methods is dependent on several factors, including the teachers' competency in using particular methods, the type of learners, teaching and learning resources and the objective of particular lessons (Al-lasaqa & Sahin, 2022; Yli-Panula et al., 2019). A learner's understanding of the subject is enhanced when teachers use various teaching methods in isolation or when transferring content (Al-lasaqa & Sahin, 2022; Opoku et al., 2021; Yli-Panula et al., 2019). Simonyi and Homoki (2020) explain that learners acquire in-depth knowledge when teachers utilise various teaching methods in geography lessons. A search through literature shows that field work is valued in both developed and developing countries. While more studies are in some Western countries, other countries also consider fieldwork activities to be cardinal in geography teacher preparation programmes, and Zambia is not an exception.

A study in Turkey by Kocalar & Demirkaya (2017) revealed that geography teachers were effective in the use of pedagogy in geography teaching in Turkey. The study highlights geography teachers managing to utilise teaching resources, teaching methods and strategies in line with what was required in the curriculum (Kocalar &

Demirkaya, 2017). The study further yields worthwhile information in geography education despite needing more in-depth information than expected from a qualitative study, as the study suggests. The study's findings show that closed-ended questions were mostly employed instead of open-ended questions, as expected in a qualitative study. Geography teachers were expected to have acquired pedagogical skills during their teacher preparation to teach effectively in schools. However, student teachers are expected to have acquired pedagogical content knowledge, more than one form of knowledge. Like other studies highlighted, the focus of this study was also different from the present study both in context and in place.

Contrary to the above Kocalar & Demirkaya (2017) study, Dhakal (2019) examined secondary school geography teachers' perceptions and experiences with geography as an academic discipline and established that geography teachers employed collaborative and interactive teaching strategies in their lessons. Fieldwork, question and answer, discussion and lecture methods were among the methods utilised by geography teachers, according to the findings (Dhakal, 2019). The study further revealed that school geography teaching was affected by a lack of teaching and learning resources like geography classrooms and laboratories at the secondary level. However, geography teachers still had positive experiences teaching the subject. Lack of content knowledge in mathematical geography in Higher Education geography was seen to have made the teaching of mathematical geography very challenging for geography teachers, according to the findings of this study (Dhakal, 2019). This study adds valuable knowledge to geography education from a South Asia perspective, which is unique considering that most studies are usually from Western countries. However, the students' findings could not be seen as responding to the research questions of the present study, whose interest was geography teachers' experiences of their undergraduate teacher preparation in a Southern African country. Furthermore, Dhakal (2019) brought forward little information on geography teachers' experiences with content knowledge, which the present study considered cardinal when studying geography teachers' perceptions and experiences.

In a Kenyan study, Muchiri & Iddrisu (2019) established that university-trained geography teachers were less prepared to implement the geography syllabus than those trained in colleges. The study concluded that the teacher preparation

programme did not produce geography teachers competent in pedagogy. Muchiri & Iddrisu (2019) collected data using a questionnaire that is limited in collecting in-depth, rich data, and the rather small sample population of 30 geography teachers representing both degree and diploma-holder geography teachers somehow weakens the study's findings. Furthermore, it should be noted that Muchiri & Iddrisu's (2019) study was focused on evaluating geography teachers' pedagogical approaches, while the present study was broader and focused on pre-service geography teachers' experiences. Hence, it was important to conduct this study to enrich information on geography teacher preparation from the Zambian context and improve literature in geography education in Southern Africa. Similar to Muchiri & Iddrisu's (2019) findings, Rwejuna (2017) also established that inefficient teaching methods and inadequate teaching and learning resources were among the challenges faced by teacher preparation colleges in Tanzania. The two studies bring worthwhile data on geography teachers' competency in pedagogy from an African perspective, East African, specifically. However, the two studies cannot be utilised to depict the case of geography teacher preparation in Zambia. In the Zambian context but not geography education specific, Manchishi & Masaiti (2011) also established that University of Zambia trainee teachers were weak in the delivery of subject matter (methodology).

In Uganda, Nuwategeka & Odama (2020) reviewed documents as the main data-collecting method in analysing teaching methods and instructional materials used by geography trainee teachers during their practicum. The study established that, on average, the trainee teachers used relatively few teaching methods and limited instructional materials. The study further explained the results as a direct reflection of the limited number of teaching methods used by university lecturers who had not been trained to instruct teachers (Nuwategeka & Odama, 2020). Using documents as the only source of information leaves some questions needing to be answered. Using interviews could have enhanced the depth of information required to understand and improve the programme. Furthermore, considering that the above study was interested in pedagogy in geography education, which was not the focus of the present study, it was important to investigate pre-service geography teachers' experiences of their undergraduate teacher preparation, which brings in more in-depth information.

While studies have established that geography teachers acquired insufficient pedagogy to take up teaching in schools in both developing and developed countries (Blankman et al., 2015; Muchiri & Iddrisu, 2019; Nuwategeka & Odama, 2020) it cannot be concluded that this is the case with others considering that a study conducted in Turkey revealed the contrary (Kocalar & Demirkaya, 2017). Pedagogical knowledge is best acquired through student teachers' practical experiences in teaching.

Al-lasaqa and Sahin (2022) explain that geography teachers acquire pedagogical knowledge on how to teach different components of the subject during their initial teacher preparation. Pedagogical knowledge is acquired through student teachers' engagement methodologies during teacher preparation (Manchishi & Mwanza, 2016). Darling-Hammond (1999) explains that it is critical for teachers, especially in Africa, to acquire pedagogical knowledge for effective teaching. Dan & Liu, (2021), explain that discussions highlighting the importance of learning through practical experiences and challenges associated are underway in universities and colleges. Student teachers are required to spend sufficient amounts of time to learn from other experienced teachers for teacher preparation programmes to be considered effective (Melita & Katitia, 2015). One critical aspect of teacher preparation that enhances student teachers' acquisition of pedagogical knowledge is the addition of practical learning experiences in methodology courses and internship programmes (Manchishi & Mwanza, 2016; Mubita et al., 2022).

Manchishi & Mwanza (2016) describe student teachers practising teaching their peers in a classroom-like environment as peer teaching or micro-teaching. Peer teaching is an important activity that prepares student teachers for teaching during teaching practice and upon employment (Manchishi & Mwanza, 2016). Peer teaching activities are usually included in teaching methodology courses that aim to equip students with pedagogical knowledge. Micro-teaching activities are usually evaluated as part of continuous assessment at the University of Zambia (Manchishi & Mwanza, 2016). An assessment of micro-teaching activities at the University of Zambia showed some challenges, including a lack of resources, inadequate timing and negative attitudes of teacher educators and students (Manchishi & Mwanza, 2016). Despite contributing worthwhile information on one aspect of teacher preparation at the University of Zambia, Manchishi & Mwanza's (2016) study was too

specific as it concentrated only on peer teaching in all teaching subjects, while this study was more general and focused on understanding geography teacher preparation through the experiences of pre-service geography teachers.

In line with Manchishi & Mwanza's (2016) findings, Mubita et al. (2022) also revealed that geography teachers found their engagement with methodology courses needed to be more comprehensive in preparing them for teaching practice in schools. According to Mubita et al. (2022), teaching practice aims to equip student teachers with practical experiences of the theoretical knowledge acquired during lectures. Teaching practice offers students a chance to teach real learners and learn from experienced teachers through lesson observations (Manchishi & Mwanza, 2018). The duration of teaching practice when student teachers are attached to a professional development school varies from weeks to a year depending on the institution (Darling-Hammond, 2020). Mubita et al. (2022) describe teaching practice as engaging students with the real world of teaching. Teacher preparation programmes are sometimes considered to be effective or ineffective based on the amount of time that students spend learning through practice in schools. In countries like Germany, student teachers engage in practical teacher preparation that involves actual teaching for twelve to twenty-four months in special training schools or teacher training institutes (Fischer, 2022). In Kenya, Melita and Katitia (2015) considered the teacher preparation programmes to have been somewhat inadequate because student teachers spent little time learning from practice, while prioritising theoretical learning through coursework. Adequate time for practical learning is considered to be a determinant factor in the effectiveness of teacher preparation programmes in both Western and African countries.

Manchishi and Mwanza (2018) also revealed that school teaching experience for geography student teachers at the University of Zambia was affected by a number of factors, which included, lack of training in supervision for teacher educators involved in observation of school teaching practice, lack of mandatory attachment of student teachers to school mentors, and the inadequate time of less than a school term that was allocated to the school experience activity. Manchishi and Mwanza (2018) concluded that the organisation, structure and coordination of subject matter and teaching methods at the University of Zambia needed to be improved because of the challenges experienced with conducting effective school teaching experience. Other

studies at the University of Zambia described teaching experience duration of four to eight weeks as ineffective in preparing teachers for the classroom (Masaiti & Manchishi, 2011; Manchishi & Mwanza, 2018; Mwanza, 2016). A study by Mubita et al. (2022) explored the University of Zambia student teachers' experiences of their teaching practice in secondary schools and established that student teachers considered their teaching practice to have been beneficial despite experiencing some challenges. The study revealed that some challenges experienced included differences between knowledge acquired during teacher preparation and knowledge to be taught in secondary school and insufficient exposure to teaching methodologies during teacher preparation (Mubita et al., 2022). The study by Mubita et al. (2022) focused on one aspect of geography teachers' experiences, which is of interest to this study when dealing with acquiring pedagogical knowledge. However, it does not respond to the depth of the research questions driving this study. The study left out important information like the duration of teaching experience and details of participants (year of study, mode of study), which could have provided a more detailed understanding of factors that could have affected their experiences. Furthermore, the study by Mubita et al. (2022) does not justify employing a qualitative research approach while utilising a descriptive survey that combines qualitative and quantitative designs. The study is also unclear on the number of participants sampled, considering that the number presented in the abstract differs from that in the methodology section.

2.3.1.3. Pedagogical Content Knowledge (PCK) in Geography Education

PCK acquired during teacher preparation influences the geography teachers' eventual practices upon employment. Effective learning is achieved when the geography teacher is knowledgeable in the content of the subject and the pedagogy employed in the teaching (Filgona, Sakiyo & Gwany, 2020). In a study done by Harte & Reitano (2015) in Australia, pre-service geography teachers who had acquired more geography content courses during their undergraduate studies had higher levels of confidence in subject matter knowledge and teaching geographical skills than the group that studied fewer content courses as they participated in the senior phase of the geography curriculum. Confidence levels were seen to have been influenced by peer teaching and other micro-teaching activities done by students (Harte & Reitano, 2015). Harte & Reitano (2015) see the differences in the

two groups as being because of the influence of the undergraduate programme on the acquisition of PCK. The data collected using surveys, microteaching activities, interviews, and focus group discussions brought out a wealth of information needed in geography education. However, Harte & Reitano (2015) limit their study when they select a sample of 16 participants in a survey that uses mixed-method approaches. The study is similar to this one as it also focuses on the experiences of two groups of geography teachers. However, the focus and context of the two studies differ, with the present study attempting to offer in-depth information on pre-service geography teachers' experiences of their undergraduate teacher preparation from a Zambian perspective. In contrast, Harte & Reitano (2015) focused on pre-service geography teachers' confidence in subject matter knowledge and skills in Australia.

In line with Harte & Reitano's (2015) findings, although not geography-specific, Martin & Dismuke (2018) revealed differences in understanding and practices of elementary teachers who had taken a writing methods course (course teachers) and those who did not (non-course teachers). Martin & Dismuke (2018) explain that there was a strong connection between the course and the understanding and practices of the course teachers. On the other hand, non-course teachers were described as good teachers who were trying to teach what they did not know (Martin & Dismuke, 2018). Despite being a worthwhile study, Martin & Dismuke's (2018) study was focused on writing teacher practices of elementary teachers, which was not the focus of the present study. Moreover, the study could have been enhanced if specific details of the research design utilised in the mixed method approach and the data collecting instruments employed were provided. Despite missing out the research design and data collecting instrument, Martin & Dismuke (2018) highlight in their findings that teacher education and professional development knowledge are reasons for the differences between the two groups of teachers.

The two studies highlighted the critical role of teacher education in influencing teachers' practice upon employment (Harte & Reitano, 2015; Martin & Dismuke, 2018). The amount of PCK a teacher acquires during teacher preparation influences the kind of teacher one will become upon employment. In support of this, Muchiri & Iddrissu (2019) reported that Kenyan Universities were ineffective because programmes were congested with pedagogical content knowledge while time allocated for teaching was insufficient. On a larger scale, Syke et al. (2010) provided more evidence when they measured student achievement on standardised tests for

31 teacher education programmes in New York City and established that some teacher preparation programmes produce more effective teachers than others.

A study in Nigeria by Kola & Sunday (2015) also established that a teacher with insufficient PCK would have low teacher self-efficacy (low confidence), while one who has acquired adequate PCK of the subject would have high teacher self-efficacy (high confidence) in teaching different concepts with no challenges with using teaching strategies. Kola & Sunday (2015) reviewed three educational constructs: teacher self-efficacy, pedagogical content knowledge and out-field teaching to arrive at their findings. Out-field teaching was described as subjects one had not been trained in during pre-service teacher training (Kola & Sunday, 2015). Despite establishing significant findings from their review, Kola & Sunday's (2015) study needed to provide details of the methodology utilised for readers to be confident that the requirements for the research process were followed. On the contrary, this study has explained all the parts of the methodology considered to improve the study's trustworthiness.

Like other studies done in teacher preparation, Hill & Collop (1998) also evaluated the effectiveness of a professional development organisation called Colorado Geographic Alliance (COGA) that was involved in geography teacher training and established that teachers trained by COGA had more experience in geography education and were more committed to both professional development and geography education than non-COGA affiliated teachers. Like this study, most studies have focused on establishing differences between teachers prepared through different programmes. In contrast, this study intended to explore the experiences of geography teachers trained in the same programme but following different pathways, with one group studying the subject as a major and the other as a minor.

2.4. Student teachers' motivation in studying geography as their teaching subject

Student teachers motivation in studying geography as their teaching subject has been highlighted by literature as one important factor that affects teacher preparation (Kidman, 2017; Pirog, 2018). Student teachers' background in the subject affects their experiences during and after teacher preparation. In this study, comprehension of geography student teachers' motivation for selecting the subject as their teaching subject was seen as cardinal in influencing their experiences in teacher preparation. Pajares (1997) explains that how one perceives their capabilities influences their acquisition and use of knowledge and skills.

Some of the reasons student teachers select geography as their teaching subject is more positive than others (Ferretti, 2007). A study by Opoku et al. (2021) revealed that high school geography learners studied the subject because of interest in the subject's content, future career prospects and due to parental influence. Career prospects had more influence on students' selection of geography as the subject of the study as compared to interest in the study, according to a study done by Piróg (2018). Kidman (2017) describes students' participation in geography because of influence from parents, teachers or the school as leading to compliance attitudes. Piróg (2018) argues that a university education provides a base for students to pursue careers and not follow one's interests. On the contrary, Beggs, Batham & Taylor (2008) revealed that students' interest and abilities influenced their decisions when selecting subject majors. Ferretti (2007) also revealed that students' confidence influenced their geography selection at A level, not the amount of coursework.

From the discussion above, it is clear that students interested in studying geography are influenced by different reasons, some of which are more positive than others. Student interest in career prospects offered by the study of geography is wider than teaching. Piróg (2018) explains that the prestige decline in teaching and saturation in education has made students more interested in other geography career prospects than teaching.

A study by Babacan (2018) in Turkey established that most pre-service geography teachers had great expectations of the potential employment chances that geography education offered and were open to change and evolution. The study also

revealed that most pre-service geography teachers hoped to be employed in state schools as teachers or pursue an academic career. In contrast, others intended to work as geographic information systems personnel, police officers, public servants, and in the private sector under different positions (Babacan, 2018). Babacan's (2018) study further established that most pre-service geography teachers considered their university education and preparation conditions insufficient. University education was seen as insufficient in teaching methods and techniques like laboratory and field work, class management skills, student assessment and administrative duties that would need to be done upon employment (Babacan, 2018). The study by Babacan (2018) brings in important information on pre-service geography teachers' perceptions of university education and their expectations of the field of study. However, the study could have been strengthened with interviews, which could have provided in-depth information as compared to the questionnaires. The findings of the study conducted by Babacan (2018) in Turkey could not respond to the research questions of the present study, whose aim was to explore pre-service geography teachers' experiences of their undergraduate teacher preparation at the University of Zambia using semi-structured interviews. Considering the limited studies, the present study still promises to add a voice to geography education from a Southern African perspective.

Park and Huynh (2015) claim that students who do not study geography as their subject major are at a risk of performing poorly compared to those who study it as their major, considering the differences in motivation. Geography students who study the subject because of personal interest and those who take it to fulfil general education requirements differ in attitudes towards the subject, which may also be reflected in their performance. According to Park and Huynh (2015), not many students in North America studied geography as their subject major, which was a cause of concern for geography professors. The purpose of Park and Huynh's (2015) study was to establish students' motivation, especially those who had yet to declare their major in an introductory geography course in North America. The study revealed that when geography students felt confident learning the subject, they were likelier to perform well. Furthermore, the findings showed that non-major geography students interacted intensely with the content when they valued the subject and focused on acquiring knowledge (Park & Huynh, 2015). In their study, Park and Huynh (2015) explain that it is difficult for geography teacher educators to ensure

that effective teaching and learning are achieved without focusing on students' motivational needs, especially those who lack personal interest, like the non-majors. Park and Huynh (2015) provide unique information on motivating non-geography major students to ensure effective teaching and learning occurs in geography education. Like many studies, this study was conducted in North America. It provided information on geography from a Western point of view. In contrast, the present study provided information on pre-service geography teachers' experiences of their undergraduate teacher preparation from an African perspective. Moreover, Park and Huynh (2015) collected data from non-geography major students, while the present study sampled pre-service geography teachers who studied the subject as their major and those who took it as their minor.

Mohan (2009) established that geography content, informal education, and interests (primary travel) were important factors in teacher efficacy in geography. Mohan (2009) explored and measured the relationship between the educational experiences of geography teachers and teacher efficacy in geography, specifically focusing on informal education through travel. Mohan (2009) ended by emphasising the need for teacher education programmes in geography to understand the importance of teaching efficacy and provide opportunities for teachers to improve their teaching efficacy. According to Blankman et al. (2015), student teachers who are motivated to teach geography provide better geography lessons in primary schools, and motivation was a relevant factor in explaining discrepancies between intended and achieved levels of PCK in geography.

2.5. Conclusion

Globally, literature shows that the preparation of teachers has challenges, which make institutions of higher learning continually strive to improve their teacher preparation programmes. Worldwide studies have been done in pre-service teacher preparation in different subjects, including geography, with many programmes, highlighting the challenges of preparing teachers. Studies have revealed that geography teachers struggle to understand and teach physical geography concepts, while others highlight geography teachers acquiring inadequate pedagogical knowledge (Fischer, 2022; Harte & Reitano, 2015; Ingiaimo, 2012; Larangeira & van der Merwe, 2016; Muchiri & Iddrissu, 2019; Rwenjuna, 2017). Studies have also shown that some challenges emanate from university student teachers not having a

background in senior secondary content subjects (Bowlick & Kolden, 2013; Larangeira & van der Merwe). Many studies have pointed to the need to improve geography teacher preparation in institutions of higher learning. Others have pointed to the need for geography teacher preparation to be responsive to the needs of geography school curricula (Boehm et al., 1994; Ingiaimo, 2012; Muchiri & Iddrissu, 2019; Blankman et al., 2015).

Geography is a broad subject, and teacher education is another wide subject; different issues in both aspects have been researched in many countries. However, studies in geography secondary school teacher preparation are limited, especially in African countries, with a few studies highlighting geography teachers having challenges in their acquisition and transfer of pedagogical content knowledge in the subject (Larangeira & van der Merwe, 2016; Muchiri & Iddrissu, 2019; Rwenjuna, 2017). Studies in teacher preparation at the University of Zambia in general, and in other subject disciplines, also highlight difficulties faced in the preparation of teachers (Chabatama, 2012; Manchishi & Masaiti, 2011; Manchishi & Mwanza, 2018; Mulenga 2015). Studies in geography education have also revealed some difficulties that geography teachers face in teaching the subject in schools (Mubita et al., 2023; Mundende et al., 2023). However, none of the studies have explored geography teachers' experiences of their undergraduate teacher preparation at the University of Zambia in order to understand the teacher preparation programme. Studies done focused on other aspects in geography education whose findings cannot give a true picture of issues surrounding the experiences of pre-service geography teachers of their undergraduate teacher preparation at the University of Zambia. Studies in secondary school geography teacher preparation remain contextualised to where studies were done, and most studies focused on different issues from what this study aimed to establish.

A literature review shows that few studies have explored geography teacher educators' pedagogical content knowledge, influencing student teachers' experiences. A literature search in this study has also revealed that few studies have explored teaching methods employed in geography education at the university level. Some studies have highlighted geography teachers needing to be better prepared in pedagogy at the university level without providing in-depth knowledge of the pedagogical knowledge referred to.

From the above background, this study explored geography teachers' experiences during pre-service undergraduate preparation at the University of Zambia and in-service teaching in secondary schools. To the researcher's knowledge, no study has been done to explore the experiences of geography teachers in the geography teacher preparation programme offered at the University of Zambia. The study brings unique information to pre-service secondary school geography teacher preparation by establishing the experiences of geography teachers who studied geography in the same programme but used two different pathways. The study also adds knowledge in geography education and teacher preparation in Zambia and Southern Africa, an area pointed out by Manik (2018) as needing more studies. The next chapter of this thesis (Chapter 3) discusses the theoretical framework employed in understanding geography teachers' experiences of their undergraduate teacher preparation at the University of Zambia.

CHAPTER 3

FRAMING THE STUDY THEORETICALLY

3.1. Introduction

Chapter 3 of this thesis is an extension of Chapter 2. The focus of Chapter 3 is to present a discussion of theory-related literature other than the research-related literature presented in Chapter 2. In discussing theory-related literature, the chapter contains different subheadings. The first section of the chapter discusses the concept of a theoretical framework in general, after which a brief discussion of the knowledge base for teachers is provided. This chapter further discusses the Pedagogical Content Knowledge theory and the self-efficacy theory. Lastly justification for the theoretical framework utilised for the present study is explained.

3.2. Theoretical framework

A theory, as explained by Remler and Van Razin (2011), is a logical description and explanation of how principles, practices, or phenomena work. It is simply an understanding of how and why a phenomenon functions the way it does (Sichula, 2018). According to Neuman (2014), social science research theory comprises firmly or loosely interconnected abstract ideas that are not constant or static but ever-changing phenomena.

A theoretical framework, on the other hand, is a collection of interconnected ideas based on theories and supported by evidence (Kombo and Tromp, 2014). A theory provides a guiding framework for theoretical investigation and explains why certain phenomena exist or occur the way they do (Lederman and Lederman, 2015). Lederman and Lederman (2015) explain how a theoretical framework may be a theory in quantitative research that aims at testing the validity of existing theory, while it may not necessarily be about a theory in qualitative research that aims at developing a theory.

A theoretical framework is an important part of the research process. Bryman (2012) points to how a theory is used to guide the data collection, formulation or test theory and guide the interpretation of the study's findings in research. Qualitative researchers also call on using a theory when analysing data or attempting to place

research findings within the context of existing literature (Lederman and Lederman, 2015). Building on existing literature, Sichula (2018) concludes that theories are important in guiding the research process.

In attempting to provide an in-depth understanding of the pre-service geography teachers' experiences of their undergraduate preparation, a theoretical framework within which the research process could be carried out was developed. Grant and Osanloo (2014) point to how a lack of a theoretical framework produces unclear study visions and further limits the usefulness of research findings. Considering the importance of a theoretical framework in a research project, the next section discusses the theories used to frame this study.

3.3. Knowledge base for teachers

Considering the importance of situating a study within a theoretical framework in both quantitative and qualitative research, the researcher found it suitable to discuss the theories that provide a basis for finding solutions to the research questions in this study. The researcher felt it was cardinal to utilise a theory that provided information on the knowledge student teachers are expected to acquire during teacher preparation. Theories in teacher education are important in this study that explores pre-service geography teachers' experiences of the undergraduate teacher preparation programme.

Shulman (1986) developed a theory around the knowledge base for teachers called the pedagogical content knowledge (PCK) theory. Koehler and Mishra (2009) used Schulman's (1986) PCK theory to develop the Technological Pedagogical and Content Knowledge (TPACK) theory. Technological Pedagogical and Content Knowledge, abbreviated TPACK from the original TPCK (Technological Pedagogical Content Knowledge) framework, further develops Schulman's (1986) PCK theory (Koehler and Mishra, 2009). The unique type of knowledge added to PCK to develop TPACK is technological knowledge proposed by Koehler and Mishra (2009) as an important component of knowledge that a teacher should acquire. Phillip and Harris (2018) explain different literature that supports the addition of technological knowledge, especially the new and digital tools that cannot be applied easily (Koehler & Mishra, 2009). According to Koehler and Mishra (2009), teachers need to learn how technologies afford and constrain the knowledge taught and vice versa.

Teachers' understanding of how technology influences the content and pedagogy of a subject discipline is cardinal in helping build the best technological tools for educational purposes (Koehler and Mishra, 2009). Technologies can help simplify abstract concepts in geography teaching, especially considering the nature of the subject, which has both physical and human components.

The PCK and TPACK frameworks have been adopted in many studies in teacher education and professional development (Herring, Koehler & Mishra, 2016). An analysis of PCK and TPACK by Phillips and Harris (2018) based on Cox (2008) explains the differences between PCK and TPACK and argues that scholars should consider TPACK as the special type of PCK that should sit within the broader knowledge base for teaching. TPACK is a temporary framework, according to Cox (2008), that teachers use when there is a need to use unfamiliar or emerging technologies in the delivery of lessons (Phillips and Harris, 2018). Geographic Information System (GIS) is one of the emerging technologies utilised in teaching and learning geography.

To develop a knowledge base specific to geography teaching, Hong, Harris, Jo & Keller (2018) developed a tentative model called the GeoKBT, which is grounded in Shulman's original knowledge base for teachers. Hong et al. (2018) used literature and interviews with experts in geography education to develop the GeoKBT model that can be used to study pedagogical content knowledge in geography. The conceptual model has six components, which include orientation toward teaching geography, knowledge of geography curricula, knowledge of students' understanding of geography and responses to geography learning, knowledge of instructional strategies appropriate for geography, knowledge of assessment of geography learning and knowledge of educational contexts (Hong et al., 2018). Like any other research, this research was conducted to develop the tentative model, which had limitations. Hong et al. (2018) point to limited time for classroom observations and data being collected from one south-eastern metropolitan area as limitations. Furthermore, the model has the disadvantage of collecting data from four experienced social studies teachers teaching grades 6, 7 and 9 while hoping all grade levels, including secondary grade level, could utilise the model.

The PCK and TPACK theories are dominant in providing a knowledge base for teacher education in different subject disciplines; however, the focus of this study

was more in line with Schulman (1986). Technological knowledge, the unique knowledge added to PCK, will reveal little about geography teachers' experiences during undergraduate preparation. Information on teachers' acquisition of technological knowledge may be brought out, but it is not the main focus of the present study. The GeoKBT (Knowledge Base for Geography Teaching) developed by Hong et al. (2018) has no geography-specific information (content), which makes it limited despite being developed in geography education. In developing the GeoKBT model, Hong et al. (2018) collected data from social studies teachers instead of geography teachers, and grade levels taught were lower than the grades taught by secondary schools, which is the focus of this study. It is for the above reasons that this study opted to utilise Schulman's (1986) Pedagogical Content Knowledge (PCK) theory.

Shulman's (1986) PCK theory was considered the knowledge base that geography teachers were expected to acquire during their undergraduate preparation. The researcher also sought to use Bandura's (1977) self-efficacy theory, which is not based on providing the knowledge base for teachers but helped provide an in-depth understanding of geography teachers' experiences from a psychological perspective. Schulman's (1986) PCK theory and Bandura's self-efficacy theory (1977) are two theories utilised in this study. The next section discusses the PCK theory as a knowledge base for teachers, after which the self-efficacy theory of motivation by Bandura (1977) will be discussed.

3.4. Pedagogical Content Knowledge Theory (PCK)

Shulman coined the Pedagogical Content Knowledge theory, commonly called PCK, in 1987 to understand teachers' complex knowledge better. A teacher's deep understanding of the subject matter is what Shulman (1986) called Content Knowledge, which includes facts, concepts, and structures within the subject. Pedagogical Content Knowledge is a teacher's understanding of issues that affect the learning of subject matter or simply knowing the best way to teach subject matter to learners (Shulman, 1986). Curricular knowledge is another type of knowledge that a teacher is expected to acquire during teacher preparation, and it entails the teacher's knowledge of national and state standards (or the syllabus) advocated for each subject (Shulman, 1986).

Shulman (1987) highlighted seven types of basic knowledge that a teacher must have, which comprised: content knowledge, general pedagogical knowledge, curricular knowledge, pedagogical content knowledge (PCK), knowledge of learners and their characteristics, knowledge of educational contexts and knowledge of purposes, educational purposes and educational values and their philosophical and historical bases. According to Phillips and Harris (2018) and Hong et al. (2018), for more than 30 years, pedagogical content knowledge (PCK), which is one of the components of the interconnected concepts of the knowledge base for teaching proposed by Shulman (1987), has captured the most attention from education researchers. Smit, Tuithof, Savelsbergh & Beneker (2023) systematic review of geography teachers' Pedagogical Content Knowledge study, revealed that there is insufficient knowledge about the PCK of geography teachers. The study further showed that only a few studies used PCK as a framework in Geography Education (Smit et al. 2023).

