AN ASSESSMENT OF THE TEACHING OF BRAILLE LITERACY IN ZAMBIA: A CASE OF A SCHOOL FOR THE VISUALLY IMPAIRED IN NDOLA DISTRICT

BY

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A Dissertation Submitted in Partial Fulfilment of the Requirements for the Award of the Degree of Master of Education in Special Education of the University of Zambia

THE UNIVERSITY OF ZAMBIA

LUSAKA

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DECLARATION

I, **Masika Moses Sakai**, declare that this dissertation represents my own work and that it has not previously been submitted by any other person for a degree at the University of Zambia or any other University and it does not incorporate any published work or material from another dissertation.

Signature of Author…… Date……

CERTIFICATE OF APPROVAL

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DEDICATION

This dissertation is dedicated to my late beloved mother Mrs. Lenna Samwangwa Masika, for her unfailing love and care from the time I was born, attacked by measles and became visually impaired. She did not relent but took me to school despite the hardships in those days and ensured that I was educated and be employed but unfortunately passed on at the time when she was due to reap what she had sowed. Although she was not educated, she devoted her time to see me educated, I owe her honour and respect and may God bless her richly.

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ABSTRACT

With the recent introduction of a curriculum and grades syllabi to guide specialist teachers on how to teach Braille as a subject, there hasn't been a study to review the current practices regarding the teaching of Braille Literacy. This study therefore, sought to contribute to the understanding of teaching Braille Literacy in special schools in Zambia. Specifically, the study sought to assess the practices in teaching of Braille Literacy, find out methods and techniques used in teaching it and establish associated challenges. A mixed methods design supported by use of qualitative and quantitative techniques were used to collect and analyse data. Purposive sampling was used to select the respondents. The instruments used were questionnaires, observation schedule, and focus group discussion. The sample size was 70 broken down as; 35 pupils and 30 teachers from the study school, and 5 lecturers from two teacher education institutions. Data was collected through use of questionnaires and interview guides. Qualitative data was coded and analysed getting themes and sub-themes presented descriptively. Quantitative data was analysed using the statistical package for social sciences (SPSS) software version 20 to generate descriptive statistical information in form of frequencies and percentages. Some of the findings were that; Braille Literacy was being taught although teachers faced a lot of challenges in teaching it. Braille Literacy was not taught as a separate subject and English as opposed to a familiar language was used from grades one to four. Both trained and untrained specialist teachers were assigned to teach it, ordinary methods of teaching were applied, too many pupils in one class and lack of educational resources. These were found to be the major findings in the study school. Based on the above findings, the study recommended that Ministry of Education consider deploying more qualified personnel to schools for the visually impaired; make available teaching and learning resources to support Braille Literacy education in schools for the visually impaired.

Keywords: *Teaching, Braille Literacy, Practices, Methods, Teaching resources, Challenges*

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ACRONYMS

AFB	American Federation of the Blind
CDC	Curriculum Development Centre
EFA	Education For All
FGD	Focus Group Discussion
ICT	Information Communication Technology
IEP	Individualized Education Programme
JAWS	Job Access With Speech
MOE	Ministry of Education
MOGE	Ministry of General Education
NBP	National Braille Press
PDA	Persons with Disabilities Act
VI	Visually Impaired
ZAMISE	Zambia Institute of Special Education
ZAPD	Zambia Agency for Persons with Disabilities
ZECF	Zambia Education Curriculum Framework

DEFINITIONS OF KEY TERMS

Assessment:	act of judging or deciding the amount, value, quality or importance of something
Blindness:	Inability to see anything, even light.
Braille:	System of writing for the visually impaired that uses Characters made up of raised dots on paper**.**
Braille Literacy:	Ability to read and write using Braille
Cell:	Single unit space that contains two parallel columns of three dot positions each from which alphabet is composed
Contraction:	Short form of writing words using Braille
Devices:	Apparatus used to write and/or read Braille.
Dot:	embossed character in a cell
Literacy:	Ability to read and to write with proficiency.
Low vision:	a condition of an eye whose visual acuity is 20/70 or poorer in the better eye and cannot be corrected or improved with regular eyeglasses
Pupil:	A learner under a supervision of a teacher
Special School:	school specifically for pupils with special education needs.
Teaching:	To impart new knowledge in pupils
Visual impairment:	Total or partial loss of Sight