According to Shulman's (1986) theory, an individual who opts to teach particular content must understand that content as a prerequisite to teaching. Researchers have used Shulman's pedagogical content knowledge theory in many subject areas, with most of them being in English, Science and Mathematics, with a few studies in History/Social Studies (Mohan, 2009).

In all his propositions of the necessary knowledge base to be acquired by the teacher for effective teaching, Shulman (1987) was aware of the limitations of developing a comprehensive knowledge base for teaching when he explained how most of the knowledge base for teaching still needed to be discovered, invented and refined (Hong et al., 2018; Phillips & Harris, 2018). Since PCK theory focuses on the knowledge base for teachers in general, important subject-specific knowledge needs to be provided.

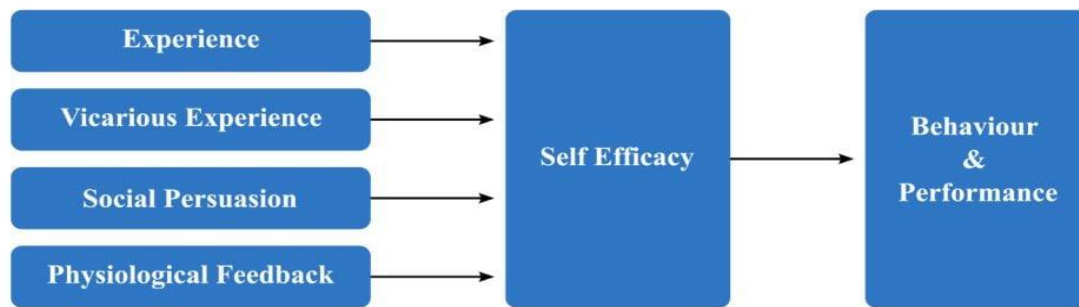
3.5. Self-efficacy theory

Apart from employing Shulman PCK theory in the theoretical framework, this study also employed social cognitive theory called the Self-Efficacy Theory of Motivation developed by Albert Bandura in 1977. Self-efficacy beliefs are people's judgement of their abilities to plan and carry out courses of action to achieve the required results

(Bandura, 1986). Self-reflection can help individuals evaluate their experiences and thought processes (Bandura, 1986).

According to Bandura (1997), people's self-efficacy beliefs are determined by four experiences: mastery experiences, vicarious experiences, verbal persuasion and motivation. Mastery experiences are explained as experiences emanating from personal experiences undertaking tasks and accomplishing goals. In contrast, vicarious experiences have to do with the influence of other people's achievements in performing tasks that make one feel they can also manage to do the same (Bandura, 1977). Bandura (1997) explains verbal persuasion as the influence one gets from other people's positive or negative support when undertaking a task that encourages one to complete a task. Lastly, motivation or physiological feedback (Lopez-Garrido, 2023) influences mental and physical well-being, affecting one's potential to undertake tasks and produce expected behaviour (Bandura, 1997). Figure 1 on the next page, summarises the four experiences that determine an individual's self-efficacy beliefs.

Figure 1: Experiences that determine self-efficacy beliefs



Adopted from Lopez-Garrido (2023, <https://www.simplypsychology.org>)

Self-efficacy theory argues that individuals can influence their cognitive processes and actions (Pajeres, 1997). The acquisition of knowledge and skills depends on an individual's self-efficacy beliefs. A student with powerful self-efficacy will set high targets for themselves and will persevere through the task to achieve the desired goals (Bandura, 1993). Individuals avoid engaging in activities they are not confident in and rather engage in those they feel competent and confident about (Pajeres, 1997). Self-perception of capability is a critical determinant of how well one will acquire knowledge and skills and how what has been acquired will be used after that (Pajeres, 1997).

In the context of teaching, Bandura (1993) explains that teachers' self-efficacy beliefs influence the learning conditions and the learners' performance. Self-efficacy theory has been applied in academic motivation and self-regulation studies in educational research (Pintrich & Schunk, 1996). Pajeres (1997) points out how research has strengthened Bandura's argument (1977) in the last two decades, which has played an influential role in human agency. The self-efficacy theory has been employed in qualitative and quantitative studies, although very few studies have utilised the theory in qualitative research (Wyatt, 2015). Literature supports the use of qualitative methods as a suitable method to utilise when employing the self-efficacy theory in research, considering that the concept is connected with complex psychological and social factors (Speziale, Streubert & Carpenter, 2011; Zamani-Alavijeh, Araban, Bastami & Almasian, 2019).

3.6. Theoretical framework for the present study

The theoretical framework developed for this study combines Schulman's (1986) PCK theory, commonly utilised in teacher education, and the self-efficacy theory developed in psychology by Bandura (1977). According to Neuman (2014), developing a theoretical framework is based on adopting or modifying theoretical frameworks employed by other scholars to fit one's study.

The PCK theory provides information on what is expected of teacher preparation programmes. The main aim of the teacher preparation programme is to equip student teachers with PCK, and this study opted to adopt the theory in providing the focus on which geography teachers' experiences would be based. The PCK theory guided this study when developing data-collecting instruments, reviewing the literature and discussing findings. This theoretical framework argues that geography teachers' experiences of their undergraduate teacher preparation are better established by focusing on the knowledge they are expected to acquire as future geography teachers (PCK). Establishing teachers' teacher preparation experiences is more meaningful when aligned with the programme's objectives. The PCK theory could not offer an in-depth understanding of geography teachers' experiences, hence the reason for adopting the self-efficacy theory of motivation from psychology (Bandura, 1977).

In this study, the establishment of geography teachers' experiences of their undergraduate teacher preparation was completed with an inquiry into what could affect student teachers' experiences. The researcher found it suitable to employ the self-efficacy theory to explore factors that could influence student teachers' experiences. Self-efficacy highlights one's judgement of how well one can manage a given task as an important aspect of performance. Students' self-efficacy beliefs influenced their decisions when selecting geography as one of their teaching subjects and deciding whether it would be their major or minor teaching subject. Furthermore, students' judgements of their strengths and abilities influenced their decisions in selecting elective courses. Pajares (1997) argues that students choose their subject majors and career paths in areas where they believe they are most competent and avoid those in which they feel less competent. Self-efficacy theory was suited to helping to understand how geography students' judgements of their

abilities influenced their acquisition of PCK during teacher preparation and their quality of teaching in secondary schools upon employment. Bandura (1995) argues that a strong sense of self-efficacy is obtained through mastery experiences. Therefore, looking at geography teachers' undergraduate experiences could translate into positive or negative influences on actual teaching exhibited upon employment. With this background, the researcher saw it suitable to utilise self-efficacy to explore geography teachers' experiences before and after teacher preparation at the University of Zambia.

The study argues that students' self-efficacy influences their experiences in selecting and acquiring PCK during teacher preparation. Furthermore, teacher preparation offers a chance for student teachers to improve their self-efficacy through experiences offered by universities. Geography teachers' experiences of their teacher preparation influence the quality of PCK acquired and the quality of teaching done in schools.

PCK theory was relevant in providing important components of teacher preparation necessary to understand geography teachers' experiences of their undergraduate teacher preparation. The knowledge for teachers provided by the PCK theory was cardinal in providing components to focus on when finding answers to the research questions. Apart from focusing on cardinal components in this study, the self-efficacy theory provided a framework for understanding the research questions. The self-efficacy theory was adopted to help explore geography teachers' experiences concerning their self-efficacy. The theoretical framework adopted for this study helped to establish what was important to consider in the study and how geography teachers' experiences were related to their self-efficacy. The self-efficacy theory was important in establishing geography teachers' decision-making during their undergraduate preparation and how that affected their experiences with different subject components. An inquiry into how geography teachers were prepared as future geography teachers at the University of Zambia was guided by the PCK theory, which highlighted important knowledge to be acquired by teachers during teacher preparation. The self-efficacy theory was relevant in understanding geography teachers' decisions to select the subject as their major or minor teaching subject and their confidence and belief in their teaching upon employment. Geography teachers' engagement with the subject during the four-year teacher

preparation was expected to improve their self-efficacy through mastery experience. The theoretical framework adopted for the study guided the development of the data-collecting instrument that sought to find responses to the research questions.

This theoretical framework assumed that geography teachers' experience with pedagogical content knowledge (PCK) during their undergraduate teacher preparation was related to their self-efficacy. However, it should be noted that geography teachers' experiences of their undergraduate teacher preparation can be discussed as being more than just pedagogical content knowledge. Other important aspects of teacher preparation not discussed in the present study are still cardinal in establishing geography teachers' experiences. Furthermore, the self-efficacy theory has been applied mainly in quantitative studies, with few adopting it in qualitative research. Despite that, though considered objective, people's responses to closed-ended questions still have an element of subjectivity, considering that they are individuals with unique reasoning for their responses. The use of self-efficacy theory in qualitative studies is supported by other scholars (Speziale et al., 2011; Zamani-Alavijeh., et al., 2019).

3.7. Conclusion

This chapter has briefly described some of the theories providing the knowledge base for teachers. The chapter has discussed the PCK, and self-efficacy theories adopted in this study. The chapter has also explained the reasons for adopting the two theories.

Other scholars in teacher education studies worldwide in several disciplines have utilised Shulman's PCK theory and Bandura's self-efficacy theory. The two theories guided the research process for the study in attempting to answer the research questions. The next chapter discusses the research methodology that was adopted in this study.

CHAPTER 4

RESEARCH DESIGN AND METHODOLOGY

4.1. Introduction

In Chapter 2, the researcher discussed the literature related to this study. She further discussed the theoretical framework, which is closely in line with that underpinned by this study in Chapter 4. In Chapter 4, the researcher further discusses the methodology used to find answers to the research questions. The chapter begins with a discussion of the interpretivist paradigm, which is the research paradigm that guided the study process. The chapter further discusses the qualitative research approach and an instrumental case study, both adopted in the research methodology. Further, in Chapter 4, sampling techniques, the data-collecting process and ethical considerations are also discussed. After discussing different parts of the research methodology chapter, the researcher justified all the decisions when selecting other parts.

4.2. Research paradigm: Interpretivism

The researcher's paradigmatic orientation influences all the components of the research methodology chapter. Mackenzie and Knipe (2006, p.2) explain that 'without nominating a paradigm as the first step, there is no basis for subsequent choices regarding methodology, methods, literature or research design'. Bryman (2008, p. 696) defines a research paradigm as a cluster of beliefs that dictates what should be studied and how somebody should represent and interpret the results.

The interpretivist paradigm or worldview will guide this study. Interpretivists believe individuals with backgrounds and experiences construct reality through social interaction (Lincoln, Lynham & Guba, 2011; Wahyuni, 2012). Reality is seen from multiple perspectives as different people and groups perceive the world differently (Hammersley, 2013; Lan, 2018; Willis, 2007). The undergraduate teacher preparation programme at the University of Zambia could thus be best understood from Geography teacher perspectives whose experiences would be unique. People's varied meanings and construction of numerous realities led the researcher to look for the complexity of views and a comprehensive understanding of the situation

(Cresswell, 2003; Morehouse, 2011). An interpretive paradigm enabled the researcher a chance to have an in-depth understanding of geography teachers' diverse experiences of the undergraduate teacher preparation programme. Objective knowledge does not exist without human interpretation in the interpretive paradigm (Gephart, 1999). According to Cresswell (2014), interpretive researchers rely on the participants' views and situations as much as possible. Thanh and Thanh (2015) explain that theoretically, the researcher comprehends the world from the participants' perspectives and experiences. This study aimed at understanding a geography teacher preparation programme through geography teachers' experiences, hence the adoption of the interpretive paradigm. Lan (2018) further elaborates that rather than focusing on producing measurable truths, interpretivists adopt a relativity ontology, which focuses on a particular subject which may have several interpretations. The interpretive paradigm was best suited in this study considering geography teacher preparation could be interpreted based on geography teachers' perspectives. All philosophical orientations in research have ontological and epistemological assumptions (Saunders, Lewis & Thornhill, 2009).

Ontology refers to the nature of reality and focuses on researchers' understanding of how the world functions (Saunders et al, 2009). The ontological assumption of this study is based on the idea that reality is socially constructed by people (Bryman, 2012). The ontological assumption was based on the fact that the geography teacher preparation programme offered at the University of Zambia could be best understood through the meanings that geography teachers had attached to it based on their experiences. Reality is constructed by different people according to their perception; hence there is no single reality. Geography teachers in this study constructed their reality socially through their experiences of the teacher preparation programme. Having considered the ontological assumptions of this study, it was also important to explain the epistemological assumptions of the study. Apart from focusing on ontological assumptions, paradigm orientations also include assumptions about the nature of knowledge and knowing when to consider the epistemological stance of a study.

According to Saunders et al, (2009), epistemology focuses on the nature of knowledge to be collected and considerations of what is accepted as valid knowledge in a particular paradigm. In the interpretive paradigm, knowledge is

created through people's experiences of particular events. In this study it means knowledge of geography teacher preparation at the University of Zambia can be understood by exploring geography teachers' experiences. Knowledge of geography teacher preparation is based on participants' experiences in this case. Geography teachers' experiences were explored through the pedagogical content knowledge theory and the self-efficacy theory. This was done to understand the research problem using a scientific setting as required by research (Yin, 2014, 2011).

The interpretive paradigm was best suited for this research in exploring

geography teachers' experiences of their undergraduate teacher preparation because it focuses on knowledge development achieved through the perception and experiences of participants. Being a study in the social sciences, this work is studying the experiences of human beings who are geography teachers in this case. In this paradigm, humans explain the world and react to such explanations while the world does not (Hammersley, 2013). Research in the social sciences is required to follow best-suited methods for the research process depending on the aim and nature of the study. The aim and nature of the study on geography teachers' experiences of their undergraduate teacher preparation was best suited to the interpretive paradigm. A distinction between research methods in the social sciences and those in the natural sciences is required (Alharahsheh and Pius, 2020).

Furthermore, the researcher employed the interpretive paradigm because of its ability to bring out in-depth information about a phenomenon and its unique context without attempting to generalise it to the entire population (Creswell, 2007). The study aimed to establish the experiences of geography teachers trained at the University of Zambia who may have unique characteristics and experiences that cannot be generalised to other geography teachers. Experiences are unique to individuals and socially constructed and thus cannot be generalised to the entire population. The interpretive paradigm was best suited to this study because of its focus on the depth of variables and context (Alharahsheh and Pius, 2020). This study employed an interpretive paradigm in establishing geography teachers' experiences of their undergraduate teacher preparation considering that the crucial purpose of the interpretive paradigm is to get 'insight' and 'in-depth' information (Thanh and Thanh, 2015).

Observation and interpretation underpin the interpretive paradigm; thus, observation calls for collecting data, and interpretation entails making meaning of data by choosing the best explanation or comparing the information with the abstract pattern (Aikenhead, 1997). Hammersley (2013) and Alharahsheh and Pius (2020) explain that generation of knowledge and its use in social science research differs from physical science research. Exploration of human beings comes with creating in-depth meaning, unlike when dealing with physical phenomena (Alharahsheh and Pius, 2020).

This study intended to establish pre-service geography teachers' experiences of the teacher preparation programme, which is best suited to the interpretive paradigm as it enabled the researcher to obtain their views and understanding of the situation from their different experiences. Research questions underpinning this study were subjective questions that align with the interpretive paradigm, which seeks to understand phenomena in a social context. Interpretivists have the advantage of understanding phenomena deeply in any social context (Lan, 2018).

4.2.1. Criticisms of interpretive research paradigm

The interpretive paradigm, just like other research paradigms, has its limitations. Due to its context, specific nature and inability to have the research outcomes generalised to the entire population (Alharahsheh & Pius 2020; Cresswell, 2007; Saunders, Lewis & Thornhill, 2012), a gap is left in verifying validity, rendering research outcomes unusable with scientific procedures (Lan, 2018). On the contrary, Myers (2008) argues that since the interpretive worldview considers personal contributions with different variables, it leads to a high level of validity in the data. It has the advantage of providing in-depth data from participants that provide rich knowledge and meaningful data in social sciences research. Research within the interpretive paradigm usually measures quality or validity, which follows scientific procedures of the social sciences (Yin, 2011), which is considered correct within its framework. Positivists should not use their standards to judge or criticise this social science-based paradigm because it holds a different philosophical orientation (Sichula, 2018).

Interpretivism is subjective and seen as a limitation that produces research bias. The researchers' interpretations, preferences, and belief systems influence the research outcomes since they involve themselves in the research process (Mack, 2010). Mack

(2010) argues that all research is subjective because one is drawn to one paradigm and not the other while selecting the research paradigm. Individuals stated that interpretivism emphasises that knowledge is socially constructed and given different meanings through direct experience (Mack, 2010). Maree (2012) explains that rigour under the interpretative paradigm is obtained by responding to research questions following a scientific qualitative research procedure. This study followed the qualitative research procedure to respond to the research questions. Objectivity in the interpretive paradigm is achieved when the researcher eliminates their preconceptions during data analysis (Mack, 2010). The present study was guided by the interpretive worldview and followed the procedure for qualitative research while developing the proposal, research instruments, sampling, data collection and data analysis to make the study trustworthy. Criticisms of interpretivism mainly appear when researchers want to judge the paradigm using standards applied in the positivist paradigm in the natural sciences, which should be different considering that both paradigms view life from two different perspectives. Despite limitations and criticisms, using qualitative designs and methodology, interpretivism still allows researchers to produce in-depth data by exploring human experiences that can support scientific research (Alharahsheh and Pius, 2020).

4.3. Research approach: Qualitative

Qualitative research is “a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem” (Creswell, 2014: p.32). According to Alharahsheh and Pius (2020), qualitative research focuses on developing data that may not be measured using quantity. Understanding the meaning and experience of human lives and social worlds is essential in qualitative research methodologies (Fossey, Harvey, McDermott & Davidson, 2002). Phenomena are understood based on experience with fewer generalisations to the entire population (Alharahsheh and Pius, 2020). The qualitative research study involves people's experiences of some aspects of their lives, individual or group behaviour, and the functionality of organisations and relationships as a product of interaction, including some of the studied phenomena (Teherani, Martimianakis, Hayes, Wadhwa & Varpio, 2015).

Scholars like Alharahsheh & Pius (2020) and Creswell (2002) explain qualitative research as a research approach interested in obtaining the best in-depth

understanding of the research problem through exploratory studies. Creswell (2014) refers to qualitative research as a design and approach. The researcher adopted qualitative research in this study as a research approach because it explores pre-service geography teachers' experiences and the meaning they attached to undergraduate teacher preparation.

A close look at the research approaches pointed to the qualitative method as the best approach for this study because the purpose and focus of the study, which was to understand teacher preparation from the participants' point of view, were in line with the approach. According to Teherani et al. (2015), obtaining data on how events occur and the outcomes of such events from the perspective of the people involved is cardinal in the qualitative approach. In studying educational settings and processes, like the present study, Denzin and Lincoln (2003) support using a qualitative research approach.

Furthermore, the research approach adopted relates well to an interpretive paradigm adopted for this study. The qualitative approach aligns with the interpretive paradigm as both the approach and paradigm view reality as dependent on people's constructions. This study aims to understand pre-service geography teachers' experiences. Reality is understood from multiple perspectives because it is subjective. A qualitative approach was best suited for the study because it enabled the researcher to collect thorough data that helped to understand teacher preparation from the participants' perspective.

In exploring geography teachers' experiences of the teacher preparation programme, the researcher saw it fit to utilise the qualitative approach because it allows a phenomenon to be understood from the participants' perspective. Yin (2011) explains that data from qualitative research is a product of real-life experiences from people who have undergone it. Thus, qualitative researchers attempt to understand phenomena from the context of the participants who have lived the phenomena being studied (Cresswell, 2014). Thanh and Thanh (2015) recommend qualitative methods as best suited for researchers who attempt to understand student teachers' experiences.

The researcher was also motivated to utilise the qualitative approach because of its interactive and flexible nature, allowing the researcher to prompt thorough

information from the participants. The geography teachers provided rich and in-depth data for the study through flexible and interactive interviews. The qualitative approach was also adopted based on the nature of the aims of the research study and the research questions for the study.

4.3.1. Criticisms of qualitative research approach

The qualitative approach, like other research approaches, has weaknesses that reduce its utilisation. Qualitative research is biased because it is subjective and lacks generalisation of research results for the entire population; hence, it is mainly criticised (Kumar, 2014). Bias is unavoidable since the researcher is a participant observer (Chesebro & Borisoff, 2007) who is both a data-collecting instrument and an interpreter (Chipatu, 2017). Qualitative research should be more robust in this capacity than the strength of quantitative research.

Chipatu (2017) explains how the small sample size in qualitative research makes the generalisation of findings to other areas impossible., However, Yin (2011) argues that a researcher can still justify generalising findings from qualitative research, considering that any given study, whether qualitative or not, usually collects a limited amount of data with limited numbers of data collection units. Yin (2011), further explains that generalising findings to broader conditions beyond the immediate study requires revising in qualitative research.

Though critics highlight the need for more generalisation as a weakness of qualitative research, they need to make the point that it is not the aim of the qualitative approach to generalise the research findings but rather to understand phenomena in-depth. The qualitative approach does not require generalising of the research findings (Creswell, 2014).

The study followed all the required procedures for qualitative research to reduce biases posed by the qualitative approach. In the methodology section, the researcher explained the procedure to ensure the study's trustworthiness. A comprehensive description of the methods utilised with the research findings has been provided to uphold trustworthiness.

4.4. Research design: Case study

The research design refers to the general plan that guides the researcher when finding responses to the research questions (Saunders, Lewis & Thornhill, 2007). Saunders et al. (2007) explain that research design guides the researcher on the type of data to be collected, the best way it should be collected, the best instruments to use, and the best data analysis technique to interpret the data. In qualitative research, no clear consensus is given on creating research designs before data collection starts (Yin, 2011). Yin (2011) further explains that it is optional for all qualitative studies to have a research design at the beginning. However, it is considered a retrospective feature rather than a plan.

Cresswell (2002; p. 61) explains a case study as a problem to be studied, revealing an in-depth understanding of a "case" or bounded system, which involves understanding an event, activity, process, or one or more individuals. The case study design was employed in order to understand the complexity of the geography teacher preparation programme.

McMillan and Schumacher (2001) state that a case study assesses a programme or system in detail by collecting data from different places. A case study design enabled the researcher to explore geography teacher preparation through geography teachers' experiences. It is a detailed description and analysis of an individual, group, or event (Taylor, Sinha & Ghosha, 2011). Starman (2013) further explains that case studies can be qualitative research and, sometimes, a method or scientific approach, according to different researchers. A case study was considered a type of research design under the qualitative research approach in this study.

There are different case studies, but an instrumental case study employed in this study, was of interest. . An instrumental case study allows the researcher to refine a theoretical explanation or provide insight into an issue (Stake, 1995). Stake (1995) explains that a researcher is free to maximise the learning of a phenomenon. According to Berg (2001), the case has an important function against which actual research interest is done. It aims to assist a researcher in better understanding some external theoretical question or problem while the case becomes less important (Berg, 2001). The case study design was best suited in responding to the research questions of this study. In this study, geography teachers' experiences were

explored through the pedagogical content knowledge theory and the self-efficacy theory which is best suited in the instrumental case study.

An instrumental case study was best suited for this study because it provided extensive and in-depth information on the preparation of geography teachers at the University of Zambia from the experiences of pre-service geography teachers. Krusenvisk (2016) explains case studies as having the advantage of providing in-depth relevant data applicable to real life and contemporary human situations. An instrumental case study helped the researcher better understand one aspect of the case: the pre-service geography teachers' experiences. A case study is useful when trying to comprehend circumstances that are not well-known (Leedy & Ormrod, 2005). In this case study, geography teachers' experiences of the teacher preparation programme were not well known. With their focus on complex real-life situations, research outcomes of case studies help to develop new theories and strengthen previous research without being taken out of context (Krusenvisk, 2016).

The researcher was also motivated to employ an instrumental case study design because it was in line with the research purpose, which sought to comprehend the experiences of pre-service geography teachers in detail. The selected research design gave the researcher the advantage of collecting detailed information that responded to the research questions from the participant's perspective. Starman (2013) explains that case studies have been primarily utilised and found valuable in practice-oriented fields like the social sciences, such as education.

4.4.1. Criticisms of case studies

The lack of statistical generalisability of findings to the entire population or non-representing study results has been highlighted as one of the negatives of employing case study designs (Chipatu, 2017). Hammersley (2013) explains that arguments concerning case studies can produce valid generalisations that have been disputed for a long time. In the context of case studies, unlike with quantitative designs, some scholars have argued that a researcher can obtain generalisation by availing a comprehensive account of the entire research process, especially the analysis process (Seale, 1999), which enables a reader to make their judgement on the applicability of research outcomes to other known research settings (Seale, 1999). In this study, a detailed account of the entire research process has been provided to

enable the readers to make their own judgement about the applicability of the research outcomes. Woodside (2010) further argues that the primary objective of case studies is not to generalise research outcomes to the entire population, however, the aim is to develop and prove a theory. It should be noted that it was not the aim of this study to generalise the research outcomes of geography teachers' experiences of their undergraduate teacher preparation programme at the University of Zambia.

Case studies are also criticised for being subjective in case selection (Starman, 2013) because of the researcher's prior knowledge of the case (George & Bennet, 2005). The researcher's interactive role in the case study brings potential bias. However, Starman (2013) argues that knowledge of the selected case is important to come up with a strong theoretical base and a good research procedure. In this study, following the required qualitative research procedures reduced subjectivity.

Another area for improvement in using case studies, according to Yin (2009), is the need for more rigour. The case study is too flexible, such that a researcher may fail to follow the expected procedure and allow prejudiced views to influence the study findings (Yin, 2009). Subjectivity in this study was reduced by following all the research procedures that were expected in qualitative research to ensure the trustworthiness of the study. Furthermore, Flyvbjerg (2011) explains that more room for the researcher's subjectivity is allowed in a case study and other types of qualitative research designs as compared to quantitative studies. On the contrary, Starman (2013) points to how case studies allow researchers to find what is hidden within familiar boundaries while examining capability, scalability and available knowledge.

Like other research designs, case studies also have methodological procedures that should be followed to avoid biases in the study. Amongst them are diligence and consistency in the tracking process (George & Bennet, 2005). In this study, the researcher also engaged another experienced researcher in the same field of study to check through the interview questions and help with coding to reduce biases by comparing the work done by two researchers.

Furthermore, in line with the methodological requirements for a case study, this study has provided a rich and detailed description of the study in Chapter 4, which has detailed information that readers can utilise to make judgements about the

transferability of research outcomes to other research settings as advised by Seale (1999).

4.5. Sampling of participants

The study targeted pre-service geography teachers teaching in secondary schools who graduated from the University of Zambia from 2014 to 2020. The study targeted the University of Zambia because it is the highest institution of learning in Zambia and has also been involved in teacher preparation for a long time. Furthermore, the University of Zambia is vested with teacher preparation knowledge, considering that it has spearheaded the development of teacher preparation programmes in colleges and other upcoming universities.

The study explicitly targeted geography teachers who were teaching in secondary schools in Zambia for six years or less and had studied at the University of Zambia. Pre-service geography teachers who had graduated in the previous six years or less were deemed to have had details of their undergraduate teacher preparation experiences at their fingertips. Geography teachers who had taught for a few years in secondary schools were considered to have had rich data on their experiences during teacher preparation and their experiences in teaching geography in secondary schools. Their interaction with the University of Zambia and secondary schools was relatively fresh and promised to offer worthwhile data. Study participants were teaching in four provinces: Central, Lusaka, Southern and Western provinces of Zambia. Geography teachers who were teaching in both rural and urban schools were of interest in this study. The selection of data from four provinces ensured that in-depth and rich data was collected on geography teachers' experiences teaching the subject in different school environments.

This study employed purposive sampling to select participants who knew the study topic to find answers to the research questions. Purposive sampling is a non-probability type of sampling (Bryman, 2008). Individuals in the population do not have an equal chance of being selected as a sample in non-probability sampling (Mugera, 2013). Purposive sampling was mainly utilised to determine the sample from which data was collected. Miles & Huberman (1994) indicate that qualitative samples are usually purposive rather than random in quantitative research because the universe is more limited.

Purposive sampling enables the researcher to employ their judgement in selecting cases that best respond to the research question(s) and achieve the stated objectives of the study (Burns & Grove, 2007; Saunders et al., 2007). Chipatu (2017) further explains that the researcher depends on their judgement or accessibility to select the sample.

Considering the nature of this study, which employed the qualitative approach and its requirements, data for this study, was collected from nine geography teachers who had studied geography as their major and those who had studied it as their minor. The researcher utilised purposive sampling as the best sampling technique to identify and select the participants based on the needs of the research questions. Purposive sampling had the advantage of allowing the researcher to select participants with information that best responded to the research questions and met the purpose of the study.

Quota sampling, a non-probability type, was also employed to ensure that the experiences of teachers who studied geography as their major and those who took the subject as their minor were represented. The study aimed to establish the experiences of both groups of pre-service geography teachers. Purposive sampling allowed the researcher to collect data from geography teachers well-versed in the information required to help answer the research questions.

4.5.1. Snowball sampling procedures

The researcher also employed a snowball sampling technique when selecting some pre-service geography teachers who had taken the subject as their minor. During data collection, it became difficult to find geography teachers who had taken the subject as their minor because more geography students take the subject as their major and most of those who graduated (both those who studied the subject as their major or as their minor) in the past few years were still unemployed. However, it was easy to access geography teachers who had taken the subject as their major. More geography teachers took geography as their major than those who took it as their minor. It became impossible to find geography teachers in the initially proposed provinces (Central and Lusaka), and snowball sampling enabled the researcher to access participants with the characteristics that were crucial in the study. These were accessed in the Southern and Western provinces of Zambia. Adding two other

provinces also ensured that rich data was collected from geography teachers teaching in rural and urban schools of the added provinces. The addition of two provinces did not affect the study in any way, considering that all the characteristics of the participants, the data-collecting protocol, the data-collecting instruments and the purpose of the study remained the same. Neuman (2000) explains that snowball sampling is practical when a researcher needs to select well-informed hidden participants (Neuman, 2000). Snowball sampling, also known as the referral sampling technique, proved the best option when it became difficult for the researcher to find pre-service geography teachers who took the subject as their minor in the two provinces earlier proposed as study areas. Some geography teachers were contacted with the help of the district education board office, which further helped the researcher find other geography teachers who met the requirements for the study. Geography teachers contacted further helped the researcher find other participants using social media platforms that were opened during their undergraduate preparation and were still in existence after graduation for continued interaction. Contacted geography teachers informed their former course mates about the study using social media platforms. The researcher was provided with contact details of those geography teachers who met the criteria and were willing to participate.

4.5.2. Research participants

The nature of qualitative studies demands that researchers collect in-depth and rich data from a few participants (Cresswell, 2014; Yin, 2011). The decision on the number of participants to be involved in a qualitative study depends on when data saturation is reached by the researcher (Carson, Gilmore, Perry & Gronhaug, 2001). Data saturation refers to the stage when information being collected from interviews continues to be similar without new themes emerging (Carson et al., 2001). Unlike quantitative studies that give guidelines on sample size, there is no such advice for qualitative studies, especially in a case study (Carson et al., 2001). Considering the nature of qualitative studies and research requirements, this study collected data from nine pre-service geography teachers using semi-structured interviews. Participants for this study included geography teachers who had studied geography as pre-service students at the University of Zambia. The participants must have been teaching geography in rural and urban secondary schools for six years or less. In-

service geography teachers were excluded from this study, considering that they were trained mostly through distance education, and their earlier experiences of teaching in schools could have altered the experiences this study was interested in. Geography teachers who had graduated from the University of Zambia in 2013 and earlier were also excluded because their experiences with teacher preparation at the University of Zambia were considered old in this study, as some aspects of teacher preparation could have changed over time.

The geography teachers involved were teaching the subject in secondary schools of Lusaka, Central, Southern and Western provinces of Zambia. The participants of the study included four geography teachers who had studied the subject as their minor and five geography teachers who studied the subject as their major teaching subject. In this study, participants who studied the subject as their major were identified with the letters *Mj* while those who studied the subject as their minor were identified with letters *Mn*. Furthermore, to distinguish participants from each other, the letter P and a distinct serial number (1 to 9) were added to the letters *Mj* and *Mn*. For example, participant number 1 who studied the subject as their major was identified with P1*Mj* while participant number 6 who studied the subject as their minor was identified as P6*Mn*.

Table1 shows the attributes of geography teachers who participated in this study.

Table 1: Participant attributes

Participant	Gender	Years of employment
P1 Major	Female	6
P2 Major	Male	5
P3 Major	Female	2
P4 Major	Female	3
P5 Major	Male	1
P6 Minor	Male	6
P7 Minor	Male	5
P8 Minor	Male	1
P9 Minor	Female	6

4.6. Research methods: Data collection and generation

In this study, data was both collected and generated by the researcher, considering that the researcher is part of the research process in qualitative research. Data was generated as the researcher was involved in the construction and development of meaning while interacting with the geography teachers during the interview and the analysis of documents. Flick (2014) explains that in qualitative research data is constructed and generated when participants interact with the interviewee and the documents.

Research has laid down procedures for collecting data and with which instruments are appropriate for research approaches. According to Yin (1994), a case study has six data sources: interviews, direct observation, participant observation, archival records, and physical artefacts. Primary data for this study was collected using semi-structured interviews. The primary data is collected directly from the participants using different research instruments (Kombo & Tromp, 2006). In this study, data was also collected from documents like the University of Zambia geography teacher education programme materials and the secondary school syllabus. The collection of primary data from documents complemented the findings from the geography teachers' responses to the research questions.

4.6.1. Semi-structured interviews

In this study, the researcher utilised semi-structured interviews to help establish the experiences of pre-service geography teachers during their undergraduate teacher preparation. Generally, interview schedules permit the researcher to collect thorough data using probing questions to clarify unclear questions or get in-depth explanations for misunderstood responses (Neuman, 2006). According to Yin (2011), qualitative interviews enable researchers to access in-depth information. Evans & Lewis (2018) further explain that semi-structured interviews allow in-depth data collection on people's experiences. According to Zohrabi (2013), a semi-structured interview guide is a moderate form of an interview to solicit a tremendous amount of qualitative data. Participants can discuss the issue or topic on their own terms while responding to a defined topic (Choak, 2012).

The semi-structured interview proved the best-suited instrument because it allowed the researcher to collect in-depth qualitative data flexibly. Semi-structured interview

schedules authorised the researcher to probe and encourage participants to elaborate on responses and even cross-check information (Mulenga, 2015). Semi-structured interview guides allow the researcher to get thorough data on the same theme from different participants (Cresswell, 2012). Semi-structured interviews are developed beforehand to allow participants to discuss unanticipated ideas relevant to the study (May, 2001). Participants were guided from straying from the topic of discussion with the help of interview schedules. Semi-structured interviews were very helpful in collecting contextual and in-depth information on geography teachers' experiences during pre-service teacher preparation and in-service teaching in schools.

This study employed semi-structured interview guides as the only data collecting instrument, considering that it was the best instrument to bring out the information that responded to the research questions. A semi-structured interview schedule enabled the researcher to collect data from individual geography teachers whose perspectives aligned with the demands of the interpretive paradigm adopted in this study. Responses to the study's aims were best sought from individual geography teachers' perspectives, which were best acquired through semi-structured interviews. Adding a data-collecting instrument other than the semi-structured interview was considered unnecessary because the instrument captured all the important details sought by the research questions interested in geography teachers' experiences. The other reason for using semi-structured interviews was the COVID-19 pandemic, which made it difficult to collect data using methods that needed many participants in one designated space.

With complete information on the benefits and procedure for conducting an interview, the researcher collected data from pre-service geography teachers in their respective schools with permission from the relevant authorities. The researcher introduced herself by stating her name, position and the institution she was representing. Furthermore, the researcher explained the purpose of the study and all the ethical issues regarding their participation. The participants were assured of the confidentiality of their information before the interview. With their consent and at their most preferred time, face-to-face and virtual interviews occurred within the participants' respective schools. The duration of all the interviews was between 40 and 65 minutes. The researcher requested permission from each participant to have

the interview audio recorded. At the end of each interview, the researcher thanked each participant.

In this study, semi-structured interviews were conducted following Creswell's (2014) suggestions. The table below shows the suggestions given by Creswell (2014), and the way the researcher responded to the suggestions.

Table 2: Factors considered when conducting interviews

S/N	Steps in conducting an interview	Study actions
1	Identify the interviewees.	In this study the researcher employed purposive and snowball sampling to identify the geography teachers.
2	Determine the type of interview you will use.	This study employed semi-structured interview schedules which were administered physically and virtually.
3	During the interview, audiotape the questions and responses.	The researcher audio recorded the researchers' questions and the geography teachers' responses, using a smart phone which had an audio recorder.
4	Take brief notes during the interview.	In this study the researcher was also taking brief notes during the interview.
5	Locate a quiet, suitable place for conducting the interview.	Interviews conducted in this study were carried out in physical and virtual spaces that were free from distractions.
6	Obtain consent from the interviewee to participate in the study	The researcher obtained consent from the geography teachers before carrying out the interviews. The researcher ensured that all the participants understood the purpose and use of the data that was being collected. Only geography teachers, who voluntarily wanted to participate, were included in this study.
7	Have a plan, but be flexible. During the interview, stick with the questions, but be flexible enough to follow the conversation of the interviewee.	Throughout the interview, the researcher was respectful and courteous to the participants. The researcher was attentive to the responses throughout the interview.
8	Use probes to obtain additional information.	In this study, the researcher probed for more information in cases when the responses were unclear or there was need for detailed information.
9	Be courteous and professional when the interview is over.	At the end of each interview, the researcher thanked the participant and assured them of the confidentiality of the responses given and also indicated that the summary of the findings would be availed to them.

Semi-structured interviews, like other data-collecting instruments, have been criticised for possibly producing distorted data due to the influence of interviewees' emotional states (Patton, 2002). Arising from that, the researcher practised breathing techniques to help create a calm and enabling environment. Furthermore, the researcher encouraged participants to be accessible throughout the interview and probed for more information.

4.6.2. Documents

The University of Zambia geography teacher preparation programme structure and the Zambian senior secondary school geography syllabus were the policy documents consulted. The documents were of importance to this study as they contained the general topics that were taught to student teachers during their teacher preparation and what they were teaching in secondary schools. The researcher was interested in understanding the university's geography teacher preparation programme and the senior secondary school geography syllabus in connection with the experiences of geography teachers.

After the data was collected using semi-structured interviews and document analysis, the researcher went ahead to analyse the data to make meaning of the raw data. The following section discusses the different processes and procedures to analyse the data.

4.7. Data analysis

Flick (2013, p.5) defines qualitative data analysis as the classification and interpretation of linguistic or visual material to make statements about the implicit and explicit dimensions of meaning-making in the material and its representation. The researcher in qualitative data analysis attempts to understand the data collected by organising the data into meaningful patterns using words.

Interview data collected in this study was analysed using thematic analysis, while content analysis was employed to analyse data collected from documents. The data analysis phase was informed by the pedagogical content knowledge theory and the self-efficacy theory as the theoretical frameworks for exploring pre-service geography teachers' experiences of their undergraduate teacher preparation

programme and after employment. Furthermore, data analysis was also informed by the interpretive paradigm, which views experiences as subjective to individuals.

In qualitative research, data analysis has different aims. Flick (2013) elaborates on three aims of qualitative data analysis: developing theory, establishing similarities and dissimilarities between cases, and providing comprehensive accounts of events. The aim of the data analysis in this study was to provide in-depth account on geography teachers experiences of their undergraduate teacher preparation and upon employment.

Leedy and Ormrod (2015: p. 310-314) recommend the following general steps that should be followed during qualitative data analysis:

- a) Convert the data into one or more forms that will be easy to organise and analyse.
- b) Organisation of data in a preliminary, superficial way for easily locating them as you proceed.
- c) Identification of preliminary categories that are likely going to help code the data.
- d) Division of data into meaningful units that will be individually coded.
- e) Application of initial coding scheme to a subset of the data.
- f) Construct a final list of codes and sub-codes and define each code and sub-code as specifically and concretely as possible.
- g) Consider using two or more criteria to code the data.
- h) Identification of noteworthy patterns and relationships among the codes.
- i) Be alert for outliers, exceptions, and contradictions within the data set
- j) Interpret the data in light of your research problem.

On the other hand, Cresswell (2014) explains six stages that should be followed when conducting qualitative data analysis. The first thing that needs to be done is for the researcher to prepare and organise the data for analysis by transcribing the interviews. Secondly, the researcher is advised to explore and code the data by summarising comprehensive accounts of events and assigning a code to the text. Thirdly, there is a need to code and build descriptions and themes, which is followed by representing and reporting qualitative findings using tables, figures and explanations. The fifth activity to be done during data analysis, according to

Cresswell (2014), is the interpretation of the findings, which is based on comparing the findings with literature, a provision of personal views, highlighting study limitations and pointing to potential future research. The last step involves validating the accuracy of the study findings by auditing, triangulating and member checking. The difference in the steps of data analysis suggested by different scholars shows that there are many ways that different researchers can conduct qualitative data analysis. The general steps followed in qualitative data analysis are flexible, considering that data analysis is done by going back and forth between the different stages of qualitative studies (Cresswell, 2014; Leedy & Ormrod, 2015).

4.7.1. Data analysis for semi-structured interviews

The study utilised thematic analysis, one of many qualitative data analysis techniques. Braun & Clarke (2006) define thematic analysis as a method used for identifying, analysing and reporting patterns in the data. Thematic analysis is a method of qualitative data analysis that helps the researcher identify subjects (themes) after the data collected has been transcribed and coded (Braun & Clarke, 2006). Through thematic analysis, the researcher can recognise similarities and differences between participants' experiences of events (Braun & Clarke, 2006). Analysis of data using themes, entails identifying significant concepts or themes, after which themes are categorised into related topics (Kombo & Tromp, 2006). A theme “captures something important about the data concerning the research question and represents some level of patterned response or meaning within the data set” (Braun & Clarke, 2006, p.82). The researcher found it suitable to employ thematic analysis in this study because of its ability to bring out patterns formed in the data. This meant that patterns in the data could be developed when establishing geography teachers' experiences of their undergraduate preparation. Thematic analysis is suitable for analysing research to establish relationships or compare evidence from distinct situations in the same study (Alhojailan, 2012). Its independence from any particular theoretical approach or epistemology persuasion further makes it a common choice for many researchers (Braun & Clarke 2006).

The data analysis procedure in this study was established with the help of guidelines outlined by other scholars like Braun & Clarke (2006) and Cresswell (2014). Yin (2014) supports using data analysis procedures that have been successfully utilised in other studies rather than re-inventing new ones. After collecting and recording the

interview data, the researcher commenced the data analysis process, done manually at all stages. Data was analysed manually to avoid distractions from following software procedures that could have destroyed researchers' analytical thinking needed for robust analysis (Yin, 2011).

According to Nowell, Norris, White & Moules (2017), thematic data analysis involves the constant movement between the different data analysis phases because it is an iterative and reflective process that takes time. Though written in phases, it does not fall into a linear sequence (Yin, 2011). Therefore, it should be noted that although data analysis was done in phases, the researcher constantly went back and forth when analysing the data.

The steps followed in analysing the data collected are discussed below:

Transcription of verbal interviews

Data analysis began with transcription, which involved transforming or transcribing recorded audio interviews into written form. Verbal data should be transcribed into written form for thematic analysis to take place (Braun & Clarke, 2006). The audio recordings of all nine interviews conducted with pre-service geography teachers were fully transcribed manually by the researcher. Audio-recorded interviews were transcribed into written form by the researcher. The researcher was constantly checking the written work against the original audio recordings of interviews to ensure that the data captured was accurate. After transcribing the interviews, the researcher familiarised herself with the data.

Familiarisation with the data

The second step in data analysis involved the researcher familiarising herself with the raw data by reading the transcripts. The researcher had to read through all the transcripts several times to comprehend and relate the data with the research aim. Important and interesting information was highlighted during this stage. After this, the researcher moved to the next stage of coding the data.

The generation of initial codes

The third step involved the development of initial codes from the written transcripts. Bryman (2016) describes coding as breaking down the data into their parts and giving the labels of the said parts. Labels are more like meaningful summaries

portraying what the data is communicating. Initial codes were developed by constructing a coding frame with a table with two columns. One column had raw data from the interview transcript, and the other column was used for developing initial codes using the raw data. The researcher coded the raw data from the transcript by writing summarised notes on the meaning of the data in the other right column following each sentence or line by line. The collected notes of the data were the actual initial codes developed. Braun & Clarke (2006) emphasise the importance of coding all the data extracts. The researcher further categorised codes into different groups after developing initial codes. Yin (2011) suggests that data with the same meaning should be assigned similar codes without ignoring the original data.

Categorisation of codes

After developing initial codes for all the interview transcripts, the next step was categorising codes into different groups. Categorising codes into different groups by paying particular attention to how codes were related and the categories formed. This phase was where the researcher sorted and organised data into similar and dissimilar groups following a suggestion from Yin (2011).

Categorisation of codes was done by developing a table with nine columns representing the nine participants in the study. After developing the table, codes from each coded transcript were extracted and transferred to a column for easy comparison and categorisation. The researcher further scrutinised the initial codes. Initial codes were further reworked by deleting codes describing the same content but written differently and replacing the codes with the same descriptions of similar responses from different participants. These ensured that codes were uniform without losing the initial meaning of participants' responses. Reworked initial codes were also corrected on each coding frame developed earlier in the second data analysis stage. In this phase, the researcher kept going back and forth between phases, altering some of the earlier recorded data to improve ideas and analysis for the next phase (Nowell et al., 2017; Yin, 2011).

After reworking the codes, the researcher further extracted codes from each participant's coding frame and categorised those with similar responses. The researcher categorised the codes by searching for patterns or connections between different codes. Searching for patterns or connections between different codes made

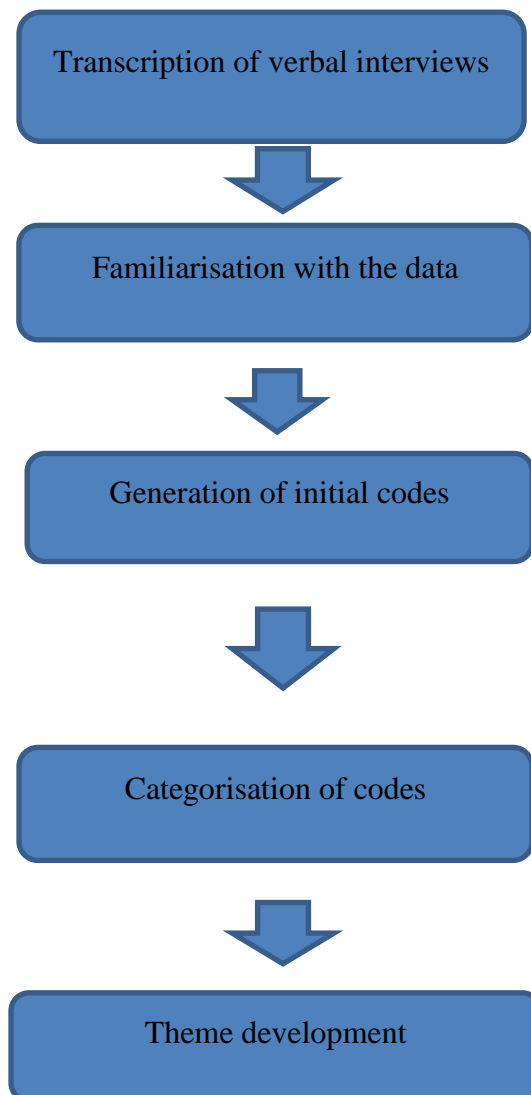
it easy for the researcher to further analyse the data in terms of what was said and how many said it, making it easy to understand the data better. Yin (2011) explains that after the data has been sorted and categorised, the researcher can examine the related features of the different categories and gain insight into them.

The development of themes

The development of themes was the last data analysis stage after coding and categorising codes. The researcher must have already developed a list of codes from the data set, having coded and collated the data (Nowell et al., 2017). Braun & Clarke (2006) explain that it is at this stage that codes are organised into different potential themes. Unlike codes, themes are generally developed, considering research aims and questions. According to Cresswell (2014), the coded data is utilised to create between five and seven themes for a research study. In this study, themes were generated and arranged according to what the researcher considered logical data flow. The codes developed aligned with the pedagogical content knowledge theory, which guided this study. It is from the generated themes that the study's significant findings in qualitative research are developed and used as headings in the presentation of the findings chapter (Cresswell, 2014).

It should be noted that the theoretical framework guided data analysis. The data-collecting instrument was developed to focus on geography teachers' experiences with pedagogical content knowledge. Therefore, responses and themes developed during data analysis were based on pedagogical content knowledge theory. Self-efficacy beliefs guided data on the categorisation of geography teachers' experiences. Pedagogical content knowledge theory provided the scope of what was important during data analysis, while the self-efficacy theory guided the analysis of geography teachers' experiences. See figure 2 on the next page, which summarises the data analysis process.

Figure 2: Summary of steps followed during data analysis of interviews



4.7.2. Data analysis for documents

This study also involved the analysis of documents like the programme structure for geography student teachers and the Zambian senior secondary school Geography syllabus, which necessitated the utilisation of content analysis as another analysis method.

Leedy and Ormrod (2015; p 275) define content analysis as a detailed and systematic examination of the contents of a particular body of material to identify patterns, themes, or biases. It aims to communicate meaning by providing awareness about the phenomenon (Merriam, 2009). Content analysis involves the analysis of written and non-written materials that involve the transmission of information between humans, like personal journals, books, legal documents,

transcripts of conversations and television (Leedy and Ormrod, 2015). In consideration of document analysis, Cresswell (2014) suggests that one identifies useful documents from public and private entities, acquiring permission to use the documents, examining the documents and finally recording the information. Content analysis of documents for this study followed the four steps suggested by Leedy and Ormrod (2015). The first step started with identifying documents that would be useful for the study. The researcher saw it fit to utilise documents related to geography teachers' experiences of their undergraduate teacher preparation and during employment. The second step involved describing the characteristics of what was being explored. After the second step, Leedy and Ormrod (2015) suggest that lengthy materials be divided into shorter and manageable parts as the third step. However, this study's third step was optional, considering that most of the data was manageable and not lengthy. The researcher scrutinised the materials for information needed in line with geography teachers' highlighted experiences as the last step of the content analysis in this study.

Using thematic content analysis was useful in making meaning of the data collected from geography teachers on their experiences of the undergraduate geography teacher preparation programme. Content analysis provided important content related to geography teachers' experiences during and after teacher preparation. After all the data collected was analysed, the next phase followed was the data interpretation, which is discussed below.

4.7.3. Interpretation of data from interviews and documents

Qualitative researchers interpret data by comparing the similarities and dissimilarities between the findings and the literature reviewed, promoting their understanding of the findings, and highlighting the study's limitations and recommendations for future studies (Cresswell, 2014).

Data was interpreted after the analysis of data collected using interviews and documents. The interpretation of data was based on the Pedagogical Content Knowledge theory and the self-efficacy theory, which formed the theoretical framework of this study. The interpretation of data was based on the researcher's understanding of geography teachers' experiences of their undergraduate teacher preparation programme and the teaching of the subject in secondary schools. The theoretical framework and the philosophical orientation of this study were utilised in

the interpretation of the study, which has been discussed in Chapters 5 and 6 of this thesis. The theoretical framework and the paradigm orientation provided a lens through which the researcher opted to understand geography teachers' experiences.

4.8. Trustworthiness of study

Good quality research in any subject discipline follows a procedure for collecting and analysing data to be valid and trustworthy. Unlike quantitative studies that use validity, qualitative studies employ terms such as trustworthiness, authenticity and credibility to address issues regarding the quality of research (Cresswell, 2014; Cresswell & Miller, 2000). Yin (2011) explains that trustworthiness in qualitative research is achieved through the transparent utilisation of accepted research procedures and exhaustive collection and searches for different kinds of evidence. In a qualitative study, credibility, transferability, dependability, and conformability are strategies used to assess a study's trustworthiness (Guba and Lincoln, 1986). This study employed strategies suggested to ensure the trustworthiness of the study.

4.8.1. Credibility

The credibility of a qualitative study is one way that the trustworthiness of a study can be measured. In this study, the researcher utilised different strategies to ensure the data collected was credible. The researcher interacted with the participants for an extended period when collecting data from July 2021 to February 2022. Cresswell and Miller (2000) elucidate that collecting data over an extended period ensures that a researcher collects credible data.

Peer debriefing was another strategy employed to ensure the study's credibility. Yin (2011) explains peer debriefing as a process of evaluating the data and the research procedure by a peer familiar with the studied topic. The assistance provided by peer reviewers improves the credibility of a qualitative study (Cresswell and Miller, 2000). The study utilised the help of two peer reviewers who are academicians from the geography and environmental education section of the University of Zambia. Two peer reviewers assessed the research procedure, including the data collection, data analysis and the presentation of findings, after which debriefing occurred. This process helped the researcher to rethink and make confident choices to improve credibility and trustworthiness. Peer reviewers provided much-needed advice and helpful ideas for improving the study (Cresswell and Miller, 2000).

Furthermore, this study also utilised member checking to ensure the study was credible. Interview transcripts and significant findings were availed to the nine participants to confirm whether the data collected was accurate. According to Cresswell (2014), the accuracy of qualitative data can be achieved by sending the final study research findings back to the participants for confirmation of accuracy through member checking.

4.8.2. Transferability

Transferability or generalisation of research findings provides evidence of whether research findings can be applied in other situations. Transferability is similar to external validity, applied in quantitative studies (Chipatu, 2017; Sichula, 2018). However, it should be noted that although qualitative studies do not aim to have their research findings generalised, transferability can be applied to specific strategies.

Korstjens and Moser (2018) suggest that qualitative researchers' provision of a rich and detailed account of the research process helps the reader judge the transferability of research findings to other situations in their setting. Researchers provide a chance for readers to make informed decisions about the transferability of research findings to other similar situations when vivid descriptions are provided (Cresswell and Miller, 2000).

The researcher attempted to provide detailed descriptions of the study participants, sampling techniques, data collection methods, data analysis and the interpretation of findings. The researcher provided a detailed account of the research process for readers to judge the applicability of research outcomes in another context. Cresswell (2014) explains that providing detailed data from different perspectives of the findings makes the study more realistic, and validity is enhanced.

4.8.3. Dependability

The dependability of the research findings in qualitative research can be compared to measuring reliability in quantitative research (Chipatu, 2017). Yin (2011) explains that with this concept, findings are expected to be the same when repeated with participants following the same research process without changing the context. The reliability of findings in a qualitative research study could be more practical,

considering that it deals with human behaviour with the possibility of multiple interpretations by participants and researchers (Chipatu, 2017).

This study attempted to consider the dependability of the findings by providing detailed descriptions of the research process, which followed all the requirements of a qualitative research procedure. Korstjens and Moser (2018) suggest that a researcher should follow the expected standards for data analysis procedure for a particular research design. The study provided all the details and reasons for decisions made pertaining to the formulation of research, development of instruments, data collection, data analysis and the interpretation of the findings. Bryman (2012) indicates that qualitative researchers' provision of rich details of all the research procedures enhances dependability.

4.8.4. Conformability

Conformability refers to the degree to which others can confirm or corroborate the results. The subjective nature of qualitative research makes it challenging to measure conformability, considering that each researcher brings unique perspectives to the study. In measuring conformability, the interpretation of findings embedded in the analysis process is expected to emanate from the data rather than the researcher's perspective (Korstjens and Moser, 2018).

An audit trail is one strategy used to ensure the conformability of the findings. Korstjens and Moser (2018) state that the researcher is expected to avail details of the data and data management of the research process, which an auditor can access to investigate the transparency of the research process. The researcher intensified conformability by organising and storing all the data collected in a retrievable form that can easily be availed to an auditor. Furthermore, according to Yin (2011), another strategy utilised for conformability is checking for the data's accuracy by availing portions of the draft of the findings to the participants. As explained earlier under dependability, the study utilised the member checking strategy to guarantee the data's accuracy.

4.9. Ethical considerations

Ethical consideration is an essential aspect of research for all researchers. Researchers must respect all participant rights, needs, values and desires (Cresswell, 2014). Ethical measures are essential in a study to ensure that researchers and participants are safe and that the study is trustworthy (Cresswell, 2014; Maree, 2012). Henceforth, for a study to be considered trustworthy and valid, several ethical concerns are addressed during the research process (Chipatu, 2017). Ethical issues that were adhered to in this study include the following:

4.9.1. Institutional ethical clearance

Prior to data collection, the researcher applied for ethical clearance from the Research Ethics Committee in the Faculty of Education at the University of Pretoria. Kombo and Tromp (2006) emphasised the need for a researcher to obtain a research permit before starting a study. After meeting all the requirements, the researcher obtained the ethical clearance letter from the University of Pretoria (Reference Number: EDU033/21). Furthermore, the researcher obtained permission from the District Education Board Secretary (DEBS) of the respective districts to collect data from geography teachers in secondary schools.

4.9.2. Informed consent

The needs and rights of the participants were a priority for this study. The researcher disclosed her complete identity to the participants and information on the study's nature, purpose and data collection methods. A written consent letter was given to the participants to read and decide whether they would participate in the study.

4.9.3. Voluntary participation

Participation in this study was on a voluntary basis, and no participant was forced to share data. The researcher explained to and assured the participants that the data was for academic purposes. The researcher further informed participants of their rights, including their right to withdraw during the data collection or at any point during the period of their participation, and with no questions asked.

4.9.4. Privacy, Confidentiality, and Anonymity

Participants were informed of their rights to privacy during and after the study. Before the interview, the researcher asked participants for permission to audio record the

conversation. The researcher guaranteed the confidentiality and anonymity of the participant's details by not using their real names for identity purposes during and before the dissemination of information. Recordings of the interviews were safely stored with the University of Pretoria as required.

4.9.5. Safety of participants

The study was free from any situation that could have caused harm to the participants due to their participation. The researcher gave all the information about the study and remained honest and respectful to the participants throughout the study.