CHAPTER ONE: INTRODUCTION

1.1. Overview

In this chapter, the following topics are highlighted: background to the study, statement of the problem, purpose, objectives, and research questions. The chapter also discusses the significance of the study, limitations, delimitation, theoretical framework and conceptual framework and it ends with operational definitions of key terms and a summary of the chapter.

1.2. Background

The Ministry of Education in Zambia upholds the principle that every individual has an equal right to educational opportunity. This means that every individual, regardless of personal circumstances or capacity, has a right of access to and participation in the education system, (MOE, 1996). It also means that even the pupils with impairments are included in the education system which is anchored in learning to read and write. Learning to read and write in this case is critical to the child's academic development because Literacy serves as the foundation skill for school based learning, (Matafwali, 2005: 2010). As for visually impaired pupils it is no difference as Braille is in place for them to use academically. However, Braille Literacy poses a challenge following its nature, method of writing and reading among the visually impaired pupils. Around 253 million people live with vision impairment worldwide, of which 36 million are blind. The vast majority live in low-income settings. Globally, uncorrected refractive errors and un-operated cataract are the top two causes of vision impairment among children and adults in the world and more so among those living in developing countries, (World Health Organization, 2017). This means that if people with visual impairments were to participate meaningfully in their communities, learning to read and write rooted in Braille Literacy was the only way to be tapped and nurtured as it was also the source of employment for the visually impaired, (Ryles, 1996).

Braille was invented in France by Louis Braille in 1800s and was put into use in 1832 to date, (Wormsley, 2011). In Zambia the education for the visually impaired and indeed official use of Braille as a language of instruction began in the year 1905 at Magwero in

Chipata of eastern province, (Kalabula, 1989). The teaching of Braille in the early special education schools was centred on Braille Literacy skills. Since then the visually impaired have been learning most of the subjects using the ordinary curriculum for every pupil in Zambia and built on acquisition of Braille literacy skills. To that effect, the ordinary grade syllabus was formulated with the assumption that the pupils were going to use sight to learn, (Simalalo, 2006). This in turn brings about a challenge to those with visual challenges. One such challenge is that as for the sighted pupil, what is written is immediately seen for an interpretation and retention while for the visually impaired what is written depends on the device used, for example, if it is a slate and stylus it takes a longer time to be interpreted due to the nature of writing and reading using Braille. This should have attracted a Braille curriculum and or syllabus to be adapted providing a road-map for implementation of Braille teaching and learning. In the recent past Zambia has had no curriculum to guide specialist teachers in how to teach Braille as a subject. This meant that it was up to the teachers to come up with the way it was taught suiting grade levels while sticking to the ordinary curriculum for guidance. With the newly introduced curriculum guidelines enshrined in Zambia Education Curriculum Framework and syllabi MOE (2013), it was worth finding out how the teaching of Braille Literacy as a subject was being implemented.

Braille has codes for writing text, music, and even technical material for mathematics and science. Text or literary Braille has two forms: non-contracted or alphabetic Braille and contracted Braille for saving space: Alphabetic Braille, formerly called grade one, writes out each letter and word exactly as it is spelled out in print. For example, in Alphabetic Braille the word "can" is written by using three separate Braille cells one cell for each of the three letters in the word "c, a and n." On the other hand, Literary Braille, formerly called grade two, is also called contracted Braille. For example, in Braille the word "can" is written in a highly condensed or contracted form, using only one Braille cell to represent the entire word, (RNIB, 1968). These differences according to Simalalo (2006) slow the pace at which reading and writing are learnt as a lot of memorizing is involved.