4.10. Conclusion

This chapter has described the research methodology employed in this study as the qualitative research approach. This study has discussed the interpretive worldview as the paradigmatic orientation employed. Furthermore, the researcher has discussed the qualitative research approach and the case study design as the research approach and research designs that were employed in this study. The chapter has also explained purpose and snowball sampling techniques as sampling techniques used in this study. The chapter further elaborated on semi-structured interviews and document review as data collecting instruments that were adopted by the researcher in the present study. The researcher has also discussed thematic analysis as the utilised data analysis procedure in this chapter. The chapter has also discussed the measures adopted to ensure the study was trustworthy and the ethical measures considered valid. The next chapter presents the findings of the study.

CHAPTER 5

PRESENTATION OF FINDINGS

5.1. Introduction

This chapter presents the findings about pre-service geography teachers' experiences of their undergraduate teacher preparation programme at the University of Zambia. Chapter 4 has explained the methodology and procedures that were followed to find responses to the research questions. This study explored geography teachers' experiences of their undergraduate teacher preparation programme and during their teaching career as secondary school geography teachers. The study was focused on establishing experiences of geography teachers who studied the subject as their major and those who studied the subject as their minor in their BA.Ed. degree. The assumption of this study was that geography teachers' experiences would be distinct based on whether they studied the subject as major or as their minor. Furthermore, the study assumed geography teachers would have unique experiences in teaching geography in secondary schools based on their experiences during teacher preparation. In consideration of the research questions of this study, this chapter presents the research findings. The findings of the study in this chapter are presented under themes that were developed during data analysis of the semi-structured interviews. The findings of the study bring unique geography teachers' experiences, which respond to the study's research questions and further provide an in-depth understanding of the geography teacher preparation programme at the University of Zambia.

5.2. Theme 1: Why pre-service geography teachers chose geography as their teaching subject

This study saw it necessary to explore geography teachers' reasons for selecting the subject as their teaching subject in order to provide in-depth information and understanding of their experiences during and after teacher preparation. Considering the first research question, theme 1 presents findings on why geography teachers chose geography as their teaching subject.

Geography teachers' background in senior secondary school geography was considered cardinal in establishing their experiences of teacher preparation.

Participants' background in the subject provided foundational knowledge which could have a bearing on choices made. According to the findings, some geography teachers did not study geography at senior secondary school level but studied it only at university level. Out of the nine participants, three geography teachers who studied geography as their subject major had no foundation knowledge in senior secondary geography.

Participant P4Mj, for example, explained that;

I never took geography in secondary school because I wasn't very comfortable with it but going to university it gave me an eye-opener to actually want to understand the world.

The findings reveal that some participants had an interest in studying the subject content at university level rather than at senior secondary level. The findings reveal that not all geography students who chose the subject have a background in senior secondary geography which could affect their transitioning through educational levels.

An in-depth understanding of the study could only be achieved by acquiring information on what motivated participants to choose the subject as one of their teaching subjects. Apart from establishing geography teachers' background in senior secondary geography, the study revealed that geography teachers had various reasons for selecting the subject as their teaching subject. The findings of the study established that some geography teachers selected the subject because they had an interest in the content, while others were influenced by other people like teachers, senior students and parents. Furthermore, the study revealed that some participants selected the subject because of the other career prospects the subject offered. The programme structure also influenced others to select the subject. It should also be noted that, coupled with the reasons for selecting the subject mentioned, high achievement in senior secondary geography was considered an important factor in selecting the subject by some participants.

People's influence was amongst the most important reasons why some geography teachers selected the subject as their teaching subject. Teachers, senior students and parents were amongst the people that influenced some geography teachers to select the subject as their teaching subject.

Below are some of the responses from the participants;

Well, from the start, it all started in high school because this is where I got into (sic) loving the subject; the teacher was always praising me for all the drawings he could give me (sic), so I developed so much interest in the subject P8Mn.

I can say from the time I was in primary school, I had a lot of interest in farming; maybe it was because of my father, who was a peasant farmer and most of the time, we would do a lot of activities in farming. So, when I reached Grade 8, I took both geography and History. I used to find Geography more interesting than History P9Mn.

Okay, the time I went to UNZA, I was still determining what subject I could combine with mathematics. Because (sic) Mathematics was my first option, but after being told by one of those (sic) senior students. I understood that the Mathematics and Geography combination was good for me according to what I could manage (P2Mj).

This study also revealed that some geography teachers selected geography as their teaching subject because they had an interest in the body of knowledge of the subject. However, not every participant who had an interest in the subject had an interest in teaching. The findings showed that some participants selected geography as their teaching subject with the hope of venturing into other career prospects that the study of the subject could offer. Some studied geography with an interest in being employed not as geography teachers but as planners or environmental personnel in institutions that were not focused on teaching.

The following are some of the responses the responses:

I took geography in secondary school because I had a lot of interest in it, and my performance in Grade 12 was outstanding P7Mn.

I think it is an interesting subject that I choose (sic) it P3Mj.

Geography was a subject that I wasn't very comfortable with in secondary school. Still, attending university gave me an eye opener to want to understand the world (sic) P4Mj.

Because of geography, I was looking at it in a wider way, (sic) not only in teaching (sic) but in future, I could do something else like planning, environment (sic) and the like and just the interest I had P1Mj.

I selected the subject because of the opportunities that it offers. It does not restrict one to teaching P5Mj.

Apart from geography teachers having an interest in the subjects, the findings of this study also established that one geography teacher selected the subject as a second option after realising that the programme structure could not allow him to select his preferred subject because it was not offered in the programme. One of the participants gave the following response:

Yes, I wanted to do maths with physics, but it was not offered under the Bachelor of Arts then. Because of these arrangements (sic), I was prompted to pick geography because I had done very well in high school P6Mn.

Most of the participants indicated they had chosen geography as their teaching subject because of different personal interests in the subject. Some participants chose the subject because they had an interest in the content of the subject, while others chose it because of other employment prospects. While the teacher preparation programme that geography teachers enrolled in aimed at producing geography teachers, the findings indicate that some participants hoped the subject would help them get employed in other institutions. The findings reveal that some geography teachers did not consider geography teaching as their first priority even though they had become teachers. The responses have also shown that some participants selected the subject because of other people's influence while others' choice of the subject was influenced by the structure of the programme that restricted them from picking other preferred subjects.

Apart from choosing geography as one of their teaching subjects, geography teachers were expected to select the subject as either their subject major or as their subject minor. Geography teachers' selection of the subject as their subject major or minor was also considered cardinal in this study. Five geography teachers decided to study the subject as their major teaching subject. The findings have revealed that most geography teachers selected the subject as their major because they considered the subject to have been wide, which meant that one could understand it

better if they studied more content courses. On the other hand, it was also revealed that one participant chose the subject as their major because their preferred subject major became difficult, so geography became the easier option. The findings established that some geography teachers took the subject as their major in order to have access to a wide range of geography knowledge that was limited if one studied the subject as their minor.

The following were some of the views presented by the participants:

I wanted to access more knowledge. I think it made things easier for me. If geography were my minor, I would have been limited to specific categories. I have understood it better (P4Mj).

I had an interest in geography, and most of the courses that applied to it had an interest in it, courses like environmental planning and rural geography (P1Mj).

I thought I would understand geography better if it was my major (P5Mj).

Compared to history, I thought geography had many things that I could learn from (sic) that are interesting and realistic (P3Mj).

While most of the participants selected the subject as their major because they had interest in accessing more content to understand the subject, the study also revealed that one participant studied the subject as their major out of convenience. Participant P2Mj had the following to say:

Mathematics became rough for me, so I decided that I could not major in mathematics. In the end, I just decided to major in geography (P2Mj).

The findings of the study also established reasons why four geography teachers selected geography as their subject minor. Some geography teachers selected geography as their minor because of the requirements of the programme structure while others selected it as their minor due to negative influence from other people. One participant selected the subject as a minor because they had inadequate guidance from the department that was offering the programme in which the participant was enrolled. Participants who selected the subject as their minor following the restructuring of the curriculum gave the following response:

P8Mn: *The main reason is how (sic) they have done it at the university now; when you enrolled in Sociology of Education, you can at least have a minor in a teaching subject. So, I couldn't choose a subject apart from geography as my teaching course.*

P6Mn: *I had more interest in mathematics than geography. I wanted to do math with physics, but at that time, it wasn't being offered under the Bachelor of Arts. Because of these arrangements, I was prompted to pick geography because I had done very well in high school.*

Another geography teacher who selected the subject as minor following advice from a senior student stated the following:

P9Mn: *I wanted to take geography as my major, but I had some discouragements here and there. When you have second-hand information from people, they would (sic) tell you that the course is challenging and most people do not graduate. Those sentiments had a play in my mind for taking geography as my minor.*

Lack of guidance from the department was another reason listed for selecting the subject as minor. Below is the response from P7Mn:

P7Mn: *I think the nature of the programme I was doing because (sic) I did a Bachelor of Arts in Education, and from the first year, I didn't have much information on course selection.*

In conclusion, the findings of the study have shown that not all the geography teachers who selected the subject as their teaching subject at university level had studied geography in senior secondary school. While combined with other reasons, high achievement in the subject in senior secondary geography was mentioned; other participants without a background in the subject also selected the subject as their teaching subject. From the findings explained above, this study also established that geography teachers selected the subject as one of their teaching subject due to the interest they had in the subject knowledge. Others selected the subject because of influence from other people and others hoped to study the subject with prospects of finding other employment opportunities aside from teaching. The findings have further revealed that the majority of the geography teachers who selected the subject

as their major had an interest in studying a wide range of subject content while the majority of the participants who selected the subject as their minor did so with the influence of the requirements of programme structure.

5.3. Theme 2: Geography teachers' engagement with geography content knowledge.

The findings of the study derived from the analysis of the data revealed how geography teachers interacted with geography content knowledge. Geography teachers were expected to have acquired geographical content knowledge during their undergraduate teacher preparation, see section 3.4 in Chapter 3 of this thesis. This theme shows findings on geography teachers' engagement with subject content and geography teachers' preferences when selecting their elective content courses for fourth year. The theme shows findings from both the interview and the documents.

The findings from the interviews from participants' experiences indicated that they all took some physical and human geography courses. The findings reveal that the participants reported positive and negative experiences with physical and human geography learning.

The findings of this study also revealed that participants who enjoyed learning physical geography components were slightly more than those who enjoyed learning human geography. The findings established that all the geography teachers who studied geography as their subject minor enjoyed learning physical geography compared to two out of the five participants who studied the subject as their major. Participants who enjoyed learning physical geography pointed to how they found it practical and exciting.

Participant P2Mj stated the following:

When it came to physical geography was more interesting because we could deal with physical things, and sometimes, we conducted labs on all those things P2Mj.

The study's findings further established that P9Mn and P7Mn found physical geography very interesting because it involved critical thinking, according to the former. At the same time, the latter added that physical geography was still their favourite.

P5Mj further gave the following detailed account of why he enjoyed physical geography:

I enjoyed physical geography the most, and even most of the courses I took were physical geography inclined. I picked elective courses that would help me understand specific topics better. It was more practical and considering that few people took the courses. Few people were there, so there was a high chance of probing the lecturer more to get information.

Two participants P8Mn and P6Mn emphasised having enjoyed some of the geography components like mathematical geography and map-reading, which are classified as physical geography. According to P6Mn, he enjoyed mathematical geography because it was more related to his subject major, mathematics.

In his response, P8Mn stated that:

I enjoyed mathematical geography. I was looking at it from an angle to say (sic) that is the most difficult part, which most teachers think is difficult (P8Mn).

It should be noted here that some of the participants found physical geography interesting. Slightly more participants who studied geography as their major did not enjoy learning physical geography components but found human geography more interesting and easier to understand. The following were the responses given:

The reason I enjoyed human geography was that (sic) it had interesting topics. Physical geography wasn't really my stronghold, so I picked most courses from human geography (P1Mj).

P3Mj: Human geography was easier to understand as compared to physical geography (P3Mj).

The findings further revealed that only two participants enjoyed learning both physical and human geography components, with one indicating they had enjoyed

some components of physical geography but not all.

I enjoyed human geography and some content in physical geography. For human, physical and map reading, they actually took me closer to what I was looking at. When you are in class, you only look at the theoretical part, but if I have to look at it physically (sic), I will relate what I was learning to what was happening (P4Mj).

The study's findings also established that human geography was inadequately covered by the teacher preparation programme. Two participants who had studied geography as their subject minor explained that human geography needed to be better covered compared to physical geography. P8Mn had this to say:

I feel that human geography was not dealt with adequately unless with (sic) the physical geography because (sic) that is what we started with. We didn't finish human geography due to time.

In the same line of thought P7Mn stated the following:

From what I can remember, I should have done more physical geography than human geography for the three years that I did geography. As a minor student, I did more physical geography than human geography. Human geography wasn't adequate as I would have loved, there are certain courses to date that I wish I had learnt. After all, they are relevant at this level. Let me give an example, is it economic geography? I never took economic geography.

It was not only participants who took geography as their minor that felt human geography needed to be adequately covered. P2Mj indicated a gap between human geography acquired during teacher preparation at UNZA and the human geography content in schools. Apart from the response from P2Mj, P4Mj also explained that some parts of human geography learnt during teacher preparation could not be applied in secondary school. Another participant had the following to say:

I would say maybe 80 per cent; most courses are just fine. Most of it (sic) was good quality, except certain topics were irrelevant to secondary school (P9Mn).

Some geography teachers also had other complaints about the teacher preparation programme. According to P5Mj, the programme had too many content courses and little time for practical experiences in methodology and other practical courses. The sentiments from P5Mj were also echoed by P1MJ, who indicated that some courses needed practical experiences, but there was no time to do the practical part. P1Mj further gave an example of an urban geography course and explained how applying knowledge became hard. He stated that urban geography was supposed to be a practical course, but it was only learnt through theory. P8Mn also explained how a topic called time zones in mathematical geography needed to be more adequately covered because the lecturer just gave the students questions, and they could research independently without teaching. The responses were varied and align with the interpretive paradigm adopted in the study (see section 4.2 of this thesis).

Apart from the information that was provided by the participants on their experiences with content knowledge, policy documents provided more information. The findings from the documents provided more information on the structure of the University of Zambia teacher preparation programme. The programme structure revealed that geography student teachers were required to learn two geography core content courses in their first year, with one introducing them to physical geography and another to human geography content. However, in the later years, the first year Physical and Human geography courses were combined into one course called Introduction to Geography.

In their second year, student teachers were required to have three compulsory geography content courses, with one focused on the geography of Africa, with special reference to Zambia, while the others were on mapping and field techniques in geography and statistical methods in geography. The programme structure revealed that geography teachers studied the geography teaching methods course in their third year. However, they studied other educational-based courses in their first and second years.

In the third year of their study, geography student teachers had to enrol in two geography teaching methods courses: Methodology in Geography Education and Fundamental Topics in Secondary School Geography. Apart from the two geography methodology courses, students were expected to enrol for two content courses: Environments and Development and Geography field. The Geography field course

and the Methodology course focussed on fundamental topics in secondary schools which were considered half courses, which meant that students studied three courses in their third year when it came to counting courses accounting for one's graduation. At the end of the third year, students who selected geography as their subject minor would be considered as having completed their study of the subject. In contrast, those who selected the subject as their major would be expected to continue up to the end of their fourth year. Those who selected the subject as their minor would continue to their fourth year but concentrate on their subject majors.

In their fourth year, selected topics in the geography education course were the only compulsory methodology courses student teachers had to take. In contrast, the rest of the required content courses were electives. The programme structure had more than 15 physical and human geography content courses from which students were required to select 4 half courses of their choice, which would be counted as 2 full courses towards graduation.

The study's findings further disclosed that only geography teachers who took the subject as their major were required to select elective courses in their fourth year. The findings established that most participants selected human geography courses with only one who selected physical geography courses. It should be noted that these results were only applicable to geography teachers who had selected the subject as their major. The responses given are shown in the table below.

Table 3: Reasons for choice of elective courses in fourth year of study

Geography component	Participant	Response
Human geography	P4Mj	<i>I just took human geography courses, unfortunately. I perceived that physical geography was difficult.</i>
	P1Mj	<i>Physical geography wasn't really my stronghold, so I picked most courses from human geography.</i>
	P3Mj	<i>I selected human geography because it was easier to understand than physical geography.</i>
	P2Mj	<i>I selected human geography courses because they are easier than physical ones and seem more marketable than physical ones.</i>
Physical geography	P5Mj	<i>Most of the courses I took were physical geography inclined. I picked elective courses that would help me understand certain topics better. And I also picked those electives hoping to get employment outside teaching.</i>

P2Mj, who selected human geography elective courses, was of unique interest to the study even though he had earlier pointed to finding physical geography more interesting.

Furthermore, the findings disclosed that some participants felt that some practical courses and human geography were inadequately covered. The findings were in line with the interpretive paradigm which is explained in section 4.2 of Chapter 4 of this

document.

In conclusion, the above findings have revealed that most participants enjoyed learning physical geography because they found it interesting. The findings disclosed that those who took the subject as their minor found physical geography more interesting than those who took it as a major. The study findings have established that most participants who studied geography as their major selected human geography components as their elective courses because they found it easier to understand than physical geography. The findings showed that geography teachers had varied experiences and interest in the two components of geography.

5.4. Theme 3: Geography teachers' engagement with pedagogy

This theme still corresponds with the second secondary research question, which aims to establish how student teachers at the University of Zambia are prepared for geography teaching in secondary schools. This theme presents findings concerning participants' experiences with pedagogy during teacher preparation. The presentation of findings on this theme focused on participants' views on pedagogical methods employed during their undergraduate teacher preparation and participants' engagement with the teaching methodology courses.

In this study, establishing geography teachers' experiences with pedagogical methods utilised during their undergraduate teacher preparation was considered cardinal. This was important in helping establish pedagogical methods participants considered effective or ineffective. The study revealed that different pedagogies were utilised during geography teachers' undergraduate preparation. According to the findings, three teaching methods were utilised: the lecture method or teacher exposition, laboratory or practical work and fieldwork.

The lecture method, an expository pedagogy, was indicated to have been a common teaching method utilised by lecturers during teacher preparation. This method requires the teacher or, in this case, the lecturer to transfer relevant information to the learners or students. All the participants indicated that the lecture method was the main method of teaching utilised by different lecturers in different courses.

The study's findings further revealed that participants had positive and negative feelings towards using the lecture method. According to P3Mj, the lecture method

was alright because, most of the time, lecturers gave out enough information. However, not all participants found the lecture method to have been good. P5Mj described the lecture method as effective with lecturers who were clear in their explanation of some concepts and ineffective with others. In similar circumstances, P9Mn indicated the following:

Some lecturers would come into the lecture theatre with a PowerPoint; they would run quickly through before you could read nicely on the slides. I understood better from those who were demonstrating on the board than those using PowerPoint, though I could understand to some extent those using slides because of their vivid explanations. I couldn't understand the other lecturers because they were too fast, or maybe I am a slow learner.

Besides the lecture method, participants also indicated laboratory or practical methodology, an evaluative pedagogy, as one of the methods utilised. The practical method involved students learning hands-on skills while being assessed as part of their continuous assessment. An example of practical skills learnt during practical sessions is map work, which involves students learning skills to understand and develop maps.

The study's findings established that laboratory or practical methodology was indicated to have been an intense and involving learning activity.

P1Mj, in her response, stated that; Lab work was very involving. Most people we started with stopped in the first year and branched off to other courses because of fear. Because of the labs, people left (sic) geography; I don't know what labs do to people.

The need to learn through laboratory or practical activities was reported to have discouraged some students from taking the subject and others from continuing with the subject. P1Mj and P3Mj explained how they were forewarned by senior students about the practical laboratory activities being perceived as hard and complicated. Furthermore, participant P4Mj described how labs were involved to the extent that students would run out of time and fail to finish the tasks on time.

P1Mj further stated the following:

At undergraduate, the teaching was very intense and very involving. The lecturers did their best to take us through, especially regarding labs and statistical parts.

The findings of the study from the analysis of the data further showed that most participants had challenges learning through fieldwork. Participants explained how a particular course aimed at equipping them with research skills was difficult to understand. Several participants described the content course in fieldwork to have been challenging because of inadequate guidance and insufficient time.

Some of the responses that were given supporting this finding include:

Personally, I did not benefit much in that area; I was not given good guidelines on how to write a project. I had to find out most of the things independently (P9Mn).

I think there was little guidance in the field project, we didn't know what to do. I found someone who was my senior who sat me down and showed me how you have to go about it (P2Mj).

In line with the use of fieldwork, P2Mj stated the following:

Yes, the teaching resources and teaching methods were quite alright (sic). We were able to understand and practise what we were doing (sic). The only challenge I faced was when we came to our field project.

Overall, the findings found that participants had varied experiences with different teaching methods. Most of the participants found the laboratory method and fieldwork to have been involving and challenging. However, some participants indicated that the teaching methods were good. In line with the findings, P8Mn stated the following:

The teaching methods were just alright (sic); the lecturers were not only using teacher exposition, but at least (sic) they were also using learner centred, where we would be asked questions and we would respond; I think that was good. Yes, I actually learnt a lot. Also, the research was practical.

In the same line of thought with P8Mn, P2Mj indicated the following:

The teaching resources and teaching methods were quite good. We were able to understand and actually practise what we were doing.

Like P8Mn and P2Mj, P4Mj also explained that the teaching methods used during teacher preparation were very good. The findings illuminate the interpretive paradigm which was adopted for this study.

A check through the programme structure of the University of Zambia using documents also showed that there was a core course referred to as Geography Field Course which was supposed to be taken by all student teachers in their third year.

Furthermore, geography teachers' engagement with methodology courses was considered important in this study. In establishing their experiences of the teacher preparation programme, participants' views of the methodology courses that directly connected with learning how to teach the subject were cardinal in this study. The findings showed that some geography teachers felt methodology courses were good although others felt some parts were insufficiently covered.

One of the participants (P8Mn) explained that he enjoyed learning the methodology course, which he further described as the anchor course for teacher preparation.

When asked to explain his experience with the methodology course, P8Mn stated the following:

The teaching method course was just fine; the lecturers were not only using teacher exposition, but at least they were also using learner-centred methods, where we would be asked questions, and we would respond; I think that was good.

In light of this, P1Mj had this to say:

The geography methods course was also done well because we were given practical work, like making geography lessons aids. The quality of the teaching was good.

However other participants had their own descriptions of their experiences with the methodology course. Some of the responses given are listed below;

P5Mj: There were too many content courses, and the methodology courses were too few. Practical experiences like peer teaching could have been allocated more time so students could do more peer teaching.

P6Mn seemed to agree with P5Mj when he also stated that:

The methodology is not much emphasised, they concentrate too much on the content.

P6Mn further explained how inadequate coverage of methodology made lesson delivery challenging, especially at the beginning of one's employment. In line with the two responses, P4Mj also indicated that she had challenges with utilising some teaching methods with certain topics.

In conclusion, the findings presented under Theme 3 have shown that fieldwork, lecture method and practical were the main teaching methods indicated by the participants. The findings revealed that fieldwork and laboratory or practical methods were considered to have been challenging by most participants. Furthermore, the study's findings revealed that some participants found their interaction with the methodology courses to have been interesting despite some considering learning through practical experiences to have been insufficient and needing more time.

5.5. Theme 4: Pre-service geography teachers' perspectives on the quality of geography teacher preparation

This theme corresponds with the third secondary research question, which aimed to establish geography teachers' views on the quality of geography teacher preparation programmes. Generally, the findings indicate that most participants felt adequately prepared for geography teaching in secondary schools because they had acquired more than enough geography content. However, the teacher preparation programme still had some gaps as further established.

Presentation of findings from the analysis of the data for this theme focused on the assessment of geography pedagogical content knowledge offered during teacher preparation, assessment of teaching and learning environment and the shortcomings of the teacher preparation programme.

To establish participants' experiences during their teacher preparation, assessment of geography content and pedagogy in the programme from the participants' point of view was deemed important. The table below shows the findings on participants' views on the teacher preparation programme.

Table 4: Pre-service geography teachers' examination of the teacher preparation programme

Sub-theme	Participant	Response
<p>I was adequately prepared for geography teaching in secondary school.</p>	P5Mj	<p><i>It provides a holistic approach to teacher training because of the information I acquired. There is a huge gap in that (sic) I acquired more information than what I am using. I feel like we were given enough content that would equip us to survive in any environment.</i></p>
	P6Mn	<p><i>I acquired more content than required, so the content from UNZA is adequate for geography teaching. You don't need four years to be a teacher.</i></p>
	P7Mn	<p><i>We were over-equipped; at one point, I wondered if the things we were learning at UNZA were too much for the type of job we are doing now.</i></p>
	P2Mj:	<p><i>The content is almost the same, and It does not change. It is only that at UNZA, sometimes we go (sic) into details. In physical geography, almost everything we learnt at UNZA is what we are teaching, and it has been easy for me to teach geography.</i></p>
	P1Mj	<p><i>I was adequately prepared for teaching and other programmes, such as climate change consultancy.</i></p>
	P9Mn	<p><i>I would say yes, though there are some hiccups here and there. There are many benefits as compared to the disadvantages. I would say I am well prepared.</i></p>
<p>Inadequately prepared for geography teaching in secondary schools</p>	P4Mj	<p><i>The biggest difference is that what we learned at UNZA was very advanced. You cannot teach it to a learner in class, and it does not apply to the syllabus either.</i></p>

According to the findings of the study, the majority of the geography teachers felt sufficiently prepared in geography content and pedagogy offered during their studies while a few felt inadequately prepared. The findings further revealed that even participants who studied fewer courses also felt they had acquired more than enough geography content to take up geography teaching in schools. The study's findings

further showed that participants considered their acquisition of more than enough content to have been an advantage.

It should also be noted that apart from a few participants indicating that they needed to be more adequately prepared for geography teaching, the participants also confirmed that they did not study geography during their senior secondary school. When one of the participants was further questioned on examples of courses she felt were irrelevant to the secondary school syllabus, P3Mj had this to say:

For courses like climatology or hydrology, I don't see the connection.

Contrary to the statement given by P3Mj, P5Mj stated the following when justifying why he selected physical geography courses like climatology and hydrology:

I picked elective courses that would help me understand certain topics better. Topics like hydrology and climatology, soil science and natural resource management have helped me understand weather and climate, the river system, and mass wasting.

As I said from third to fourth year it is different, first and second year we have those courses that we teach especially under physical geography but we start choosing courses like planning, hydrology or geology; it's a bit different from the content that we are teaching in schools (P1MJ).

P9Mn also had the following to say:

Some courses were irrelevant, for instance, (statistical methods in geography) a course where we were learning on linear progression; but here in school I have never taught that. So, I don't see the relation on why I should be learning linear progression and I don't see it anywhere in the text books. P9Mn.

The findings of the study show that some courses that some participants found irrelevant were seen as relevant by other participants. The findings reflect the assumption of the interpretive paradigm (See section 4.2 of Chapter 4 of this document).

Furthermore, the study showed that geography teachers' assessment of their teacher preparation programme was varied with most of the participants indicating they had been sufficiently prepared, while a few felt inadequately prepared.

From the analysis of the data, the findings of the study also revealed information on the quality of the teaching and learning environment offered during participants' undergraduate studies. In this study, teaching and learning environments included the physical and social environments. According to the study findings from geography teachers' responses, teaching and learning resources in a few courses were difficult to access. A few participants explained how it took more time to find certain subject content materials in certain courses. Some participants mentioned that there was need to improve the library by acquiring more books and other materials.

P6Mn explained how some materials were only sometimes available in some practical courses, which made it difficult to cover everything. Below is another response that supports the finding:

Apart from the Internet, not everything was accessible, like the (sic) book. When you go to the library, you find no books there. If there were books in the library, I think we could have lessened internet use (P3Mj).

In line with the finding on the inaccessibility of some resources in certain courses, P2Mj suggested that stocking more resources in the library on geography decks would be good.

On a positive note, which still qualifies the above finding, P2Mj indicated the following in his response:

When it comes to the resources, almost every component we had there (library), especially the physical one; when you talk of remote sensing, all the resources we needed could use the computers, the GPS and the like. We had almost everything we needed.

Apart from having difficulties accessing some resources, one participant (P7Mn) indicated that it took him some time to learn how to access geography resources.

Furthermore, physical space for learning was also considered to be of importance in this study. Although this was an important aspect, few participants made mention of it. According to the responses, some physical learning spaces could have been more conducive for learning, considering the number of students. Participants explained

that learning in such lecture rooms was made difficult. The following are participants' responses supporting this finding;

The environment was just fine; it was just that we were highly populated (sic), especially in lecture theatres (P6Mn).

I have just forgotten the lecture theatre; it was small, so we had to be packed (sic). Others would be making noise, so you failed to concentrate, so it used to make it challenging (P4Mj).

The room we used to learn geography from was a bit small; I have just forgotten the name of that venue. The room was small, so some people had to stand in the back because of the unavailability of sitting places (P9Mn).

It can be concluded from the responses of the two participants that the challenges faced were with specific lecture rooms and not all lecture rooms. The study's findings indicate that learning spaces were good, but learning was made difficult due to overcrowding in certain courses.

In addition, some geography teachers mentioned their interaction with geography lecturers to have been cardinal during their teacher preparation. It should be noted here that only some of the participants made mention of their interaction with their lecturers. The social environment was seen as an important factor that had an effect on the experiences of geography teachers. The participants reported more positive interactions with their lecturers.

Participants' responses that support this finding include the following:

I had no problem with any lecturer at UNZA; the relationship was alright, and that is why I was the class representative for most of those years (P8Mn).

In terms of interactions with the lecturers, it was okay; I really tried so hard to engage in a class by participating though it was difficult for them to know all of us by name because the classes were big (P9Mn).

I think I had very good lecturers (P1Mj).

Apart from the only positive interactions indicated by most of the participants, P6Mn had a more neutral response when it came to him describing his experiences with lecturers. He indicated the following when responding:

As usual, humans will remain humans; there are those you can easily interact with and those you just can't, no matter how good you are. You still find some grey areas here and there, so it was a 50/50 (sic) (P6Mn).

Geography teachers did not only end at describing their lecturers in terms of social interactions. Lecturers were also described according to the quality of teaching experienced by the geography teachers during teacher preparation. In line with this, most participants described their lecturers as good with lesson delivery. Some participants described their lecturers as *knowledgeable, had adequate content*, and very good at teaching. Below are the responses from geography teachers that support this finding:

My lecturers were very good, to be honest; they really helped me understand geography more than I thought I would (P4Mn).

The lecturers did their best to take us through, (sic) especially regarding labs and statistical parts. The quality of the Teaching was good (P1Mj).

Lesson delivery by lecturers was okay (P8Mn).

To be honest, they were fully baked (sic) (P7Mn).

I liked the way some lecturers were teaching, others I couldn't understand (P9Mn).

In line with this response, P9Mn further elaborated on how she did very well in a statistics course she had previously failed. The participant explained that the course became interesting when it was being taught by a different lecturer at the time of redoing (P9Mn).

From the findings above, most participants indicated that they had good student lecturer relationship, while a small number of participants said that their relationship with some lecturers was poor. However, one participant was neutral on the issue of the student-lecturer relationship. The responses are reflected in section 4.2 of this document which highlights the philosophy of the study.

Geography teachers' views on what they considered to have been shortcomings of the teacher preparation programme were also established during the study. Despite the majority of participants having felt adequately prepared during teacher preparation, some participants indicated what they had considered to have been

shortcomings of the programme. The findings of the study established that four participants felt human geography was not adequately covered in the teacher preparation programme. The findings came from both participants who had studied geography as their subject major and those who took the subject as their subject minor. Two of the participants who had studied geography as their subject minor explained that human geography was not well covered as compared to physical geography. P8Mn had this to say:

I feel the human geography was not dealt with adequately unless with the physical geography because that is the one we started with. We didn't finish the human geography maybe due to time.

In the same line of thought P7Mn stated the following:

From what I can remember I should have done more of physical geography than the human geography for the three years that I did geography. I feel for a minor student I did more of physical geography than the human geography.

As explained earlier, it was not only participants who took geography as their minor who felt human geography was not adequately covered. P2Mj indicated that there was a gap between human geography acquired during teacher preparation at UNZA and the human geography content in schools. Apart from responses from P2Mj, P4Mj also explained that some parts of human geography learnt during teacher preparation could not be applied in secondary school.

Apart from human geography being described as inadequate by some participants, other participants had other complaints with the teacher preparation programme. According to P5Mj, the programme had too many content courses and little time for practical experiences in methodology and some other practical courses. This was also echoed by P1MJ who indicated that some courses needed practical experiences but there was no time to do the practical part. P1Mj further gave an example of the urban geography course and explained how the application of knowledge became hard. He stated that urban geography was supposed to be a practical course, but it was only learnt through theory. P8Mn also explained how a topic called time zones in mathematical geography was inadequately covered

because the lecturer just gave the students questions and they were able to research on their own without actual teaching.

According to the findings, the field project was another content course that was highlighted to have given the majority of the participants' challenges. A number of participants described the content course of fieldwork to be difficult to understand and execute during their undergraduate studies. Participants indicated they had had challenges with the field project because of inadequate guidance and insufficient time for effective learning to have taken place. Examples of responses that support this finding include:

Personally, I did not benefit much in that area, I was not given good guidelines on how to write a project. I had to find out most of the things on my own (P9Mn).

I think there was little guide in field project, we didn't really know what to do. I found someone who was my senior who sat me down and showed me how you have to go about it (P2Mj).

When it came to the methodology courses, the study disclosed that two participants felt the methodology courses were not very emphasised considering that a lot of time was spent acquiring content courses during teacher preparation. The following is the response that came from P5Mj:

I think there are too many content courses and then the courses for methodology are just too few.

He further explained that practical experiences like peer teaching could have been allocated more time so students could do more peer teaching.

P6Mn seemed to agree with P5Mj when he stated that:

Methodology is not much emphasised; they concentrate too much on the content.

P6Mn further explained how this made lesson delivery challenging especially at the beginning of one's employment. In line with the response from P6Mn, it should also be noted that one participant who found the methodology courses to have been adequate during teacher preparation, indicated challenges with lesson delivery had been experienced when teaching in secondary school too (P4Mj).

The findings of the study further indicated that apart from the teaching methodology courses that participants took, they also did teaching practice or experience. As part of the teacher preparation programme, teaching practice involved student teachers teaching in a formal school setup. With regards to teaching practice, the findings of the study show that most of the participants who did their teaching practice for six weeks found it to have been inadequate and those who did their teaching experience for about twelve weeks found it adequate. It was established that participants who graduated in the recent past did their teaching practice for a longer period than those who graduated years earlier.

Furthermore, the findings of the study revealed participants' suggestions on how the programme could be improved in consideration of the shortcomings. The study's findings disclosed that even though most participants felt adequately prepared to teach in secondary schools, the majority suggested that some aspects of the teacher preparation programme could be improved. The findings indicate that most participants felt the teacher preparation programme could be improved by focusing more on content related to the senior secondary geography syllabus. P1Mj suggested that geography content should be taught in the School of Education so that students could be taught courses they are expected to teach. P1Mj further indicated that she spoke for others, considering that not everyone understood the general idea or picture. This statement was also echoed by P4Mj, who suggested that the teacher preparation programme should include more courses that involve students needing to investigate so that it is more practical. Below are other responses that support the finding:

I think the teacher preparation programme should focus more on training teachers. The geography we learn is too wide, and there is little time allocated to developing the teacher (P5Mj).

Since they are training teachers, they should add more information that teachers would meet as they start teaching (P3Mj).

Aside from the above finding, slightly less than half of the participants suggested that the programme should improve the practical-based learning of students. According to P6Mn, and P5MJ, there was a need to improve student engagement with methodology and the practical aspect of learning during teacher preparation. In support of his response, P6Mn had this to say:

They (UNZA lecturers) concentrate too much on the content. Then the methodology for delivering the subject when you get into the field (sic) becomes a challenge.

The two participants suggested that methodology should be allocated more time and experiential learning, like peer teaching in methodology courses, should start in the early years of students' training.

The study's findings further revealed that some participants suggested that the required physical and human geography content courses should be balanced in the teacher preparation programme. This response came from participants who felt they took more of one component of geography than the other, which disadvantaged them. Responses that support this finding include:

P4Mj: Like my experience, I only went the human geography way (sic), maybe if I was advised to do both so that (sic) I could balance human and physical geography electives, I would be giving appropriate knowledge to learners. That could have been helpful.

P7Mn: For me, as a minor student, maybe just if there are those (sic) compulsory courses, they should be balanced more because, from what I can remember, I should have done more physical geography than human geography for the two years that I did geography.

In conclusion, the findings established that most participants felt adequately prepared by their teacher preparation programme to teach geography in secondary schools, while a few participants felt inadequately prepared for teaching. Most participants felt they had acquired too many content courses compared to the content that was required in secondary school while some felt that methodology courses were insufficiently covered. Findings also showed that participants felt that the content taught at university level needed to be aligned with secondary school, while some participants suggested that physical and human geography courses needed to be balanced and learning through practical experiences increased.

5.6. Theme 5: Transition from university teacher preparation to secondary school geography teaching

This chapter of the study ends with a presentation of findings on Theme 5, which aimed to establish the experience of geography teachers while transitioning from being students to being teachers of geography in schools.

Therefore, here is the presentation of findings for Theme 5 on geography content acquired, participants' understanding of pedagogy and curricula and finally participants' self-evaluation of their teaching of the subject.

The study revealed that most participants felt that the number of geography content courses acquired during teacher preparation helped them with teaching the subject in schools. The majority of the participants felt that those who took more geography content and methodology courses (subject major) had an advantage when teaching geography in schools compared to those who took fewer number of courses (subject minor). The sentiments came from both participants who had studied geography as their subject major and those who took it as their minor. Some participants further explained that differences between the teachings of the two groups could arise from the depth of knowledge acquired during teacher preparation. The general feeling from P1Mj, P5Mj, P6 Mn and P7Mn was that those who studied particular courses others did not take would have in-depth knowledge and, therefore, could teach such concepts better. P5Mj further gave an example of how a course called hydrology, which could not be taken by anyone who studied geography as their minor, enabled him to have a deeper understanding of how to teach the river system. P6Mn and P8Mn explained that the difference in teaching could be minimal, considering that even those who took geography as a minor had studied above the requirement for secondary teaching. P6Mn further qualified his statement with the following words:

One who does a major (sic) gives has an advantage in the way they maybe explaining concepts. Because there are certain courses they did (Sic) that I didn't and need to be taught in secondary school. Maybe they will have a better explanation of certain things (sic) or certain courses.

In support of the above finding, P7Mn had the following to say in response to his experiences in teaching geography with his colleagues who took the subject as their major:

I can give an example of the colleagues I consult with on certain things that I do not understand. I have come to realise that their reasoning makes sense. Even when they are not sure about a particular concept, especially when it comes to physical geography, their reasoning would still make sense. It shows that someone has a strong background in that particular subject.

In line with the rest, P9Mn supported the finding with the following statement: *I think if I had taken more geography courses, I was going to be more exposed to more skills in teaching geography. There are certain courses that I didn't do, which I think I should have done, like urban planning.*

However, it should also be noted that the study's findings also revealed that other participants felt the quality of teaching in school was not related to the number of geography courses that one studied during their undergraduate degree. This finding came from participants who had studied geography as their subject major and had no background in senior secondary school geography. This finding came from responses from P2Mj, P3Mj and P4Mj, who had different reasons to support their responses. According to P4Mj, whether one studied geography as their major or minor, teaching geography would be the same since teachers are given the same information and are expected to apply it to the learners. P3Mj and P4mj had the following to say:

On that one, as I said initially, what we were being taught that side (UNZA) is different from what we meet when we come to the secondary school setup (P3mj).

From my experience number of content courses one studied does not influence teaching. For example, I have a friend who did geography as her minor and she doesn't have challenges as much I do (P4MJ).

It should be noted that the participants who felt there was no difference in teaching between those who studied more geography courses than the others were also those who felt inadequately prepared had no background in senior secondary geography.

In this study, geography teachers' understanding of pedagogy and curricular issues was deemed cardinal. Geography teachers' understanding of pedagogy and

curricular issues also gave an insight into knowledge acquired during teacher preparation. The findings show that participants employed teaching methods like the lecture method, group discussion and question and answer, and fieldwork. The study's findings further disclosed that most participants could explain factors influencing their teaching methods. Some participants explained that the nature of the topic influenced their choice of teaching methods, while others pointed to learners' background as another determining factor. The study established that participants had different ways of describing pedagogies utilised and reasons for doing so. According to P7Mn and P6Mn, applying certain teaching methods, especially learner-centred methods involving learners from rural areas with significant communication challenges, was difficult, making the lecturer method more suitable.

P3Mj, P8Mn and P6Mn explained that they used the lecturer method when dealing with topics that learners needed to become more familiar with, like topics in physical geography.

P3Mj further explained that it was easy to use group discussion with topics in human geography because learners had prior experiences that made it easy to participate. P1Mj also indicated that she utilised question and answer when teaching Physical geography to give the learners hands-on experiences.

In support of the finding, P8Mn had this to say:

Most of the topics in physical geography go for teacher exposition, like mathematical geography and map reading. These courses require teacher exposition because learners are new, just coming from Grade 9 with little understanding of the subject. However, after two or three lessons, you can introduce learner-centred methods where you involve questions (Sic) and then the learners can do it independently.

Other explanations given by some participants showed a flawed understanding of teaching methods. For example, P1Mj indicated that group discussion was the commonest method she utilised while pointing out she had avoided the lecture method. P2Mj also explained that he utilised teacher exposition when teaching human geography because it was easy to understand. Participant P2Mj had to say:

For the other components, like human geography, I think teacher exposition is fine to use because you can give them notes and then come to explain. It's alright (sic) for them to understand.

It is clear from the responses that participants had varied understandings of pedagogies employed in teaching. Some participants showed a good understanding of their pedagogical approaches compared to other responses that showed a flawed understanding of pedagogical approaches.

Furthermore, findings from the secondary geography syllabus showed that that teacher exposition, group discussion, educational tours to relevant geographical sites, and question and answers, were some of the suggested methodologies for geography teaching in secondary schools. Learning and teaching aids have also been highlighted as amongst the suggested methodologies. While the document highlights some of the recommended teaching methods, it also encourages geography teachers not to stick to the methods suggested.

In addition, in order to better understand participants' teaching, participants were also requested to assess their own teaching in secondary schools. The findings of the study revealed that most of the participants felt better at teaching either physical geography or human geography. According to the findings, the highest mark a participant gave themselves for teaching physical geography was 100%, while the lowest participant graded themselves as 70 %. On the other hand, the highest mark scored in human geography was 95%, and the lowest was 70%. Slightly more participants scored their confidence levels higher in teaching human geography than physical geography. The findings further revealed that only one participant who had studied geography had the same confidence level in teaching physical and human geography.

Table 5: Self-evaluation of geography teaching in schools

Geography teacher	Background in Senior Secondary Geography	Physical geography (%)	Human geography (%)
P1MJ	Yes	80	100
P2MJ	No	90	70
P3MJ	No	70	80
P4MJ	No	75	90
P5MJ	Yes	95	75
P6MN	Yes	90	90
P7MN	Yes	70	90
P8MN	Yes	100	90
P9MN	Yes	85	95

The study's findings revealed that even after experiencing teaching in secondary school, most participants had more confidence in teaching the geography component they enjoyed learning during their undergraduate studies. However, this was only the case for some participants; P7Mn responded differently to the majority. P7Mn indicated he had enjoyed learning physical geography during his undergraduate teacher preparation. In contrast, participant (P7Mn) graded their confidence level in teaching physical geography content in secondary school to have been at 70% compared to 90% in human geography. Participant P7Mn said:

I think physical geography, for nearly all the five years I have taught, I can safely say that it is much more challenging as compared to human geography; if I were to rate out of ten, I would rate myself up to about seven comparison to human geography. Human geography, I would rate myself out of 10 at 9; it is straightforward for me, and I fully understand that one.

The findings of this study also established that geography teachers had some challenges in teaching some topics in geography, especially physical geography. The following are some of the responses given by the participants;

I will be very honest I am very conversant 101% in human geography but when I am teaching physical geography I have to study prior to that for me to deliver perfectly than I would in human geography. The challenge comes to topics like mathematical geography (P1Mj).

I have challenges with map reading. Sometimes you can understand it but how to convert (sic) it, how to deliver to the class is a bit challenging (P2Mj).

There is another geography colleague who usually helps me when I have challenges understanding certain topics. I do not enjoy teaching topics like river processes (P4Mj).

The first two years I was here (secondary school) I came across certain teachers who used strategies. They would give me component of physical geography to teach for them and once I was done I handed over the class to them so that they can do the human part; I think that was my Head of Department. At first, I thought we were just dividing work but little did I know that she never enjoyed physical geography she considered it to be very difficult (P7Mn).

The part that I don't enjoy that much is faulting and folding is kind of confusing for the pupils (P9Mn).

Apart from highlighting some of the challenging topics participants faced in teaching the subject. Participants also explained how they overcame their challenges. Others asked for help from other geography teachers in teaching difficult concepts while others employed the use of videos. Some of the responses given are listed below;

I would go to my Head of Department because he is very conversant in mathematical geography, we would have a one-on-one discussion on the topic then I would go through the work by myself and then deliver the lesson (P1Mj).

Sometimes I even consult my friends. Those I was with during my undergraduate at the University of Zambia (P2Mj).

I sometimes get help from geography teachers' social media groups. We have a provincial social media group for geography teachers, with some teachers who have taught the subject for a long time. Long-serving geography teachers

share their knowledge and insights with us who have just been employed (P5Mj).

I give them a topic then I will give them the questions on that topic to say, 'Gentlemen, go and research or can you have an idea,' then I will... I ... I sometimes run handouts (P6Mn).

I have come to find it very useful downloading some videos on YouTube and then projecting them on the projector (P7Mn).

When I started teaching I still had a bit of a challenge with map reading, then I said there is no way I could be failing. I approached my HOD about the matter and he was very willing to help me (P9Mn)

For now, I have no challenges but it is the other way round, other geography teachers get help from me. Like map work, we are two teachers who manage to teach it (P8Mn)

The only thing that I have found working out for me is when I am not very confident about a certain topic, I would ask around from my friends for one who is comfortable to come and teach as I observe from that teacher. At times I would just ask for help when preparing the lesson (P9Mn).

The findings of the study indicate that geography teachers had challenges in teaching some topics, especially in physical geography that made them seek help from other geography teachers and also used other methods. The geography syllabus was consulted to help further understand the content that geography teachers were referring to in their discussions.

Apart from considering geography teachers' experiences in teaching geography in senior secondary, the researcher also consulted the geography syllabus to relate the teachers' experiences with the topics taught. According to the findings of the study, the secondary school syllabus content has topics that are supposed to be taught in three years, from Grade 10 to Grade 12.

The geography topics teachers are expected to teach to Grade 10s are mainly based on physical geography content. Geography teachers are expected to be competent in teaching topics that include the solar system, Earth's movements, weathering and

mass wasting, river processes, weather and climate, vegetation and natural environmental hazards. Furthermore, geography teachers are expected to have acquired knowledge and skills in map work that they would also need to teach to Grade 10s.

Geography content taught to Grade 11s includes farming, fuel and energy, and world population. Grade 11 topics are fewer than those taught in Grades 10 and 12. Most of the content in Grade 11 is human geography, while Grade 10 is physical geography content.

Lastly, geography teachers are expected to teach Grade 12 topics like agriculture, forestry, wildlife and tourism, mining, power and energy, transport and communication, and processing and manufacturing. In Grade 12, the topics studied focus on understanding Zambian content, and knowledge of the sub-region is also covered. Information on mining, transport and communication, and processing and manufacturing in the sub-region is taught by geography teachers.

The study's findings have shown that the senior secondary geography syllabus had physical and human geography topics that geography teachers were expected to teach in secondary schools. The findings from the geography syllabus have shown that geography teachers had challenges teaching physical geography content courses, like map work and weathering.

Knowledge of geography teachers' teaching of the subject in secondary school was seen as another way that the teacher preparation experiences could be assessed. This study revealed that geography teachers had different kinds of knowledge about their learners which influenced their teaching. Participants indicated different kinds of knowledge their learners had with regards to learners' background, cognitive abilities and attitudes towards the subject being the common ones described.

Findings of the study indicate that geography teachers had knowledge of their learners' cognitive abilities which influenced their teaching. Some of the responses that support this finding include:

I think for me the greatest challenge for these learners when you are delivering the geography component is that they do not know how to read and write. And for them to understand it takes a lot. P7Mn

When preparing for my lesson, I try to think of the prior knowledge of what they already know so that I build on that. Mostly you find that these learners watch these geographical channels. P2Mj

P6Mn: The issue is that learners from rural areas ... most of them are slow learners because of the background. As a teacher you need to know that most of the learners even if they don't understand they will not ask.

P9Mn: There are some learners who are slow learners and there are some who are fast learners. So, what I do when I am teaching and I want to access my learners through question and answer; I can see those who when I ask a question they are quick to answer. I will be able to conclude that these ones are getting what I am teaching and for the other group I will find a way of helping them.

In this study, it was cardinal to establish participants' assessment of learners' engagement with geography content knowledge in order to understand participants' understanding of geography learning. The findings of the study established that most of the geography learners had difficulties understanding physical geography content according to the participants. This finding was reported by all the participants who indicated that geography learners had difficulties with understanding physical geography content like physical geography concepts, mathematical geography, map-reading and field projects. This finding is in line with most participants' indication that human geography was easier to understand than the physical geography component.

In addition, the findings of the study also revealed that geography teachers had knowledge of learners' attitudes towards the subject. Some explanations given by some participants confirmed that they had knowledge of learners' attitudes towards the subject that affected learning. According to P4Mj, some learners are passionate about geography but get affected by the notion of the subject being hard that they get from others which easily affects them before seeing what the teacher has to offer. In line with the above finding, P5Mj had this to say:

The attitude of most of the learners towards the subject from inception thinks it's a very difficult subject.

This finding was also supported by P3Mj who explained that most of her pupils had a negative attitude towards the subject to the extent that they did not bother to get help even when free extra help was offered. The findings have shown that geography teachers had knowledge of learners' attitude towards the subject which made them work extra hard in certain instances to try and encourage the discouraged learners.

Apart from being knowledgeable about learners' attitudes and cognitive abilities, the findings of the study also indicated that geography teachers had knowledge of learners' social backgrounds which affected the teaching and learning process. The findings revealed that some geography pupils had more challenges with learning due to differences in social backgrounds. Participants pointed out they had more challenges with learners in rural areas due to communication challenges.

P6Mn, P7Mn and P8Mn indicated that learners in the rural areas were slow learners, mostly because they struggled with reading and writing even in secondary school because of the environment they were brought up in. The following response from P8Mn as he compared two classes in a rural boarding school further explains the finding:

The Bs are slow learners whilst the Cs are fast learners because the Bs most of them are from the local setup here and the Cs are coming from urban areas. Maybe it is because they easily understand the communication that is English they don't have a problem with. P8Mn.

In her explanation, P1Mj also explained how social background and home environment of the learners affected teaching and learning. She explained that she knew her learners' home environments and their challenges which influenced her teaching.

In conclusion, the findings of the study under Theme 5 showed that most participants considered those who took geography as their subject major to have had an advantage when teaching particular courses, they studied as their electives over those who took the subject as their minor. The findings also disclosed that participants had varied understandings of teaching methods and how they are utilised in teaching. Some participants showed a good understanding of their pedagogical approaches compared to some participants who showed poor

understanding of methods. When it came to self-evaluation of their own teaching, the findings established that most geography teachers were more confident at teaching one component of geography than the other. A few numbers of geography teachers felt confident in teaching both physical and human geography content. The findings show that the responses were varied and in line with the interpretivist paradigm which guided this study. It is also clear from the findings above that geography teachers had knowledge of their learners and how that affected their learning.

5.7. Conclusion

Chapter 5 presented the study's findings on the undergraduate teacher preparation experiences of geography teachers trained at the University of Zambia. The data were collected through interviews with nine geography teachers and further analysed thematically. Data was collected from geography teachers who had either studied the subject as their major or those who had studied the subject as their minor. The findings revealed that geography teachers selected geography as their teaching subject and as a subject major or minor because of personal interest in the subject and others out of convenience. According to the findings, participants enjoyed learning either Physical geography or Human geography, with those who took the subject as their minor indicating they had enjoyed physical geography more than those who took it as a major. The findings further show that only some geography teachers had a background in senior secondary geography. It is clear from the findings that most of the geography teachers felt adequately prepared to teach geography in secondary schools after their undergraduate teacher preparation. However, the study also revealed that two participants with no background in senior secondary geography felt inadequately prepared because they found the content in secondary school very different from the content acquired during teacher preparation. Lastly, the study reveals that geography teachers felt that those who studied the subject as their major had an advantage when teaching particular courses, which they had studied as their elective courses, over those who took the subject as their minor. The next chapter, which discusses findings, provides an in-depth analysis that utilises the literature review and the theoretical framework underpinning the study to understand the research findings and their implications.

CHAPTER 6

DISCUSSION OF FINDINGS

6.1. Introduction

This chapter discusses the findings presented in Chapter 5. The discussion of findings validates or discounts the findings from interviews based on the literature reviewed and the theoretical framework discussed in Chapters 2 and 3. Following the same outline as in Chapter 5, this chapter is presented under the same themes established. Therefore, the discussion will be done in line with the following themes: pre-service geography teachers' background with the subject, geography teachers' engagement with geography content knowledge, geography teachers' engagement with pedagogy, assessment of the geography teacher education programme, understanding of geography teaching in secondary school and the influence of the teacher preparation programme on teaching in secondary school. It should be noted that the discussion of findings addressed the research questions of the study.

6.2. Theme 1: why pre-service geography teachers chose geography as their teaching subject.

Pre-service geography teachers' background in geography was important in establishing their experiences during undergraduate teacher preparation. Understanding of geography teachers' prior knowledge in secondary school geography content was considered important in establishing their experiences. These findings established that 6 geography teachers studied geography during their senior secondary education, while 3 had no background in senior secondary geography. Geography teachers indicated that the first year of their study was challenging, especially for those with no background in senior secondary school geography. Similarly, a study by Larangeira and van der Merwe (2016) discovered that 31% of the first-year geography student teachers enrolled in a map work course needed to gain a background in senior secondary geography. Findings showed that geography student teachers struggled with university map work when 60% of the students could not achieve a 50% mark in their final examination (Larangeira & van der Merwe, 2016). A study by Bowlick and Kolden (2013) revealed that students with a background in geography coursework self-perceived greater geographic skills and

increased those skills through the course more than those with no previous engagement with geography coursework. Geography teachers with no foundation in secondary geography found the subject more advanced because their transition in knowledge was not done in logical progression as expected in the education system. Each level of education is an important basis for transitioning to the next level with fewer challenges. However, this was not the case for a few geography teachers who missed senior secondary geography, which was a disadvantage for them. Prior knowledge is essential for effective teaching and learning in any education set-up. This study agrees with the literature which emphasises having good senior secondary geography content at the tertiary level for effective secondary teaching (Bonnet, 2003; Dolan et al., 2014; Larangeira & van der Merwe, 2016). Student teachers with prior knowledge in senior secondary geography are more likely to relate easily to advanced geography content because of their previous experiences with the content. Student teachers' prior experiences with their senior secondary school geography could also be related to their selection of the subject as one of their teaching subjects, considering that experience has a bearing on decision-making in people's lives.

This study also revealed that most geography teachers selected geography as one of their teaching subjects because of personal interest in the subject matter. Personal interest in the subject knowledge was also the main reason most selected it as their major or minor (see section 5.3.2 in Chapter 5 of this thesis). The selection of geography as a teaching subject was an important career choice that student teachers were expected to make. Considering that the selection of geography as a teaching subject meant it was a subject they would be teaching in employment and, most likely, for the rest of their lives, interest in the subject or a positive feeling towards the subject would be more meaningful and expected. Pre-service geography teachers were more than likely to select a teaching subject they felt comfortable with in knowledge acquisition, with fewer challenges considering prior engagement with the subject. Geography teachers' self-efficacy beliefs played a role in their selection of geography as a teaching subject, mainly emanating from their mastery experience with the subject during their secondary school level. On the contrary, some geography teachers who had no background in senior secondary geography also had an interest in the subject which made them select the subject as their teaching subject. All the geography teachers with no mastery experience with the subject at

the senior secondary school level had an interest in the subject to select it as their major. This finding shows that mastery experience may not have been the main reason for selecting the subject. Pajares (1997) suggests that students select their subject majors and career paths depending on their competency levels in a particular subject. Though the statement was true for most of the participants in this study, it was still not a true picture for all participants; a few participants selected the subject for reasons other than interest and competency. Of interest was one participant who had avoided studying geography in secondary school because he/she/they considered it difficult but decided to study it at university level after gaining the courage and interest to face his/her/their fears. This geography teacher's self-efficacy had improved through vicarious experiences, and not through mastery experience which is more common.

Furthermore, Ferretti (2007) established that the amount of coursework had no major influence on students' choice of geography at A-level, but students' confidence had an influence. However, the findings contradict other studies in Malaysia and Ghana that revealed that parents influenced students' choice of study and attitudes towards the subject (Khoo et al., 2015; Opoku et al., 2021). Students' interest in the subject is more significant than parental influence. Students interested in the subject are likely to be more motivated than those with other reasons for selecting the subject, which may further lead to negative attitudes. Kidman (2017) cautions against students enrolling in the subject because of parental influence that may lead to conformity attitudes.

Coupled with interest in the subject, in this study, geography teachers selected geography because of the future career prospects offered that were not limited to teaching despite being enrolled in a teacher preparation programme. Babacan (2018) also highlights pre-service geography teachers considering geography education to have significant employment prospects. Piróg (2018) explains that the decline in the prestige of teaching and saturation in education has made students more interested in other career prospects for geography rather than teaching. According to the literature, geography students have an interest in the subject because of the wide range of future career prospects that it offers due to its broad nature (Babacan, 2018; Opoku et al., 2021; Piróg, 2018).

On the other hand, this study also established that some geography teachers selected the subject not so much because of interest but because they found it the most convenient of the available choices. In this study, a few geography teachers selected the subject because of their positive prior experiences in senior secondary geography, while others were influenced by advice from senior students. In this case, the findings show that geography teachers were influenced by three of the four experiences highlighted by Bandura (1977): self-efficacy beliefs, mastery experiences, vicarious experiences and verbal persuasion (see section 3.5 of Chapter 3 of this thesis). Vicarious experiences were noted from senior students' influence that helped some geography teachers select the subject. Some geography teachers who were initially warned against taking a challenging subject such as geography explained that they selected the subject after seeing that other senior students had managed to pass it.