Learning Braille as a beginner is similar to learning a new language. In addition to memorizing the dot configurations of the alphabet, numbers, punctuation, and

contractions, one needs sufficient finger sensitivity to feel the dot combinations. Also the devices to use for writing are not readily available in local shops for parents to buy for their children as they do for the ordinary children Wormsley (2004). This limits continuity of learning at home as most such devices are left under lock and key in schools. Wanting to learn Braille is always a personal choice as some people have usable vision, but their eyes tire easily or become irritated or uncomfortable when reading for longer periods of time warranting Braille Literacy a must, (Mandyata and Kamukwamba, 2018). The criteria followed for learning Braille literacy is worth investigating in the study school whether all the visually impaired pupils regardless of severity of vision loss were compelled to learning Braille literacy and how they acquire the required Braille Literacy skills was not well known.

Studies in many countries like Singapore, India, Australia and United States of America (USA) have revealed that Braille is not being taught to most blind pupils today who lose their sight. Many commentators on the Braille Literacy crisis agree that one of the most significant contributing factors is a negative societal attitude towards Braille (Riccobono, 2006). Additionally, most of those who were attempting to educate the Visually Impaired (VI) were advocating teaching them to read print rather than using a separate system arguing that Braille is slow and hard to learn and that it isolates blind children from their peers (Mellor, 2006).

Contrary in Zambia MOE (2013) directed that all student teachers shall be exposed to adequate knowledge and skills in Braille Literacy to enable them to communicate effectively with pupils with visual impairments. Therefore, there was need to assess and document the findings about the current practices in teaching of Braille Literacy in Zambia.

In summary, the principle standpoint of the Ministry of Education in Zambia has been highlighted concerning education as a right for all citizens, after which the birth of education for the blind in Zambia has been discussed alongside the curriculum in use. However, what remains unclear is how Braille Literacy was being taught and learnt by

teachers and visually impaired pupils respectively in special schools, hence the present study.

1.3 Statement of the Problem

Although the Ministry of General Education has revised the literacy policy for Zambian schools several times with the latest one in 2013, (MOE, 2013), little is known about current practices in teaching of Braille Literacy to visually impaired pupils. Matafwali (2005) found that there were many studies which had been conducted on reading and writing with a focus on sighted pupils but not the visually impaired. The challenges experienced among print readers and writers in relation to Braille Literacy may not be necessarily the same as those experienced by visually impaired pupils who are Braille users. Mtonga (2011) revealed that there was an outstanding absence of attention paid to learning practices that exist among pupils with visual impairments in Zambia, more so, those using Braille as a medium of instruction. Comparatively, there has been limited study to investigate teaching of Braille Literacy in special schools for the visually impaired bordering on practices of teaching Braille reading and writing in Zambia, a reason why this study was undertaken.

1.4 Purpose

The study is thus intended to investigate and establish the extent of how Braille Literacy was being taught and learnt in a selected special school in the study district. This particular study proposes to describe and analyse the various practices, approaches and challenges teachers were experiencing in teaching Braille Literacy in the study school.

1.5 Objectives of the Study

1) To establish practices in the teaching of Braille Literacy to the visually impaired pupils in the study school.
2) To assess methods and techniques used by teachers in teaching of Braille Literacy in the study school.
3) To examine challenges teachers face in teaching Braille Literacy to pupils with visual impairments in the study school.

1.6 Research Questions

The study was guided by the following research questions:

1) What are the practices in the teaching of Braille Literacy to the visually impaired pupils in the study school?
2) What methods and techniques were teachers using in teaching of Braille Literacy in the study school?
3) What challenges do teachers face in teaching Braille Literacy to pupils with visual impairment in the study school?