Moreover, it was also established that senior students' verbal persuasion influenced a few participants to select geography as their teaching subject and as their major or minor. One participant, who had an interest in geography and wanted to study it as their major, ended up studying it as their minor after being influenced by a senior student who considered geography difficult, a decision the participant regretted. Another participant selected geography as their major after finding their preferred major, mathematics, to have been difficult. Selecting the subject out of convenience meant that some students took the subject motivated by future career prospects the subject offered without having an interest in the content of the subject or in teaching the subject. Some geography teachers who selected the subject out of convenience enjoyed other subjects more than geography even after teacher preparation. Piróg (2018) also revealed that future career prospects were a more important factor for students selecting a degree than students having an interest in the subject matter. According to Park and Huynh (2015), attitude towards the subject is affected by students' reasons for selecting the subject which may further affect performance. It is clear that without personal interest in the subject matter, a university education becomes more of a foundation towards joining the labour market than a place for pursuing one's interest (Piróg, 2018). Stewart (2022) explains that a lack of passion from geography teachers in schools will negatively influence learners when pursuing further studies at the tertiary level.

Furthermore, the varied reasons for selecting the subject, which also accounts for differences in experiences, align with the interpretive paradigm, which highlights multiple realities as the basis of life. Some geography teachers' self-efficacy beliefs were not stable as they were affected by others' suggestions. Verbal persuasion in the self-efficacy theory did not work positively but also negatively affected some geography teachers' decision-making. What is clear is that geography education needs to find ways of focusing on enrolling student teachers who are enthusiastic about the subject to have effective teaching of the subject in schools and keep the subject alive.

This study agrees with Ferretti's (2007) findings that revealed that students select geography for various reasons, some of which are more positive than others. The findings of this study align with the literature, which highlights geography being selected as a subject of choice or as a teaching subject because of career prospects not limited to interest in teaching the subject (Ferretti, 2007; Piróg, 2018; Stewart, 2022). However, what is unique in this study is that some geography teachers selected the subject without interest in career prospects but out of convenience and verbal persuasion from others. Differences in interest and motivation puts students who study the subject as their minor at risk of performing poorly compared to others (Park & Huynh, 2015). Some students' interest in teaching the subject was still considered second best compared to other subjects even after pursuing and passing the subject in teacher preparation.

This study established that even geography teachers who had no mastery experience with senior secondary geography had high self-efficacy that made them select the subject as their major teaching subject. Geography teachers selected the subject as their teaching subject with varying self-efficacy beliefs, which were influenced by mastery experiences, vicarious experiences and/or verbal persuasion from others in certain circumstances. Geography teaching and learning for secondary and tertiary education will be more effective and achieve better results when passion and interest are the motivating factors behind one's subject selection. Geography risks being taught by trained but unenthusiastic teachers when taught by those not interested in the subject. Geography teachers' interest in the subject matter knowledge is crucial to developing the discipline of geography education.

6.3. Theme 2: Geography teachers' engagement with geography content knowledge.

According to the findings of this study from both geography teachers and the University of Zambia course structure for geography student teachers, undergraduate geography student teachers were expected to study physical and human geography courses as both core courses and electives. However, only geography teachers who studied the subject as their major were required to select elective geography courses in their fourth year, while those who studied the subject as their minor completed their study of the subject at the end of their third year of study. Shulman's (1987) PCK theory highlights subject matter knowledge as one cardinal knowledge type teachers should acquire during their preparation (see section 3.4 in Chapter 3 of this thesis). Response from the geography teachers and study of the course structure and syllabus documents revealed that university content courses acquired were broad and in-depth compared to geography content taught in secondary school. More than fifteen elective courses were offered to fourth-year students who took the subject as their major (UNZA, 2020). Similarly, geography content at the university level was described as an in-depth subject with plenty of topics, some of which were not learned at the school level (Ferreira, 2018).

In acquiring content, geography teachers indicated they enjoyed learning physical or human geography content. More geography teachers with no foundation in senior secondary geography enjoyed human rather than physical geography. In contrast, those with prior knowledge of secondary school geography enjoyed physical geography. The content of the senior secondary geography syllabus revealed that most of the topics that are learnt by Grade 10s are physical geography content which is covered for the whole year (Curriculum Development Centre, 2013). This therefore means that those who had a background in secondary geography had a good foundation in physical geography which made it easy to understand what seemed abstract to those who had no background. The majority considered physical geography broad and challenging, which may account for those without a foundation in the subject enjoying human geography more than physical geography. The findings are supported by literature, which has also shown that lack of prior content knowledge or little prior knowledge affects learning (Bowlick & Kolden, 2013; Larangeira & van der Merwe, 2016).

The selection of elective courses was based on geography teachers' preferred component, which was for those who studied the subject as a major as they were the only ones required to select electives in their fourth year. The majority selected human geography courses as their electives. On the contrary, a study by Selmes et al. (2022) confirmed students' interest in physical geography when their study indicated that slightly more undergraduates enrolled in physical/environmental courses than those who studied human geography. Physical geography content was perceived to be more difficult and abstract than human geography, even by those who enjoyed learning physical geography. On the other hand, most participants described human geography content courses as easy to understand. In line with the findings, Harte and Reitano (2015) also revealed that geography teachers had more confidence in either physical or human geography. The varied experiences geography teachers had with the two components of geography indicate that reality is subjective and depends on individual experiences.

The findings support Fischer (2022) and Opoku et al. (2021), whose studies established that physical geography was perceived to be more difficult than human geography. Physical geography has been described as a geography component that contains broad abstract concepts, more scientific explanations, and some mathematical data that seem more challenging to understand (Fischer, 2022; Opoku et al., 2021). Fischer (2022) revealed that novice teachers seemed to have been better prepared in human geography while they perceived challenges in physiogeography, which is similar to physical geography. In this study, geography teachers' interest in physical and human geography courses was related to their self-efficacy beliefs. Participants enjoyed components they felt more competent in than components they found difficult to comprehend. Furthermore, participants' selection of elective courses was based on their mastery experiences with the two components during their first to third year of teacher preparation which exposed them to both physical and human geography courses. Through mastery experiences participants were able to tell, which components would be easier and interesting for them to select.

Physical geography proved to be more abstract and difficult to understand than human geography considering that the content is also science-based. Furthermore, a lack of foundation in senior secondary geography could have made geography teachers perceive physical geography as difficult, considering there was no logical transition in understanding content from senior secondary to university geography. Stewart (2022) explains that learners without a good foundation will need help to see the relevance of physical geography, considering that it is more abstract. The importance of prior knowledge in aiding understanding of more advanced concepts cannot be ignored, if effective learning is to take place in schools and institutions of higher learning.

Overall, there were no unique differences in geography teachers' experience with geography content between those who studied the subject as their major and those who studied it as their minor. This study has revealed that most geography teachers enjoyed engaging in physical or human geography content, and very few enjoyed learning both components the same way. The findings imply that the fact that student teachers find one geography component more enjoyable may influence their knowledge acquisition in both positive and negative ways. Student teachers will likely become more competent in the geography component they find more interesting, which could affect the quality of teaching in schools for those components not enjoyed. This study has shown that geography teachers need a foundation in senior secondary geography to have higher self-efficacy in abstract concepts (physical geography) than in human geography. This study's findings reveal that most geography teachers who had mastery experiences with senior secondary geography content knowledge enjoyed physical geography. The findings highlight the need for institutions of higher learning to assist student teachers to be competent and improve their self-efficacy in physical and human geography components during teacher preparation.

Geography teachers were inclined to select courses they had high self-efficacy in while avoiding challenging courses, forgetting they would still be expected to teach topics they avoided upon employment. Geography teachers need to improve their self-efficacy in challenging topics by interacting more with such content through mastery experience and verbal persuasion from teacher educators. Park and Huynh

(2015) explain that focusing on the motivational needs of student teachers will ensure effective teaching and learning takes place in geography education. The structure of the University of Zambia, which allows student teachers who study the subject as their major to select elective courses of their choice in the fourth year, perpetuates student teachers' avoidance of components they find difficult. Geography teachers are expected to be competent and have high self-efficacy in physical and human geography components if effective teaching is to occur in secondary schools. Student teachers need more encouragement to enrol in physical geography content courses they consider challenging. The geography teacher preparation programme needs to find ways of ensuring student teachers' self-efficacy beliefs are improved through mastery experience by the time they graduate. The programme should focus on ensuring student teachers interact more with challenging concepts.

6.4. Theme 3: Geography teachers' engagement with pedagogy

Like many other universities, geography teacher preparation at the University of Zambia involves acquiring theoretical knowledge and practical experiences. Different pedagogical approaches are employed in disseminating subject matter from teacher educators to student teachers. Teaching methods employed by the geography lecturers at the University of Zambia included lecture methods, practical demonstrations, question and answer and fieldwork. In line with the findings, Dhakal (2019) highlighted question and answer, lecture method, and fieldwork as methods used to teach geography.

The findings of this study revealed that the lecture method was the most common method used by lecturers at the University of Zambia. The lecture method was common because it was convenient for lecturers to reach the high number of students enrolled in most courses, and it was cost-effective in using the allocated time for each lesson. Since each course was allocated three hours a week, more content could be shared using the lecture method than other methods. Similarly, Opoku et al. (2021) indicated that teachers often utilised the lecture method in their study. The lecture method requires a teacher or, in this case, a lecturer to transfer relevant information to the learners or students. Other literature relates teacher-centred methods like the lecture method with negative experiences (Kidman, 2017),

while learner-centred methods are more related with positive experiences (Dolan et al., 2014).

This study revealed that the majority of the geography teachers found the use of the lecture method to have been adequate teacher preparation. However, it was reported that, in some instances, a few students needed help with how some lecturers used the method. The findings align with the interpretive paradigm, which indicates that experience is subjective to individuals (Hammersley, 2013; Lan, 2018; Willis, 2007). The lecture method, which was deemed adequate by the majority of the students, was still seen to have been challenging by a few, especially when used by some teacher educators. Geography teachers are expected to acquire knowledge of pedagogies for teaching and learning; this is more effective when experience is involved.

The findings of this study show that geography teachers had positive experiences with the lecture method, which contradicts other studies that relate effective teaching and more positive learning experiences with learner-centred methods (Dolan et al., 2014; Kidman, 2017; Opoku et al., 2021). Opoku et al. (2021) involved senior secondary students, while this study involved university graduates, and this may explain the positive attitudes of the present study towards the lecture method because students were at a mature age by the time they were enrolled at the university level. Older students can appreciate the lecture method more because of their improved level of understanding and maturity.

The practical or laboratory method was another method used by geography lecturers at the University of Zambia. The practical or laboratory method involved learning hands-on skills that were assessed as part of continuous assessment. This method is similar to the lab component that Bowlick & Kolden (2013) explain as a method focused on the learner's acquisition of knowledge through hands-on supplemental learning in physical geography. An example of practical skills learnt during practical sessions was map-work, which involves students learning skills to understand and create maps. The practical or laboratory method was described by most of the geography teachers as being involving and challenging. What made things worse was that the content learned through this method was examined and graded as part of a continuous assessment. It was reported that some students with low self-efficacy in learning through this method dropped out of the subject and enrolled in

other subjects after finding it too challenging. Participants also reported that some senior students often pointed to this method as a reason for discouraging students who needed clarification about selecting geography as their teaching subject. It is clear that through verbal persuasion, some student teachers were made to abandon the subject for fear of learning through a method perceived as difficult. Student teachers with high self-efficacy beliefs persevered and managed to learn through this method.

Apart from the practical or laboratory method, fieldwork was also indicated as one of the methods employed during the geography teachers' undergraduate studies. According to the findings, more than half of the participants found understanding and learning through fieldwork challenging. The fieldwork course involved learner-centred activities that followed a research procedure of proposal development, data collection, data analysis and an assessment in the form of report writing. Most geography teachers in this study considered learning through fieldwork in a fieldwork course difficult to comprehend because of unclear guidance, especially with report writing. Most geography teachers felt incompetent in fieldwork, even after undergoing training. Mastery experience with the method could have improved geography teachers' self-efficacy in using the method as would be expected.

One participant explained that even as a geography teacher in secondary school, she still did not understand what was expected of her during the fieldwork course. In this study, geography field research, a learner-centred method was utilised, and geography lecturers assessed the work done by geography students. Similar to the findings of this study, the literature shows that fieldwork was not conducted according to the expected guidelines and standards (Ari, 2020; Nakazwe, 2011). Ari (2020) questions the pedagogical value of fieldwork in Turkish universities when skills to be acquired by students need to be clarified. Opoku et al. (2021) also pointed to some schools lacking fieldwork activities in a study conducted in Ghana. Poorly conducted fieldwork activities affect the quality of undergraduate geography education (Ari, 2020; Nakazwe, 2011) and will continue to do so if measures to improve fieldwork activities are not implemented. In line with the findings of this study on the experiences of geography teachers with the laboratory and fieldwork methods, Babacan (2018) in Turkey, also revealed that university education was inadequate in some teaching and learning techniques including in fieldwork and laboratory methods.

Considering the complexity of following a research procedure or a fieldwork activity, student teachers will only benefit from learning through fieldwork if teacher educators give clear guidelines. Clear guidance is very important since future geography teachers must master the skills before transmitting them to the learners. Despite the differences in studies, learning through fieldwork comes with challenges that negatively affect the teaching and learning of geography. Geography, a broad and practical subject, needs to be taught by geography teachers who can engage in fieldwork activities with in-depth knowledge. The discussion above has highlighted the methods used by lecturers at the University of Zambia during geography teachers' undergraduate studies. While it was expected that student teachers should have acquired all the pedagogical knowledge during their undergraduate teacher preparation, this study established that it is not always the case, as most geography teachers indicated they had insufficiently understood fieldwork. This study has also established that pedagogical methods utilised during teacher preparation, like the practical or laboratory method, can influence students to abandon the subject. Some methods challenged geography teachers' self-efficacy beliefs in their capabilities of understanding the subject. Mastery experience with the teaching methods is expected to improve geography teachers' self-efficacy. This study calls upon teacher educators to pay extra attention when using some of these complex pedagogies that geography teachers have challenges with, if effective teacher preparation is to take place. The next section discusses the geography teacher's experiences with the methodology courses to equip student teachers with pedagogy.

Effective geography teachers are also expected to have acquired pedagogical knowledge as among the types of pedagogical content knowledge, according to Shulman's PCK theory (see section 3.4 of Chapter 3 of this thesis). The study's findings showed that the acquisition of pedagogical knowledge in the teacher preparation programme at UNZA was obtained through mandatory peer teaching sessions in a methodology course and through experience with teaching methods utilised during teacher preparation. Furthermore, geography teachers had their practical experiences teaching geography in secondary school through an internship programme at the end of their third or fourth year of undergraduate studies. Geography teachers' engagement with pedagogical practices utilised by different teacher educators in the programme is also an important learning experience in using different teaching strategies. Nuwategeka & Odama (2020) argue that trainee

teachers' use of teaching methods directly reflects the methods used by teacher educators during training. Schulman's PCK theory, which guides this study, highlights knowledge of instructional strategies as appropriate for teaching as an important aspect of teacher preparation (Schulman, 1986). According to the findings of this study, geography teachers' engagement with different teaching strategies utilised by lecturers was fair, with a few challenges experienced in learning through fieldwork and laboratory methods. Methodology courses were relevant because of their focus on pedagogy. Activities like peer teaching in the methodology course were very helpful in preparing students for teaching in schools. Fischer (2022) explains that student teachers teaching fellow peers and getting feedback afterwards is a way of increasing learners' practical experiences. Hands-on teaching activities greatly benefit student teachers' acquisition of pedagogy (Du Plessis, 2020; Fischer, 2022; Harte & Reitano, 2015; Shah, 2020).

Apart from experiences with methodology courses, geography teachers were also able to explain the different strategies utilised in geography lessons and when the best particular strategies could be employed. Similarly, although in a more practical sense, Kocalar & Demirkaya (2017) found that geography teachers in Turkey could use various materials, methods, and techniques according to the curriculum. The findings, however, are contrary to studies that point to geography teachers needing to be more competent in pedagogy (Muchiri & Iddrisu, 2019; Rwejuna, 2017).

Regarding geography teachers' internship or teaching experience, geography teachers who undertook their teaching experience for six weeks found the experience to have been insufficient because little time was spent on practice, while those who undertook it for twelve weeks or three months found it sufficient because they had enough time to practise and improve their teaching skills. The findings indicate lengthy teaching practice (mastery experience) had a bearing on geography teachers' competency and self-efficacy. Geography teachers who did their teaching practice for a long time felt more prepared than those who spent less time. In line with the findings, literature shows that teachers in Canada felt well prepared after undergoing the programme with extended practice time and in-depth coursework (Darling-Hammond 2017). Fischer (2022) also emphasised the need for German geography teacher training to focus on actual teaching in initial teacher training. However, despite other studies highlighting the importance of learning through lengthy teaching practice in schools, Jan et al. (2017) argued that teachers who

studied a more theoretically based education had stronger self-efficacy than those who attained a more practical former education. The findings of this study support the argument of Jan et al. (2017), considering that geography teachers had a more theoretically based programme than practical in general but still felt sufficiently prepared for teaching. The argument in the literature indicates that theoretical and practical learning should be given adequate time by student teachers in higher learning institutions for the effective acquisition of PCK.

The study's findings also showed that the learning environment influenced geography teachers' experiences during their undergraduate studies. The study revealed that some geography teachers needed help accessing certain resources from the library in one or two courses, while others had no challenges. These findings align with the interpretive paradigm, which believes reality is seen from different perspectives. Furthermore, learning spaces were generally considered good despite some geography teachers indicating overcrowding to have been a challenge in certain courses.

Regarding the social environment, the study revealed that geography teachers had more positive relationships with their lecturers and amongst themselves. Good relationships meant that geography teachers could learn with fewer obstacles in acquiring Pedagogical Content Knowledge. The participants also felt that apart from most of the lecturers having had good attitudes towards the students, they also had adequate content knowledge for the subjects taught.

6.5. Theme 4: Pre-service geography teachers' perspective on the quality of the geography teacher preparation programme.

In assessing the teacher preparation programme, seven of the nine (78%) geography teachers who participated in this study indicated that they had acquired more than the sufficient content needed for teaching in secondary school. However, two of the nine (22%) geography teachers who took the subject as their minor felt human geography content needed to be more adequately covered despite indicating they had been adequately prepared for teaching (see section 5.6.1 of Chapter 5 of this thesis). The acquisition of excess knowledge was described as an advantage even with content acquired that could not be used in secondary schools. The majority of the geography teachers (78%) considered themselves to have been well-

prepared for teaching in secondary schools. The study's findings align with the interpretive paradigm, which highlights different interpretations of reality by participants (see section 4.2 of Chapter 5 of this thesis). Despite other studies done by different scholars indicating that geography teachers needed to be adequately prepared for geography teaching in schools (Baban, 2018; Rwenjuna, 2017; Volman & Boogaard, 2015), this study, on the contrary, revealed that 78% of the geography teachers felt sufficiently prepared to take up the teaching of geography in secondary schools. The findings contradict other studies at the University of Zambia in subjects like English and History, where it was indicated that teachers were not adequately prepared for teaching (Chabatama, 2012; Mulenga, 2015). Furthermore, despite other studies highlighting that some geography teachers had challenges teaching some components of physical geography (Nakazwe, 2011, Mubita et al., 2023), this study established that geography teachers felt sufficiently prepared to take up secondary school geography teaching despite considering some aspects of physical geography abstract and challenging to teach. Challenges experienced in teaching some aspects of physical geography in secondary schools do not seem to emanate from the inadequacy of geography teacher preparation. In addition, this study has shown that teacher preparation improved geography teachers' self-efficacy and competency in teaching the subject. In line with the findings, He et al. (2022) also revealed that geography educators were satisfied with the geographical content presented in the classroom in China. However, the responses in the He et al (2022) study were from teacher educators and academic geographers, while the findings in this study came from geography teachers who had experienced teacher preparation themselves.

A closer look at the findings of this study also revealed that all the geography teachers (22%) who felt inadequately prepared had no background in senior secondary geography before tertiary education. In this study, the two participants (22%) claimed that the geography content acquired differed from the content that was to be taught in secondary school. This scenario can be explained using Bowlick & Kolden's (2013) study, which revealed that students with previous initial contact with geography repeated and reinforced concepts better than those with no background. Students with prior knowledge of geography found it easier to relate the geography content acquired during their undergraduate to the secondary school content. Not having prior knowledge in senior secondary school has several effects;

in this study, it is clear that the transition from university to secondary geography showed a big gap in knowledge for those who had no foundation in secondary geography, which made the content seem strange and not in line with what was acquired. The findings from documents showed that the teacher preparation programme had wide content coverage compared to the topics that needed to be taught in schools. Some notable topics in physical geography like map-work and weathering were visible in the secondary syllabus and in the course structure for students. The first-year course introduced the student teachers to both human and physical geography content which is a foundation for the study of the subject.

When exploring the structure of the University of Zambia's geography teacher preparation programme, the findings revealed that geography teachers felt that the programme's structure influenced the teaching of the subject in schools. Geography teachers felt that students taking more courses than others had an advantage in teaching. The advantage was seen to come when teaching certain topics whose content was acquired from elective courses that those who took the subject as a major studied but those who took the subject as a minor did not undertake. The findings agree with Harte and Reitano's (2015) study, which revealed that acquiring more geography content is associated with higher confidence in the subject matter knowledge and in teaching geographical skills than those who acquire a smaller number of courses. Literature shows that student teachers who study particular content better understand PCK than those who did not acquire particular content or studied fewer courses (Bowlick & Kolden, 2013; Knecht & Spurná, 2022; Martin & Dismuke, 2018). Students with prior contact benefit most (Martin & Dismuke, 2018), as they perceive greater geographic skills than those without prior contact (Bowlick & Kolden, 2013). In the study's findings, Knecht & Spurná, (2022) established that non-specialised teachers had a restricted understanding of the content knowledge compared to specialised teachers with sufficient content knowledge. With geography being a broad-based subject, expertise in all areas is hard (Fischer, 2022), and this could be worse for students exposed to fewer topics, like those taking the subject as their minor. Unlike at the university level, where geography lecturers are allowed to major in human or physical geography, secondary school geography teachers are expected to master both as they are expected to be competent in both. While the mastery of the subject is made difficult due to its broad nature, improvement in understanding concepts is expected as a teacher continues to interact with the

subject during their career. However, Fischer (2022) points to trainee teachers being criticised for not having good academic research skills that could have helped close the gap between what was learned and what still needed to be learned while practising. Considering the broadness of the subject, it is clear that mastery of content knowledge is challenging, worse still for those who acquire fewer content courses.

In support of the differences that may occur between those who study the subject as a major and those who study it as a minor, it was established in this study that some geography teachers who read the subject as their minor felt human geography and physical geography courses were not well balanced in the programme and human geography courses were insufficiently covered. Geography teachers who studied the subject as their minor still needed to improve in acquiring human geography courses. Some geography teachers felt they would have been better prepared to teach some human geography topics in secondary schools had they been taught at university. Geography teachers had low self-efficacy in teaching topics in which they had not acquired content during their undergraduate preparation. This study has shown that geography teachers who study the subject as their major and study more content courses benefit more than those who study the subject as their minor. Since geography is a broad subject that geography teachers are expected to acquire and understand in-depth, teacher preparation programmes need to ensure that student teachers are exposed to enough geography content to help them survive with few to no challenges when teaching the subject in secondary schools.

The study's findings also revealed shortcomings in the undergraduate teacher preparation programme. Some geography teachers reported having had too many content courses compared to methodology courses, and some courses were considered irrelevant for geography teaching in schools. Some geography teachers considered content courses like Statistical Methods in Geography, Hydrology, Climatology, Land Resource Survey and Environmental Planning irrelevant to school geography teaching. On the contrary, courses like Hydrology and Climatology were considered relevant by other geography teachers. The findings align with the interpretive paradigm, which assumes different realities to people's experiences of the same phenomena. (see section 4.2 of Chapter 4 of this thesis). In line with the

findings, Ferreira (2018) also established that geography students found certain geography topics at the university irrelevant to school geography teaching.

Geography teachers had a narrow view of content that should be taught at university, focusing on learning the exact content needed in secondary school, forgetting that even the school syllabus changes. Effective geography teachers need a good understanding of the subject regardless of whether the content is what they will be teaching in secondary schools or not. A wider coverage of the subject with a special focus on the content to be taught in secondary school will enhance comprehension. The findings also supported the benefits of covering a wide range of topics when the geography teachers indicated that acquiring knowledge not meant for geography teaching in schools was still beneficial. University education is meant to equip students with knowledge that would help them survive in many environments, which comes with a need for wide content coverage. In line with this, He et al. (2022) explain that overcoming the knowledge gap between the university and secondary geography syllabi is more challenging because of the differences in learning needs and career goals.

This study has shown that the gap between secondary school geography content and university geography content was a normal change that happens when transitioning from one level to another, and based on the findings, the change in levels was beneficial to geography teachers as most of them considered themselves to have acquired more than enough content that made them feel adequately prepared for geography teaching. Geography teachers had high self-efficacy that made them competent to take up teaching after teacher preparation. Furthermore, this study has established a need for the teacher preparation programme to improve the teaching of methodology courses as more time was spent learning content. The need to improve pedagogical approaches in teaching geography was also noted by Mundende et al. (2023).

In this study, the first year of learning at the university was also reported to have been challenging because teaching and learning skills and the university content differed from secondary education. Most geography teachers found it challenging because they thought university teaching styles would be the same as secondary school. However, learning at the university level is more independent, and the teaching style differs from secondary schools. Teacher educators expect to teach

students who are mature and can take charge of their learning, unlike secondary teaching. The first year of university education is expected to be more challenging, considering that it is when students start adapting to the new learning environment and unfamiliar teaching styles, which needs time. Transitioning from school to university geography is challenging for teachers, educators and students (Ferreira (2018). According to He et al. (2022), a gap in depth of subject matter, skills, and geographical thinking exists between school and university geography. Literature highlights the need for universities to find ways of helping students transition from secondary school geography to university geography (Ferreira, 2018; He et al., 2022; Larangeira & van der Merwe, 2016). Universities need to help geography students, especially the first years, to transition from secondary to university education easily. University orientation for first-year students' needs to improve by focusing more on helping students understand that the differences in the knowledge depth and teaching styles between secondary and university geography are normal changes that come with transitioning from one level to another and should not be seen as a disadvantage.

6.6. Theme 5: Understanding of geography teaching in secondary school.

In exploring pre-service geography teachers' experiences of their undergraduate teacher preparation, this study considered geography teachers' experiences of geography teaching. An inquiry into geography teachers' knowledge of curriculum knowledge was cardinal. This theme discusses geography teachers' experiences during their teaching careers in secondary schools.

Pre-service geography teachers were asked to self-examine their teaching of physical and human geography courses in secondary schools. The study revealed that geography teachers had more confidence in teaching one component of the subject, physical or human, than the other. Geography teachers (both those who took the subject as their major and as their minor) graded themselves to have a confidence level of 70% and above in teaching human and physical geography. The findings revealed that slightly more (five of the nine) participants scored their confidence levels higher in teaching human geography than physical geography because human geography concepts were easier to understand than physical geography concepts. In contrast (three of the nine) teachers scored their confidence

in teaching physical geography higher than teaching human geography. Only one geography teacher scored their confidence level the same in physical and human geography (see Table 6 in section 5.6 of Chapter 5 of this thesis). The geography teachers' responses and challenges were varied and in line with the interpretive paradigm. Despite having had mastery experience (see section 3.5 of Chapter 3 of this thesis) with different components of the subject during their undergraduate preparation, geography teachers still had difficulties teaching some components of the subject, making them grade their teaching lower in particular components than others.

Some of the reasons behind the self-examination results arise from the challenges geography teachers indicated to have had while teaching the subject. More geography teachers highlighted having had challenges teaching some topics in physical geography than human geography. According to the findings, some geography teachers had challenges teaching physical geography components like map reading, faulting and folding, while a few still needed to learn how to teach certain topics. Similarly, the literature indicates that novice geography teachers had difficulties reaching the expected subject matter standard in the classroom and, therefore, needed help transforming theoretical concepts learnt into practice concerning individual groups of learners (Fischer, 2022). Although the reasons for experiencing difficulties in teaching differ with the finding of the present study, Dhakal (2019) revealed that mathematical geography content was not taught at higher education in Nepal which made it difficult for geography teachers to teach the said concepts. In line with the overall findings of this study, geography teachers' experiences with the teaching of the subject were mostly positive, despite experiencing difficulties with teaching of mathematical geography (Dhakal, 2019).

A study by Kola and Sunday (2015) revealed that teachers with inadequate PCK had low teacher self-efficacy while those with sufficient subject knowledge were confident to teach all concepts with proper usage of teaching strategies. Most geography teachers in this study found it easier to teach human geography components because they were easier to understand than physical geography. This experience was observed during teacher preparation and even after employment. The study confirms the literature highlighting geography teachers' struggles with teaching geographical content knowledge to the required subject matter standard (Brook, 2006; Fischer, 2022; He et al., 2022). With a secondary syllabus whose main

Grade 10 topics are in physical geography (CDC, 2013), it is imperative for geography teachers to find ways of improving and reducing their challenges in teaching physical geography components, considering that it is difficult to avoid teaching such topics for the whole year.

On a positive note, geography teachers had ways of dealing with their challenges. Most geography teachers indicated that they had sought help from other geography teachers. Some geography teachers also mentioned having enhanced their knowledge of geography content with the help of colleagues, heads of departments and former classmates. However, some geography teachers reported teaching challenging geography concepts (physical geography) on behalf of their colleagues. One teacher stated he had had a colleague who offered to teach all the human geography components for him, while he was given all the physical geography components to teach. While this seemed like a good solution, it meant the limited interaction with the other component of the subject was making each teacher less knowledgeable in that component. It is only logical to assume that one gets better at understanding a geographical concept when one spends more time on it, which is different from most geography teachers who decided to avoid what seemed more challenging. Geography teachers' attitudes towards the two components of geography align with Pajare's (1997) explanations of Bandura's self-efficacy theory, which points to people avoiding tasks they are less confident to undertake and preferring to engage in what they feel confident to do. Geography teachers avoiding tasks they need to be more confident in may be detrimental to teaching geography in secondary school. Despite the study being done in primary education, Blankman et al. (2015) explain that motivated student teachers provide better geography lessons. The components of geography that teachers decide to stay away from will not be taught with enthusiasm, which will disadvantage the learner. Geography teachers' motivation influences the intended and achieved levels of PCK in geography education (Blankman et al., 2015). Geography learners will find it challenging to see the relevance of physical geography when the subject is communicated by teachers who are not passionate and lack an in-depth understanding of the subject (Stewart, 2022). As explained earlier, Martin and Dismuke (2018) revealed that teachers who studied a particular course showed a strong connection in understanding and practice compared to teachers who did not. Teachers who did not study the course were described as good teachers attempting to teach what they did not know (Martin

& Dismuke, 2018). Geography teachers who attempt to learn more about the geography content they have challenges with will better comprehend the content and teach more effectively than those who decide to avoid what is challenging. According to experts' perceptions, Fischer (2022) explains that despite novice teachers' competencies being varied, there has been a huge improvement in their PCK.

Regarding teachers' knowledge of their learners, this study established that geography teachers knew their responsibilities in teaching the subject in secondary schools. Geography teachers indicated knowing about their learners' cognitive abilities, social backgrounds and attitudes towards the subject. The findings revealed that some geography teachers failed to use certain teaching methods because of the types of learners they had; others also mentioned learners' home backgrounds to have influenced how they taught the subject. Shulman's (1987) PCK theory indicates that knowledge of learners and their characteristics is one of the basic types of knowledge that teachers are expected to possess (see section 3.4 of Chapter 3 of this document). Geography teachers knew the difficulties learners encountered in learning geographical concepts, especially in physical geography. While the study has already revealed that geography teachers had challenges teaching some components of physical geography, the trend was also seen to have been the same with their learners. As would be expected, it is difficult for learners to understand concepts that their geography teacher may be having challenges in explaining. If a geography teacher who has undergone several years of preparation still has challenges explaining some concepts, it would be worse for a learner who may be coming across such concepts for the first time.

Furthermore, this finding aligns with other studies that established that geography teachers were sufficiently trained to teach geography in schools (He et al., 2022).

Shulman's (1987) PCK theory, adopted in this study, also considers pedagogy knowledge an important type of knowledge teachers should possess after teacher preparation. This study revealed that some geography teachers had sound knowledge of teaching methods and their applicability, while a few needed more understanding of teaching methods. Some geography teachers indicated they had utilised learner-centred methods, avoiding teacher-centred methods even when teacher exposition was the best. For example, one geography teacher indicated that they often employed group discussion and avoided the lecture method. At the same

time, another claimed to have often utilised the lecture method when teaching human geography because it was easy to understand (see section 5.7.2 of Chapter 5 of this document). Some geography teachers, while understanding the importance of learner-centred methods, did not show understanding of when it was best for them to utilise the learner-centred methods. Similarly, other studies (Du Plessis 2020; Martinez, 2020; Sakata et al., 2021) highlight geography teachers having insufficient knowledge and experiencing challenges in utilizing learner centred methods. Geography teachers need to understand that learner-centred and teacher-centred methods are important despite learner-centred methods being more encouraged by literature (Kidman, 2017; Opoku et al., 2021). Teacher-centred methods may be better suited for teaching particular topics in certain circumstances. Both geography teachers and teacher educators must understand that learner-centred methods alone cannot improve geography teaching. For instance, abstract topics like map reading and calculation of longitudes and latitudes can only be executed with teacher-centred methods. Furthermore, considering that only a few teaching methods were being used by geography teachers in their classrooms, it is important for geography educators to expose geography students to a variety of learner and teacher centred methods in order for effective geography teaching to take place in schools. Geography educators should ensure student teachers understand when to use particular learner centred methods and how to use them. Geography teacher educators are being called upon to ensure proper acquisition of knowledge and skills by student teachers is achieved during teacher preparation (Du Plessis 2020; Martinez2020).

6.7. Contributions of the study

This study provided insights into geography teachers' experiences of their teacher preparation programme at the University of Zambia.

- a) Studies have highlighted the need to improve the quality of geography teacher preparation in institutions of higher learning (Biddulph & Kinder, 2020; Brysch, 2014; Ferreira, 2018; He et al., 2022; Mubita et al., 2023; Tapsfield, 2016). An exploration of geography teachers' experiences of their undergraduate teacher preparation in establishing the quality of teacher preparation has been

done. However, more studies have focused on the mismatch between university and secondary geography (Ferreira, 2018; He et al., 2022).

The finding of this study established that geography teachers were adequately prepared for geography teaching in secondary schools despite highlighting a difference between the content acquired and the content that needed to be taught in schools. This study established that geography teachers acquired broad and in-depth content considered more than enough for geography teaching. This study further notes that geography teachers with no foundation in secondary geography content saw the difference between university and secondary content negatively affecting teacher preparation. In contrast, those who had a background saw it as positive. This study revealed that the gap between secondary and university education geography content was seen to have been a benefit for geography teaching by the majority. However, it is rarely emphasised by literature. Literature highlights the importance of prior knowledge in senior secondary geography for those opting to study geography at the tertiary level (Bonnet, 2003; Dolan et al., 2014; Larangeira & van der Merwe, 2016). Enrolling students with a foundation in secondary school at the university level or assisting first-year students with no prior knowledge of secondary school geography (Larangeira & van der Merwe, 2016) will improve geography teaching at both secondary and tertiary levels. Furthermore, geography content was considered sufficient in this study, although geography teachers noted the need to improve practical-based learning in methodology and other courses. Student teachers need more contact with methodology courses and improve practice-based learning like peer teaching if effective preparation is to take place.

- b) Literature has shown that geography students and geography teachers have challenges with understanding and teaching physical geography rather than with human geography (Fischer, 2022; Opoku et al., 2021; Stewart, 2022). The findings of this study were also in line with the literature. However, despite indicating challenges with some topics in physical geography, this study also revealed that slightly more geography teachers enjoyed learning physical geography than human geography. Furthermore, this study revealed that more geography teachers with no secondary school foundation enjoyed human geography. The study has shown that geography teachers must

improve their self-efficacy beliefs in geography components that they did not enjoy learning or teaching. Teacher education programmes need to find ways of improving geography teachers' competencies in components they do not enjoy, considering they would be expected to motivate the learners in all the subject components.

- c) Several studies have highlighted teaching methods that are utilised both at the university and secondary school level, with a focus on both learner and teacher-centred methods (Ari, 2020; Kidman, 2017; Bowlick & Kolden, 2013; Opoku et al., 2021; Simonyi & Homoki, 2020). This study established that learner- and teacher-centred methods were utilised at the University of Zambia. Fieldwork and practical or laboratory methods were indicated to have been involved and challenging. The unique finding in this study was that some students dropped out of the course after learning using the laboratory method, which was also assessed as difficult. This study reveals that some student teachers dropped out of the subject.
- d) In contrast, others avoided the subject for fear of a pedagogical approach utilised, a rare finding in the literature. Student teachers with low self-efficacy in some pedagogical approaches avoided the subject. Teacher educators must carefully find ways of motivating student teachers while using complicated pedagogical approaches like practical and fieldwork if retention of student teachers in the subject is to be achieved.

Many studies encourage learner-centred methods in delivering knowledge to learners (Kidman, 2017; Opoku et al., 2021; Simonyi & Homoki, 2020). However, despite being teacher-centred, the lecture method was described as effective when utilised during teacher preparation. Furthermore, this study also established that geography teachers' understanding of teaching methods and when they could be used was varied and faulty in some cases. Some geography teachers were more inclined to use learner-centred methods even when such methods were not beneficial for effective learning. Teacher-centred strategies serve their purpose and should be encouraged in particular contexts if effective teaching is to take place. This study echoes the need to encourage teacher-centred and learner-centred methods in consideration of many factors that influence the selection of a teaching method. Learner-centred methods can only be fully utilised with cooperating teacher exposition.

- e) The study has also established that the majority of the geography teachers selected the subject as their teaching subject and their subject major because of interest in the subject, which was also in line with career prospects. The study confirms the literature that points to students' personal interests and career prospects as a reason the subject is preferred (Beggs et al., 2008; Ferretti, 2007; Opoku et al., 2021; Piróg, 2018). However, this study also showed that a few teachers selected the subject out of convenience. Some geography teachers who took the subject out of convenience still echoed that they did not enjoy teaching geography but enjoyed teaching their preferred subjects. Unique to the findings is the case of one who selected the subject as their major after finding their preferred subject difficult. Confirming with literature (Blankman et al., 2015; Stewart, 2022), this study echoes the warning pointing to unenthusiastic geography teachers negatively influencing the quality of school geography teaching. The findings of this study have also revealed that geography teachers with no senior secondary geography background had high self-efficacy that made them select the subject as their major. The study brings out a unique finding that students without prior knowledge have interest and confidence to select the subject as their major despite having no background. Logic makes us think that those with no secondary school geography experience would opt to study the subject as their minor to reduce the amount of content that may seem easier, contrary to these findings.
- f) The findings of this study are contrary to other studies done at the University of Zambia, the institution where this was done, that highlighted that teachers not specific to geography were inadequately prepared for teaching in schools (Chabatama, 2012; Manchishi & Masaiti, 2011; Manchishi & Mwanza, 2018; Mulenga, 2015). Geography teachers in this study indicated being adequately prepared for secondary school teaching. The acquisition of content considered irrelevant for teaching was still an advantage, something that other studies did not highlight. This study has also shown that geography teachers who studied the subject as a minor felt human geography was insufficiently covered. Studies done in teacher education at the University of Zambia (Chabatama, 2012; Manchishi & Masaiti, 2011; Manchishi & Mwanza, 2018; Mulenga, 2015) did not explore teachers' experiences of those who studied

subjects as major and those who studied as minor. Furthermore, other studies should have brought forward information on the participants' senior secondary school background in their teaching content. Geography teachers without a background in senior secondary geography become of interest here as it is from this group that some felt inadequately prepared; all of the participants with a foundation in senior secondary geography indicated they needed to be more prepared.

- g) The findings of this study align with literature that supports the notion that students who acquire more content courses through studying more geography courses than others have a better understanding than those who study fewer courses (Bowlick & Kolden, 2013; Harte & Reitano, 2015; Martin & Dismuke, 2018). However, this study adds to other literature by highlighting that some geography teachers who had studied the subject as their minor and had indicated that they had acquired more than enough content courses for geography teaching still felt they could have benefitted from studying more courses. The study shows that geography teachers who acquired more content courses were more content with courses acquired than those who studied fewer courses. Moreover, some geography teachers who read the subject as their minor felt human geography components were insufficiently covered. Geography teachers are expected to have acquired wide and in-depth content that should enable them to teach without challenges. Since the subject is broad, acquiring a variety of content is beneficial to geography teachers.

This study has established that the geography teacher preparation programme needs to balance physical and human geography courses for those studying the subject as their minor. Inadequate coverage of certain content courses may be why some teachers struggle to teach certain topics when employed. It was also revealed in this study that while more content is beneficial, the teacher preparation programme should consider focusing more on teaching content reflected in the secondary school geography syllabus to reduce the challenges that geography teachers face.

- h) The self-evaluation results show that geography teachers also needed help teaching some geographical concepts despite indicating they were adequately

prepared for school geography teaching. The results show that most geography teachers had more confidence in one component of geography than the other. It was further revealed that geography teachers got help from their colleagues, former course mates and heads of departments when faced with difficult concepts.

This study has revealed that geography teachers had preferences in different geography components, which influenced their motivation and selection of elective courses. This study has established that geography teachers' experience of their undergraduate preparation was varied in terms of the interest which they had in the subject: most teachers having had more interest as compared to a few. Geography teachers' engagement with Pedagogical Content Knowledge revealed that participants had varied self-efficacy beliefs in some components of the subject and teaching approaches. Geography teachers had low self-efficacy in some subject components, which made it challenging to teach such topics with the much-needed motivation. This study has shown that geography teachers' quality of geography teaching in schools is varied, with some teachers being enthusiastic about the subject while others were not. Geography pupils taught by enthusiastic teachers are likely to perform better than those who are not. This study highlights that school geography teachers face challenges in teaching the subject, affecting learners' understanding of concepts.

This study aimed to establish how geography was faring in schools considering challenges highlighted in geography education by other studies. This study has established that geography education is affected by geography teachers' quality of geography teaching. With some geography teachers indicating that they had challenges teaching some components, it is expected that geography pupils would also experience similar challenges that may influence their performance in the final examination. While this study was focused on geography teachers trained at the University of Zambia, it would be interesting to carry out studies with more institutions. This study shows a need to improve geography teachers' self-efficacy beliefs through mastery experience during teacher preparation. Teacher preparation programmes should focus on helping student teachers understand abstract concepts fully

to enhance geography teachers' confidence in teaching all subject components effectively.

6.8. Conclusion

The chapter has discussed the findings of the study that were presented earlier in Chapter 5. The discussion followed the themes developed during data analysis. The study established that not all who selected the subject were enthusiastic about it, and not every student who selected the subject had prior knowledge of senior secondary geography. In their experiences of undergraduate teacher preparation, the majority of the geography teachers indicated that they enjoyed learning physical geography or human geography. Human geography was seen to have been easier to understand than physical geography. More geography teachers indicated they had acquired more than enough geography content, except for a few who took the subject as their minor and felt human geography needed to be better covered. Some of the content acquired was considered irrelevant for teaching geography in secondary school but was still considered beneficial. However, it should be noted that only some of the geography teachers enjoyed teaching the subject, and they also had challenges teaching some components of the subject, especially in physical geography. After discussing findings under each theme, the chapter summarises the discussion, followed by the conclusion.

The next chapter of this thesis concludes the study by presenting the summary of the study, conclusions made based on the research questions, the theoretical implications of the study, the practical implications of the study and recommendations.

CHAPTER 7

CONCLUSION AND RECOMMENDATIONS

7.1. Introduction

Chapter 6 discussed the findings of the study based on the literature reviewed and in relation to the research done in this study. This chapter discusses the conclusion and recommendations of this study that explored geography teachers' experiences of undergraduate teacher preparation at the University of Zambia and upon employment in schools. This study focused on understanding the experiences of geography teachers who took more geography courses (Geography as their major) and those who took fewer courses (Geography as their minor). The interest of the study was to investigate why geography teachers selected the subject as their major or minor. This chapter highlights the summary and conclusion of the study based on the research questions. A discussion of how the research findings fit into the theoretical framework and implications of the findings is also provided in this chapter. The chapter ends with a conclusion and recommendations from the study.

7.2. Summary of the study

Chapter 1 of this thesis highlighted the purpose of this study, which is to establish geography teachers' experiences of their undergraduate teacher preparation and upon employment in school. With studies focused on different aspects of teacher preparation at the University of Zambia describing teacher preparation as insufficient (Masaiti & Manchishi, 2011; Manchishi & Mwanza, 2018; Mulenga, 2015), the researcher had an interest in understanding the geography teacher preparation programme from the geography teachers' perspective. Without the knowledge that this study has provided, it would be difficult to understand how geography teacher preparation is fairing at the University of Zambia. It was essential to carry out this study in order to assess the relevance and effectiveness of the University of Zambia geography teacher preparation programme in preparing teachers for secondary schools. Furthermore, this study responds to Manik's (2018) call for more studies to be done in Southern Africa in geography education to improve its value and visibility in Africa. Assessment of teacher preparation through geography teachers' experiences provided an in-depth understanding of issues in geography teacher

preparation that may provide or influence curriculum development in institutions of higher learning. Furthermore, this study adds knowledge in geography education from a Southern African perspective on issues that affect or improve geography teacher preparation worldwide. The study adds knowledge that helps in understanding the experiences of geography teachers who were prepared in the same programme but followed different pathways.

With this background, the study opted to find answers to the following research questions: 'How are geography student teachers at the University of Zambia prepared as future geography teachers?', 'Why do geography students select geography as one of their teaching subjects during teacher preparation?' and 'What are the views of geography teachers on the quality of the geography preparation programme offered by the University of Zambia?' The researcher believed that geography teachers' self-efficacy influenced their decision-making in acquiring Pedagogical Content Knowledge (PCK) during teacher preparation, and this would also influence their teaching upon employment. Furthermore, the assumption was that geography teachers' experiences during teacher preparation would improve their self-efficacy and competency in PCK.

The review of literature focused on different aspects of teacher preparation that influence the effectiveness of geography teachers, which was covered in Chapter 2 of this thesis. The literature highlights some factors that influence teachers' experiences in acquiring PCK during teacher preparation. Studies reveal that acquiring PCK influences eventual practice (Harte & Reitano, 2015; Martin & Dismuke, 2018). The review of the literature showed that some geography teacher preparation programmes were effective in producing teachers competent in some aspects of PCK, while others were not (Brooks, 2006; He, et al., 2022; Kocalar & Demirkaya, 2017; Muchiri & Iddrissu, 2019; Nuwategeka & Odama, 2020). Some teacher preparation programmes are more effective than others (Syke et al., 2010). The review of the literature also showed that more aspects of teacher preparation in geography education and geography teaching in schools needed to be done in order to improve the quality of teaching in schools.

Chapter 3 of this thesis discussed the theoretical framework utilised for this study. The study employed Schulman's (1986) PCK theory and Bandura's (1977) self-

efficacy theory of motivation to understand geography teachers' experiences of their undergraduate teacher preparation. The study assumed that student teachers' engagement with PCK depended on their self-efficacy. Furthermore, geography teachers' experiences with PCK during teacher preparation influenced their teaching in school. The theoretical framework was relevant in providing in-depth information on geography teachers' experiences during and after teacher preparation.

Furthermore, the thesis discussed the methodology of the study in Chapter 4. The chapter presented information on the paradigm followed, the research approach taken, and the design and data analysis of the research done. The researcher utilised the instrumental case study design to find answers to the research questions. Nine geography teachers trained at the University of Zambia and employed in secondary schools were purposively selected as participants in the study. The study employed teachers who had taught for six years or less to help provide information about their experiences of teacher preparation and teaching in schools. The chapter also discussed semi-structured interviews and documents as data collecting instruments and purposive and snowball sampling as sampling techniques adopted in the study. Thematic and content analysis as qualitative data analysis methods were employed to organise and analyse the meaning of the data collected.

Chapter 5 of this thesis presented the study's findings, which were developed after data analysis. The findings were presented under different themes developed during the thematic data analysis. Five themes developed which were: 'Pre-service geography teachers' background with the subject', "Geography teachers' engagement with geography content knowledge', 'Geography teachers' engagement with pedagogy', 'Assessment of the geography teacher preparation programme' and 'Influence of teacher preparation programme on teaching in secondary school'.

Furthermore, based on the findings presented in Chapter 5, a discussion of the findings was conducted in Chapter 6 of this thesis. The discussion chapter indicated that geography teachers' experiences of those who studied the subject as a major and those who studied it as a minor had more similarities than differences. Students who had acquired more geography courses (major) were seen to have had an advantage in teaching in certain circumstances (Bowlick & Kolden, 2013; Harte & Reitano, 2015; Martin & Dismuke, 2018). Colleges and universities have developed

programme structures where some issues affecting geography preparation are embedded.

Chapter 6 concludes with one of the significant findings indicating that, generally, geography teachers felt sufficiently prepared by the teacher preparation programme to teach in secondary schools despite discussing some challenges experienced. The findings are similar to those of He et al. (2022) and Kocalar & Demirkaya (2017), who highlighted that geography teachers are adequately prepared to take up teaching in schools. On the other hand, the findings of this study were contrary to those of other studies, which revealed that geography teachers were inadequately prepared in content and pedagogy to teach the subject in schools (Kaya, 2019; Rwenjuna, 2017). Other literature also highlighted that geography teachers were insufficiently prepared in pedagogy (Blankman et al., 2015; Muchiri & Iddrisu, 2019; Nuwategeka & Odama, 2020).

Teacher preparation remains crucial in the preparation of effective geography teachers. However, challenges in teacher preparation have continued to hinder progress in the teaching and learning of geography. It is clear from the findings that a programme structure that requires some students to take more courses (major) than others is disadvantageous to those who take fewer courses, considering that those who acquired a larger number of courses were deemed to have had a wider knowledge base, which improved their understanding of concepts.

7.3. Conclusions based on research questions

This section presents a conclusion of the findings by responding to the research questions that guided this study. The research questions for this study included: ‘? Why did geography teachers have the experiences they had during their undergraduate teacher preparation? ‘How are geography student teachers prepared at the University of Zambia as future geography teachers?’, ‘What are the views of geography teachers on the quality of the geography teacher preparation programme offered by the University of Zambia?’, and ‘What are the experiences of geography teachers in teaching geography in secondary schools?’

7.3.1. Research question 1

Why do geography students select geography as one of their teaching subjects during teacher preparation?

The findings revealed that most geography teachers chose geography as their teaching subject because they were interested in its content due to the perceived career prospects. However, a few also selected the subject as one of their teaching subjects out of convenience after discovering their preferred subject was not available, and in another instance, the subject was selected as a subject major after realising that the preferred subject major was difficult compared to geography. The findings aligned with other studies (Opoku et al., 2021; Piróg, 2018), highlighting potential career prospects and interest as the main reasons why students decided to study the subject. The study also showed that some geography teachers who chose the subject had no prior secondary geography content, which was seen as a disadvantage. Geography teachers who had no background in secondary school geography had unique challenges that made them feel university geography content was too different from secondary content, which made teaching the subject more challenging. However, on a positive note, all the geography teachers without a background in the subject had the confidence to study it as their major. In line with the interpretivist paradigm, geography teachers' self-efficacy beliefs were varied, with others selecting the subject based on their positive or negative mastery experience undergone during secondary school. Scholars have explained the importance of prior knowledge before studying geography at the tertiary level if effective teaching and learning is to take place (Bonnet, 2003; Dolan et al., 2014; Larangeira & van der Merwe, 2016). In line with the findings from the literature, this study also demonstrated that a lack of prior knowledge in secondary school geography was disadvantageous for effective teaching at the tertiary level and secondary levels. A good foundation in secondary school geography content is important for easy adaptation to university geography content courses (Larangeira & van der Merwe, 2016).

Teacher preparation programmes should enrol student teachers who have a foundation in secondary geography content, if an effective transition from secondary school to university is to take place.

7.3.2. Research question 2

How are geography student teachers at the University of Zambia prepared as future geography teachers?

The findings of the study revealed that geography teachers were expected to acquire both theoretical and practical knowledge during preparation. Response to research question 2 will be discussed under different themes.

7.3.2.1. Content acquired

The study demonstrates that geography teachers were required to study physical and human geography courses, and geography teachers were interested in learning human geography components more than the others. The findings further showed that understanding physical geography was challenging compared to human geography. The practical and abstract nature of some physical geography concepts were highlighted as the reason the component was difficult compared to human geography. Examples of some of the topics highlighted as challenging included weathering, map reading, and faulting and folding. The findings of the study align with other studies which established that physical geography is more challenging than human geography (Fischer, 2022; Opoku et al., 2021). It was further discovered that geography teachers avoided picking elective courses they considered difficult and opted to select courses that they considered easy to comprehend and pass. The scenario was perpetuated by the requirements of the programme structure which allowed students to select content courses of their choice. The study agrees with Bandura's (1977) self-efficacy theory, which explains that people will avoid tasks that seem challenging for them. Geography teachers' mastery experiences with the two components of the subject influenced their selection of elective courses. Furthermore, the study demonstrated that the effective teaching of physical geography in institutions of higher learning was crucial for students' effective acquisition of content. Institutions of higher learning need to find ways of influencing student teachers to have more positive attitudes and interest in physical geography if effective acquisition of content is to take place. The study revealed that geography teachers needed more help in understanding physical geography concepts in order to improve their self-efficacy beliefs or interest in the component. The effects of avoiding physical geography components were still felt in secondary schools as some geography teachers continued to have challenges with

teaching some components of physical geography despite undergoing teacher preparation.

Institutions of higher learning should ensure that the teaching of complex concepts, such as those in physical geography, is enhanced by focusing on subjects that student teachers find challenging. The programme structure requirements on the selection of elective courses should ensure that students are encouraged to select courses that they would normally avoid.

7.3.2.2. Teaching methods

According to the findings of this study, the teaching methods utilised during teacher preparation included the lecture method, fieldwork, question and answer, and laboratory/practical work. The lecture method was described as the most commonly utilised method. While studies encourage learner-centred methods (Kidman 2017, Opoku, Serbeh and Amoah 2021), this study proved that geography students were still positive towards the lecturer-centred method. However, learning through the laboratory or practical methods and fieldwork proved to be involved and challenging, and the lack of clear guidance from geography lecturers was highlighted as the leading cause of challenges in a particular fieldwork course. Lack of guidance in fieldwork rendered the execution of fieldwork ineffective. This study has also revealed that pedagogical approaches could also be a reason why some students fail to proceed with the geography subject. Participants in this study explained that some of their course mates dropped the subject after finding learning through laboratory methods difficult. Geography teacher preparation needs to find ways of assisting and encouraging student teachers in using challenging pedagogies. Teacher preparation should improve geography teachers' self-efficacy in pedagogies considered too challenging.

When it came to geography teachers' experiences with teaching methods in secondary schools, the findings of the study have also revealed that geography teachers opted to utilise learner-centred methods even in instances where teacher-centred methods were best suited. This study echoes the need to help student teachers understand that teacher-centred methods are equally important, even when

learner-centred methods are being encouraged. It is important to encourage the use of both learner and teacher-centred methods if effective teaching and learning are to take place.

7.3.2.3. Practical experience

The study showed that geography teachers had practical teaching experiences during their teacher preparation. Practical learning was acquired in methodology courses through micro-teaching or peer teaching activities, and teaching practice was done in secondary schools. From the findings, it is clear that geography teachers considered peer teaching activities and teaching experience in schools to be a very important aspect of their teacher preparation. Like other studies, the study proved that micro-teaching activities benefited student teachers (Fischer, 2022; Harte & Reitano, 2015). The study showed that the duration of the teaching experience was considered a determinant of the effectiveness of practice. Findings align with the literature from studies that were done at the University of Zambia, which highlighted six weeks of teaching experience as insufficient (Manchishi & Masaiti, 2011; Manchishi & Mwanza, 2018; Mwanza, 2016). However, from the findings, geography teachers who graduated in recent years did their teaching experience for more than twelve weeks, which was considered sufficient for worthwhile practice.

Overall, geography teachers felt that it was important for the teacher education programme to improve contact in practical-based geography courses to enhance students' understanding. Geography teachers suggested that practical learning activities like peer teaching in methodology courses should be done more than once, and teaching methodology courses should be emphasised like content courses.

7.3.3. Research question 3

What are the views of geography teachers on the quality of the geography teacher preparation programme offered by the University of Zambia? This study investigated geography teachers' views on the quality of teacher preparation to understand geography teachers' experiences of their undergraduate teacher preparation. The study findings revealed that geography teachers acquired a wide range of geography content courses, which were described as more than enough compared to the

content required in secondary schools. However, a few participants who took the subject as their minor felt that human geography needed to be covered more. Some content courses acquired were considered irrelevant for geography teaching in schools, although still beneficial. In contrast, methodology courses were seen to have been good but needed to be improved with more time allocated to practical experiences. Furthermore, the study revealed that geography teachers considered the preparation programme to have been sufficient in preparing geography teachers for teaching in schools. The findings were similar to those of He et al., (2022), although contrary to other studies (Kaya, 2019; Rwenjuna, 2017), which pointed to inadequate geography teacher preparation.

It should also be noted that, despite the majority of the geography teachers considering their acquisition of geography content to have been adequate, those who took more geography content courses than others were still considered to have had a better understanding of geographical concepts. In agreement with other studies, findings also revealed that geography teachers felt those who took more geography courses had an advantage in understanding certain concepts learnt that others did not learn (Bowlick & Kolden, 2013; Harte & Reitano, 2015; Martin & Dismuke, 2018). This study established that geography teachers considered those who had more content courses to have higher self-efficacy especially in courses others did not study. Considering that geography is a wide subject, geography teachers are required to take as many courses as possible in order to ensure the adequate acquisition of content courses. Therefore, it is crucial for curriculum developers to develop programme structures that offer equal access to courses, especially considering that the responsibilities of geography teachers are the same upon employment. The study also highlighted the need for geography content courses to be offered by the school of education so the content could be aligned with the secondary syllabus.

7.3.4. Research question 4

What are the experiences of geography teachers in teaching geography in secondary schools?

The study revealed that the majority of the geography teachers both enjoyed and felt more confident in teaching either physical or human geography components. Most of the geography teachers who studied geography as their subject major enjoyed and found it easier to teach human geography than physical geography while more geography teachers who took the subject as their minor enjoyed teaching physical geography than human geography. It should be noted that even geography teachers who enjoyed teaching physical geography considered human geography to have been easier than physical geography. The findings are in line with literature that highlights human geography as easier than physical (Harte & Reitano, 2015; Fischer, 2022; Opoku et al., 2021). It should be noted that all the geography teachers who took the subject as their minor had a foundation in secondary school geography content which may have contributed to their enjoyment of physical geography.

The study also revealed that some geography teachers had challenges with teaching some geographical concepts, which made them request assistance from fellow geography teachers. The findings show that the self-efficacy beliefs of geography teachers who had an interest in learning from other geography teachers had improved over time through mastery experiences. Knowledge of learners has been highlighted by Shulman's, (1986) PCK theory as one of the important types of knowledge teachers should possess. In line with this, the findings show that geography teachers understood their learners' cognitive abilities, backgrounds and learning abilities. All the geography teachers in this study considered learners' active participation in the lesson as an indicator of a good lesson. This study has also shown that the majority of geography teachers had a good understanding of teaching methods and when to utilise each method, despite a few that needed a better understanding of methods.

7.4. Theoretical implications of the study

This study adopted the Pedagogical Content Knowledge theory (Shulman, 1986) and the self-efficacy theory (Bandura, 1977) in exploring geography teachers' experiences of their undergraduate teacher preparation. This theoretical framework assumed that geography teachers' acquisition of pedagogical content knowledge was aligned with their self-efficacy beliefs. Geography teachers' self-efficacy beliefs

were expected to have improved through their mastery experience with PCK during their teacher preparation. Furthermore, geography teachers were expected to be competent in geography teaching upon employment in secondary schools considering that teacher preparation should have assisted them in understanding the subject.

Using PCK and self-efficacy theories to understand pre-service geography teachers' experiences revealed that geography teachers' self-efficacy beliefs affected their acquisition of content and their teaching in schools. The findings reveal that geography teachers' prior experiences with the subject affected their decision-making at different levels in their interaction with PCK during teacher preparation. Geography teachers avoided selecting elective content courses in which they had low self-efficacy and preferred to select those in which they had high self-efficacy. The study further revealed that geography teachers' engagement with PCK during teacher preparation shaped their teaching in secondary schools. Some geography teachers still struggled with teaching some physical geography courses, even after mastery experience during their undergraduate degree.

The researcher assumed that student teachers' self-efficacy beliefs would improve after undergoing teacher preparation. Regardless of the experiences geography teachers had with content knowledge during teacher preparation, those with physical or human geography continued to have similar challenges in teaching the same components in secondary schools. Geography teachers' engagement with subject matter needed to translate into improved self-efficacy in all the components they would be expected to teach in schools. In line with the statement, Shulman (1986) explains that those who intend to teach particular content should understand the content well. From the four experiences explained by Bandura (1997), mastery experience and motivation influenced geography teachers more when it came to engaging in content knowledge than when selecting the subject as a major or minor teaching subject. The finding showed that geography teachers selected the subject as a major or minor based on different experiences provided by the self-efficacy theory.

The study also revealed that, generally, geography teachers had confidence in their utilisation of geography methods in class. The findings showed that despite acquiring pedagogical knowledge, some geography teachers still needed help utilising some

teaching methods in a class, showing low self-efficacy. Teacher preparation needs to improve student teachers' interactions with content and pedagogy to develop teachers with high self-efficacy through positive experiences. The findings also showed that some of the experiences, like in the learning of fieldwork, left some geography teachers with low self-efficacy, despite needing to teach the same concepts.

Although several studies have been done on teacher preparation, this study highlights the need for institutions of higher learning to develop teacher preparation programmes that encourage the improvement of student teachers' self-efficacy. This study revealed that geography teachers' experiences during teacher preparation were influenced by different factors, some of which included interest in subject matter, background in senior secondary content, the number of courses one studied, teaching methods utilised and the duration of practical experiences provided. Some of the experiences student teachers have with PCK produced little or no impact on their self-efficacy. It is the responsibility of teacher educators to help student teachers improve in components they avoid because of challenges, as this will help them effectively teach the subject in schools. With the world changing constantly, teacher preparation is responsible for offering good quality teaching to produce geography teachers competent in all aspects of the subject.

7.5. Practical implications of the study

This study established geography teachers' experiences of their undergraduate teacher preparation in relation to employment in schools. The study's findings were important in exploring the geography teacher preparation programme that the University of Zambia offers. Geography teachers experienced challenges with acquiring some pedagogical content knowledge and teaching some components of the subject, which shows that geography education needs improvement. Considering that some geography teachers had low self-efficacy in some components of physical geography, it means that some components of the subject were not taught with utmost enthusiasm, which could have also affected pupils learning. This trend was also seen in geography pupils when participants indicated that geography pupils had challenges with understanding physical geography components. This study suggests

that this is one of the reasons that geography pupils could be performing poorly in examinations (ECZ, 2013, 2015).

Improvement in teacher preparation remains crucial for developing the education system in Zambia. The study established that geography teachers had both positive and negative experiences which influenced their acquisition of PCK and their teaching of the subject.

The study established that not all geography teachers who took the subject were interested in the content, and some had no background in senior secondary geography, making them have unique challenges. Lack of prior interest in and knowledge of the subject affect geography teachers negatively. Enrolment of student teachers who have an interest in the subject will ensure that motivated and enthusiastic geography teachers teach the subject.

From the findings, it is clear that the enrolment of student teachers who had no background in the subject and needed more interest influenced their acquisition of PCK. This study echoes Larangeira and van der Merwe's (2016) suggestion that teacher education providers should consider enrolling students with prior knowledge in senior secondary geography if improvement of geography education is to take place in institutions of higher learning. The importance of prior knowledge remains an important determinant of effective teaching at the university level (Dolan et al., 2014; Larangeira & van der Merwe, 2016). Geography teacher preparation programmes will have fewer challenges if student teachers enrolled have a background in secondary school geography.

Another practical implication that the findings have highlighted is the need for teacher educators to find ways to help geography students improve their motivation in geography components found challenging, such as physical geography. The findings indicate that geography students avoided selecting difficult electives and concentrated on what was easy to understand. Furthermore, geography teachers indicated they had difficulties teaching certain concepts upon employment and therefore opted to get help from other geography teachers. Geography teachers must be competent in all components of geography if effective learning is to take place in schools. The provision of geography programmes that are flexible enough to help student teachers with special attention in particular courses could help.

The study's findings also established that the geography content offered during teacher preparation was too broad and in-depth compared to the geography content offered in secondary school. Teacher preparation programmes could be wide and in-depth, but still have a particular focus on the content that geography teachers will need to teach in schools. Programme structures should balance the physical and human geography courses so that geography students become competent in both components. The programme structure gave an advantage to those who studied more content courses (those who studied it as their major) than those who took fewer courses (those who studied it as their minor). The programme allowed geography teachers to select electives, with most picking only human geography courses. At the same time, they continued to have challenges with teaching physical geography in secondary schools. Institutions of higher learning need to pay extra attention to the development of programmes to ensure that geography teachers acquire adequate content knowledge.

7.6. Recommendations

Based on the findings of the study on geography teachers experiences with the teacher preparation programme, this section offers recommendations on essential matters that should be considered when developing an effective geography teacher preparation programme. The section also offers recommendations for future studies based on the findings. The following section highlights what should be considered important for geography teacher preparation based on the findings.

7.6.1. Based on the findings, the following are the suggestions of what should be considered important for developing an effective geography teacher preparation programme by institutions of higher learning

- a) The first thing that should be considered before students enrol in a geography teacher preparation programme is their background in senior secondary geography. Based on the findings, this study suggests that the geography teacher preparation programme should enrol students who have studied geography at the senior secondary level. Considering that a geography teacher is expected to be competent in the subject, it is expected that students with good results would be preferable if the subjects' enrolment could allow for such activities to be done. Geography teacher preparation will be

more effective if students enrolled have foundational knowledge in the subject, which reduces difficulties in understanding more advanced knowledge.

- b) Secondly, it is important for teacher preparation programmes to consider student teachers' reasons for selecting the subject as one of their teaching subjects. Students who are interested and enthusiastic about the subject are likely to become better teachers upon employment than those who select the subject out of convenience. While this may seem challenging, first-year students' orientation should include counselling sessions to help potential geography students make informed decisions before selecting the subject. Students should be made fully aware of what would be expected of them in the subject and what they would find. Providing full information and counselling before subject selection could also help students easily transition from secondary geography to university geography learning.
- c) The teacher preparation programme should ensure that students acquire a wide range of geography content that is balanced between human and physical geography courses. Geography is a broad subject that has many topics to cover. The findings showed that students felt those who acquired more content had an advantage. Because teachers are expected to be knowledgeable, studying a wide range of courses should be considered cardinal in teacher preparation. Furthermore, since student teachers are given the same responsibilities upon employment, they must acquire the same number of courses. Students studying the subject as their minor did not seem to have any advantages. This study suggests that student teachers should be allowed to enrol in two subjects of equal importance and take the same number of courses.
- d) Teacher preparation programmes should ensure that geography content to be taught in secondary schools is emphasised during teacher preparation. While teachers are expected to acquire more knowledge than they would need for teaching upon employment, ensuring that the content to be taught is included at an advanced level is important. This is not to say that geography teachers should only be taught content that they would be teaching. Acquisition of more content that helps geography teachers understand the

subject holistically is more beneficial than concentrating only on content to be taught in schools. Geography teachers with a bachelor's degree should understand the subject more than just in the context of geography teaching. In these changing times, even school syllabi change, and geography teachers need to be ready for such by acquiring more content.

- e) Institutions of higher learning should also promote the use of learner-centred teaching and learning strategies in order to foster 21st-century skills despite the challenging learning environments in developing countries. Geography teachers would be more likely to use teaching strategies that they had experienced during their teacher preparation. Based on the findings, there is a need to shift the focus from teacher-centred methods to learner-centred methods to ensure geography student teachers acquire knowledge and skills associated with the ever-changing modern World.
- f) This study suggests that for teacher preparation programmes to be effective, practical learning in the subject should be considered sufficient. A balance between theoretical and practical learning is desirable for a programme to be effective. Adequate time for practical learning and acquisition of pedagogical knowledge is cardinal in teacher preparation. Learners do not easily forget what they learn by doing compared to learning by listening or seeing. This study suggests that student teachers should be given adequate time of at least three months of teaching in schools during their teaching experience, which is part of learning through practice. Peer teaching in methodology courses equally needs adequate attention for effective learning.
- g) Adequate teaching and learning materials are essential issues to consider in teacher preparation. Well-equipped lecture rooms, libraries and other physical facilities should be considered integral to teacher preparation. With new technologies being part of this era, institutions must consider investing in equipment that improves students' learning.
- h) Effective teacher preparation programmes also need to consider ways of improving the professional development of teacher educators. Teacher educators need to assess their teaching methodologies continually if effective

knowledge acquisition is to occur. Workshops and conferences are handy in offering platforms where knowledge can be shared. Student feedback on teacher educators' teaching will also offer valid information that can help teacher educators pay more attention and improve their teaching.

- i) Finally, this study suggests that an effective geography teacher should be more deliberate about teaching physical geography. Teacher educators need to find ways of teaching abstract concepts to help students have fewer challenges in understanding concepts. Teaching difficult and abstract concepts can be improved by engaging in more practical-based learning, using easy-to-understand visual aids, and adopting interactive pedagogical approaches.

The figure on the next page summarises the suggested important aspects of an effective geography teacher preparation programme for institutions of higher learning that can promote positive student-teacher experiences, as suggested by the findings of this study.

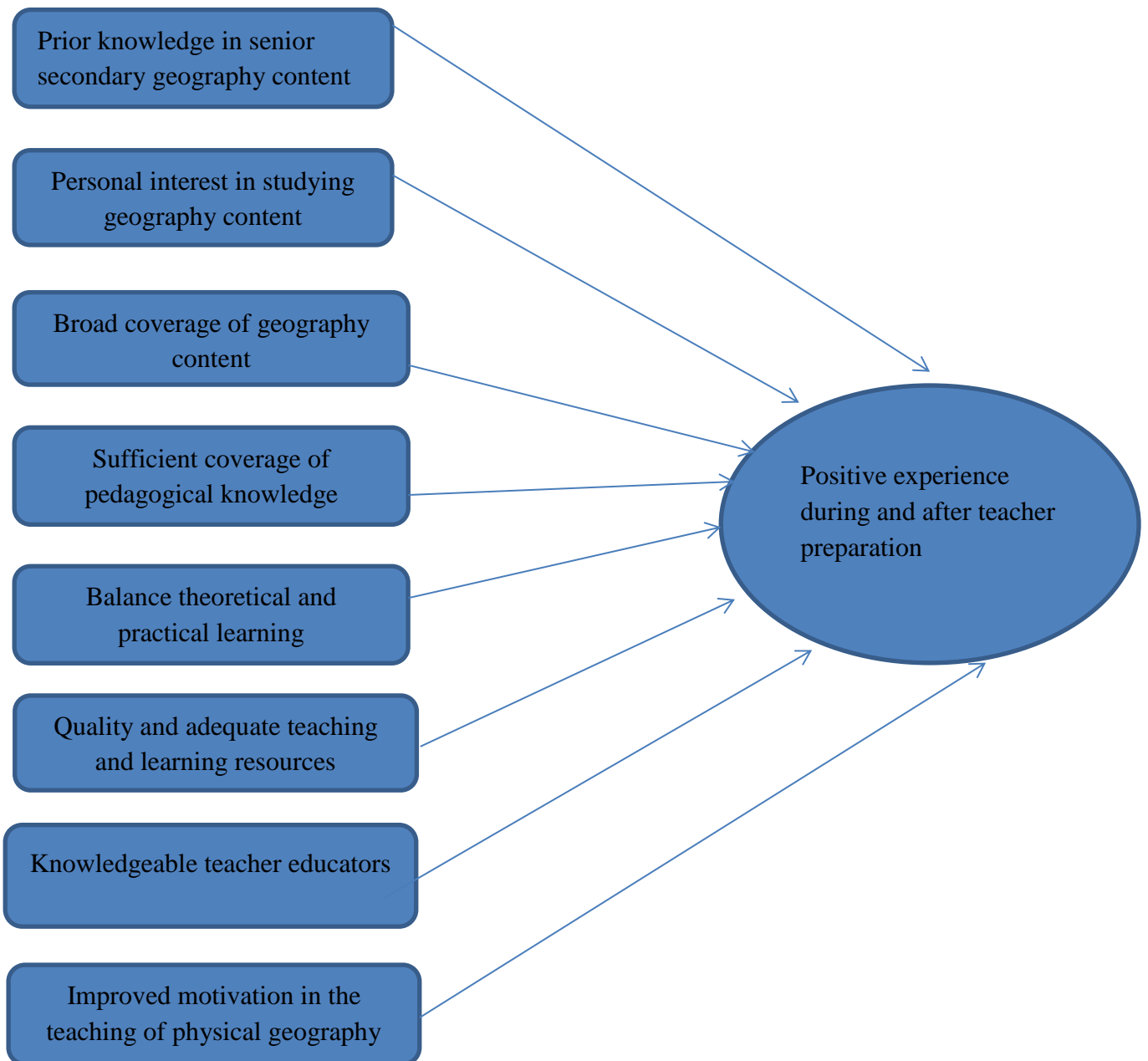


Figure 3: Attributes of teacher preparation that offer positive student-teacher experiences that promote effective geography teaching

7.6.2. Recommendations for future studies

In a fast-changing world, scholars need to be engaged in research to find solutions to challenges coming with change. The study's findings only apply to the geography teacher preparation programme offered at the University of Zambia. Therefore, this study suggests that other institutions should do other studies on teacher preparation. Teacher preparation colleges and universities in Zambia should consider carrying out similar studies in geography education to establish how geography teachers trained in their institutions are performing in teaching the subject upon employment.

Considering the study's findings, it is clear that teacher preparation within the same institutions but different subject disciplines may also differ and as such, other researchers can also consider exploring or assessing teacher preparation in subject disciplines other than geography. To have an in-depth understanding of teacher preparation programmes, this study recommends that other researchers investigate teacher preparation with a particular focus on individual subject disciplines. While this study explored geography teachers' experiences of their undergraduate teacher preparation and upon employment, other studies should explore teacher preparation from the point of view of geography teachers and teacher educators.

The findings of this study have also shown that it is necessary to carry out detailed research on the use of some pedagogical approaches. There is need for institutions of higher learning to conduct in-depth research that should focus on understanding the laboratory method and fieldwork that were highlighted as challenging by the participants. Other pedagogical approaches like Problem-Based Learning (PBL) in teaching geography can also be explored. Golightly and Raath (2015) in South Africa have shown the value of PBL in teaching geography teachers to think more broadly and apply 21st-century skills in their geography classrooms. More studies on what can be done to improve students' teachers' self-efficacy in their acquisition of Pedagogical Content Knowledge during teacher preparation are also needed. This study has further established that it is important to conduct further research on how first-year geography student teachers without a background in secondary school geography can be assisted to transition into learning and understanding university geography content by institutions of higher learning. Conducting such a study will help reduce challenges that are experienced by those without foundational knowledge in the subject.

7.7. Limitations of the study

This study employed a case study design under the qualitative research approach, which has limitations. The study's findings on geography teachers' experiences of their undergraduate teacher preparation at the University of Zambia cannot be generalised to other geography teachers or universities. However, the study did not aim to generalise the findings to geography teachers trained by other universities or colleges in Zambia. The study would have provided an in-depth understanding of

geography teacher preparation in Zambia if it had been extended to other institutions preparing geography teachers.

Another limitation of the study is the bias that comes with using purposive sampling, which does not give all members an equal chance of being selected. To help offset the effects of this bias, data were collected from geography teachers teaching in rural and urban provinces. One of the challenges experienced during data collection was the inaccessibility of geography teachers who studied the subject as their minor. The researcher collected data from four geography teachers who studied the subject as a minor but reaching five, like the number of those who studied as a major, proved impossible. The study was conducted when the government had not employed most graduate teachers who had graduated in recent years. However, this did not affect the study's findings, considering that data saturation was attained with four participants during data collection.

Using interviews as the main source of data collection was also a limitation of this study. However, the interview guide, designed to establish geography teachers' experiences, provided in-depth information that offset the negatives of using one instrument. The interview guide was particularly effective in a case study design, where detailed information is crucial, thereby justifying its use in this context. This study was carried out at the time the Covid-19 pandemic was declared worldwide which made it difficult for the researcher to focus on studies when news of deaths made it emotionally challenging to engage in research. Furthermore, a few participants were interviewed virtually at their request instead of carrying out face-to-face interviews as a way of dealing with the Covid-19 pandemic. However, this did not affect the credibility of the responses given considering that interviews can be carried out face-to-face or virtually in research.

Insufficient amount of information brought out on geography teachers experiences and knowledge of assessment methods was another limitation of this study. This is a limitation considering that assessment is an important aspect of Pedagogical Content Knowledge framework. Geography teachers brought out little information in relation with their experiences with assessment methods employed during their teacher preparation. Geography teachers highlighted their experiences with the use of the laboratory method and fieldwork project as forms of assessment which they had challenges with. However, the study remains significant considering the depth of

information that has been revealed relating with geography teachers experiences with content and pedagogy which are important aspect of the Pedagogical Content Knowledge framework. Other than that, other aspects of the PCK framework like teachers knowledge of learning and their learners have been explained. In support of the above statement, Smit et al (2023) recommends for researcher's to incorporate evidence of teacher knowledge of subject matter and their teaching which should explain coherence between at least two PCK elements, which the present study has done. In addition, Filgona et al (2020) explains that subject specific content knowledge and the knowledge of pedagogy employed in the teaching of the subject are the most important domains of the Pedagogical Content Knowledge framework.

7.8. Conclusion

The study explored geography teachers' experiences of their undergraduate teacher preparation at the University of Zambia and also upon employment. The study revealed that geography teachers had both positive and negative experiences in the process of learning. The findings revealed that geography teachers felt adequately prepared for school geography teaching. However, some geography teachers had challenges teaching certain concepts and using certain teaching methods that prompted them to ask for assistance from other colleagues. More geography teachers had more interest and confidence in either teaching human geography or physical geography while a few had the same amount of interest and confidence in teaching both human and physical geography. The study revealed that not all geography teachers had a background in senior secondary geography, and not all the geography teachers who selected geography as their teaching subject had an interest in the content, aspects that were usually ignored in studies done at the University of Zambia in teacher preparation. Geography teachers' self-efficacy beliefs influenced their decisions and experiences during and after teacher preparation.

The study concludes that geography teacher preparation at the University of Zambia had challenges, some imposed by the programme's structure, which affected the effective teaching of the subject in schools. Considering the findings, this study has suggested essential changes that can be made to improve geography teacher

education at the University of Zambia. Geography teachers' background with the subject and their belief in their capabilities remain important to teacher preparation. Teacher preparation institutions must find ways of helping improve student teachers' beliefs in their capabilities if effective teaching and learning are to take place, both during teacher preparation and upon employment. This study has made significant contributions to literature in geography education and curriculum development from a Southern African perspective, which can benefit curriculum developers, teacher educators, and geography teacher employers.

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LIST OF APPENDICES

Appendix 1: Letter of permission to conduct research-DEBS

District Education Board Secretaries

Central, Lusaka, Southern, and Western Provinces of Zambia.

Dear Sir/Madam

RE: PERMISSION TO COLLECT DATA FROM GEOGRAPHY TEACHERS IN SECONDARY SCHOOLS

Reference is made to the above captioned subject, I am writing to request for permission to carry out a study among geography teachers that were trained at the University of Zambia that are now teaching in secondary schools of Lusaka and Central Provinces.

The study explores geography teachers' experiences of their undergraduate teacher training and their teaching of geography in Secondary schools upon employment. The interviews will be conducted starting in September and ending in October, 2021.

The researcher will carry out a face to face interview with participants in their respective work places. The interview will be audio recorded to ensure accurate information is collected.

The study will strictly adhere to the covid19 prevention measures. The interviewer will observe a physical distance of one meter or more from the interviewee during the interview. The researcher and the participant will both wear masks during the interview and alcohol-based sanitiser will be used before and after the interview.

This research study is in fulfilment of the researchers PhD study in Geography Education at the University of Pretoria. My supervisor is Dr Clinton van der Merwe at UP. I sincerely appreciate your attention to this matter and I look forward to your response.

Yours faithfully,

Matilda Kanyampa Nakazwe

Dr. Clinton van der Merwe

Appendix 2: Letter of permission to conduct research- school managers

Secondary School Managers,

Central, Lusaka, Southern, and Western Provinces of
Zambia.

Dear Sir/Madam

RE: PERMISSION TO COLLECT DATA FROM GEOGRAPHY TEACHERS IN YOUR SCHOOL

Reference is made to the above captioned subject, I am writing to request for permission to carry out a study among geography teachers that were trained at the University of Zambia that are now teaching in secondary schools.

The study explores geography teachers experiences of their undergraduate teacher training and their teaching of geography in Secondary schools upon employment. The interviews will be conducted starting the third week of May and will end in June, 2021.

The study will involve face to face interview which will be audio recorded to ensure accurate data is collected. The interview will take place within participants work premises to avoid inconveniences. The researcher will ensure that the interview does not interrupt classroom teaching or teaching routines of the participants.

The study will strictly adhere to the covid19 prevention measures. The interviewer will observe a physical distance of one meter or more from the interviewee during the interview. The researcher and the participant will both wear masks during the interview and alcohol-based sanitiser will be used before and after the interview.

This research study is in fulfilment of the researchers PhD study in Geography Education at the University of Pretoria. My supervisor is Dr Clinton van der Merwe at UP.

I sincerely appreciate your attention to this matter and I look forward to your response.

Yours faithfully

Matilda Kanyampa Nakazwe

Dr. Clinton van der Merwe

Appendix 3: Informed consent for secondary school geography teachers

Date: _____.

Informed consent form for Geography Teachers

Dear Participant

You are invited to participate in an academic research study to be conducted by Matilda Kanyampa Nakazwe a PhD student in the Department of Humanities Education at the University of Pretoria.

Description of the study

The study is titled as *Experiences of Geography Teachers of a teacher preparation programme*. The aim of the study is to explore geography teachers experiences of a teacher training programme at the University of Zambia. Specifically, we are going to conduct a face to face, virtual or telephone interview which should not take more than an hour. The interview will be audio recorded for the purpose of making sure accurate information is collected and transcribed. The interviews will take place starting the third week of May and will end in June, 2021. Interviews will take place in your work premises which are Secondary schools and the researcher will ensure that the interview does not disrupt the teaching and learning.

Ethics and Participants Rights

This study adheres to research ethics and I assure you that:

1. Your participation in this study is entirely voluntary.
2. Your participation in this study is very important to us, however, you can choose to withdraw from the study at any time without any negative consequence.
3. You will not be identified or named but a number will be assigned to you and information about you will be recorded in that manner.
4. All the information that you will provide during the interview will be used for academic purposes only and may be published in an academic journal. We will provide you with the summary of our findings upon request.

The interviewer will ensure that all the covid19 preventive measures are followed. A physical distance of one meter or more will be maintained between you and the interviewer during the interview. Furthermore, you and the interviewer will be required to wear masks and use alcohol-based hand sanitizer at the beginning and the end of the interview.

We also would like to request your permission to use your data, confidentially and anonymously, for further research purposes, as the data sets are the intellectual property of the University of Pretoria. Further research may include secondary data analysis and using the data for teaching purposes. The confidentiality and privacy applicable to this study will be binding on future research studies.

If you have any questions please contact my supervisor Dr. C. van der Merwe (Clinton.vandermerwe@up.ac.za).

Matilda Kanyampa Nakazwe

Signature:

Dr. Clinton Van der Merwe

Signature:

Please sign the form to indicate that:

- You have read and understood the information provided above.
- You give your consent to participate in the study on voluntary basis

Date

Participants Signature.....

Appendix 4: Interview protocol

Research instrument

I am a PhD student carrying out an academic research study in which your assistance is very important. Please kindly respond as truthful as possible to the questions that I will be asking. The information you will give will be treated with utmost confidence and will only be used for the sole purpose of this particular study.

Date:

Time of interview:

Interviewer:

Length of interview:

.....

Title:

Interview Guide for Geography Teachers

1. *Gender*
2. *Year graduated from UNZA*
3. *How many years have you taught in Secondary school?*
4. *Why did you select geography as one of your teaching subjects?*
5. *Did you take geography as a major or minor?*
6. *Why did you select it as your major/minor?*
7. *What was your expectation of the geography teacher training programme before commencing studies? (Content, lecturers, resources, assessments, time)*
8. *How would you describe the teaching and learning that took place during your undergraduate training? (How were you trained, what was expected of you, number of courses) Teaching methods, resources, time allocated quality of courses and assessment.*
9. *What geography components or courses did you enjoy learning and why (Human, physical, Zambian and sub region, mathematical and map reading.*
10. *What challenges did you face in learning geography as a geography student at UNZA? (geography student)*

11. *Did your teacher training adequately prepare you for geography teaching in schools? Give details, (adequate & relevant courses (physical, human, mathematical, Field work, Zambian and surrounding region geography and map reading? How has your pre-service teacher training influenced your teaching of geography*
12. *How has the decision of taking geography as major/minor influenced your teaching in schools? (More courses/less courses). Do you think there could be differences in the way one who took geography as major teaches and one who took geography as minor?
Geography teaching in secondary school*
13. *What are your responsibilities as a geography teacher?(aware of national or state standards)*
14. *What do you think the study of geography entails?*
15. *Why is it important for geography to be taught in schools?*
16. *What teaching methods do you usually utilize when teaching different components of geography and why? (Pedagogy)*
17. *What areas of geography do learners often have difficulties understanding? (What challenges do learners have in learning geography)*
18. *Where do you access your materials and information for teaching geography? (Sources of information)*
19. *What knowledge do you have about your geography learners?(how does that influence your teaching) what do learners struggle to understand*
20. *How would you describe the content courses you took in geography at UNZA in relation to content you teaching in schools?*
21. *What challenges do you face in teaching different geography components? (Assessment of one's confidence in teaching different components) / what some of the Challenges of teaching geography in secondary schools?*
22. *How do you teach difficult geographical concepts (where do you get help, preparation, actual teaching)*
23. *How would you evaluate your teaching of geography in schools? (Enjoy teaching geography all components, confidence in teaching physical, human, mathematical, Field work and map reading?)*
24. *An account of what you consider to be a good lesson and a bad lesson*

(characteristics of good geography lesson).

25. *What do you think should be done to improve the teaching of Geography in schools?*
26. *Weaknesses and Strength of UNZA geography teacher preparation program.*
27. *What can improve the geography teacher preparation program at UNZA?*

Thank you for participating in the discussion.