1.7 Significance

The results of this study may be helpful to the Ministry of education to understand the challenges that are faced by both the teachers and pupils teaching and learning Braille Literacy respectively. This may in turn help in planning for both teachers and pupils where Braille Literacy expectations are concerned. In the case of the Examination Council of Zambia, this study may help the institution develop acceptable standards of Braille examination materials for pupils. Similarly, it is expected that teacher education colleges may use these research findings to enhance methods of training teachers in Braille Literacy skills.

1.8 Limitations of the Study

Owing to inadequate time and resources, only one out of six residential schools for the visually impaired in Zambia was sampled for this study. The distances from one school in one province to another in a different province hindered the researcher from covering many schools. As these schools are in different provinces far apart it meant that the learning experiences of pupils with visual impairments in the different provinces comparatively may not be the same. These differences in learning environments and experiences would have provided additional information patterning to the study at hand. However, this may not be possible. Therefore, the results of this study may not be generalized to all special schools for the visually impaired.

1.9 Delimitation of the Study

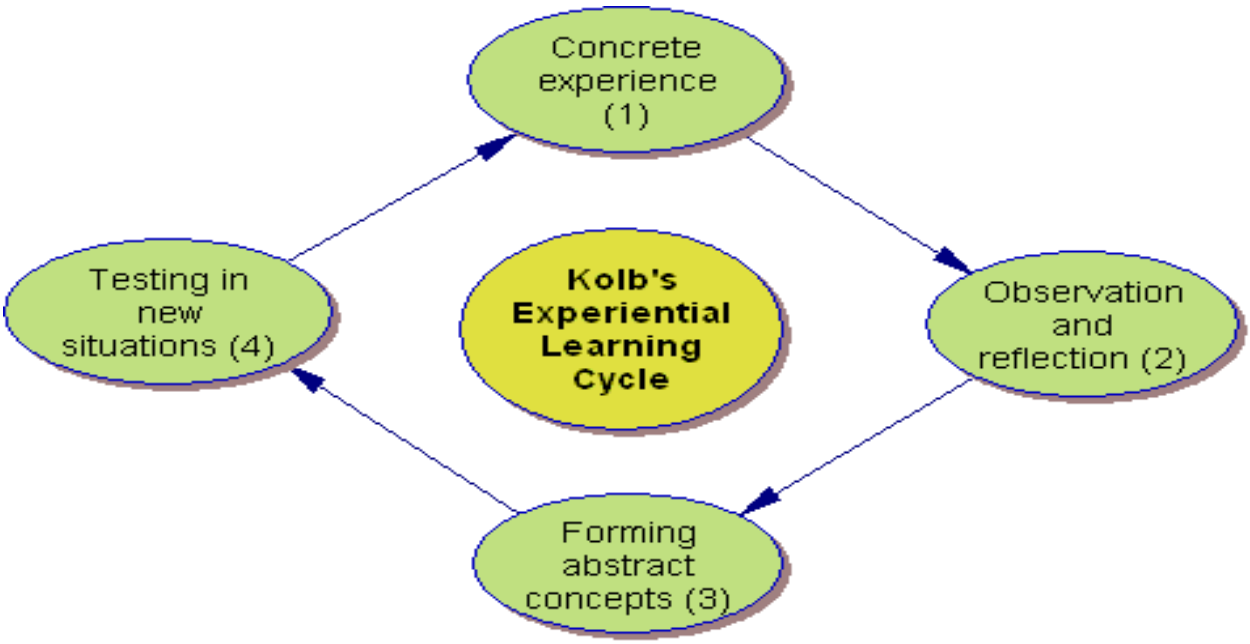
The study was confined to pupils with visual impairments who use Braille for reading and writing in Ndola district. The teachers who were the respondents were only those who were teaching the visually impaired pupils with a specialization in Braille reading and writing has been chosen because it has a good number of visually impaired pupils attending a special school there. ZAMISE and Kwame Nkrumah University have also been selected because they train specialist teachers to teach the visually impaired pupils. These respondents were believed to have sufficient experiences to positively contribute to the study.

1.10 Theoretical Framework

The study was guided by a four-stage cyclical theory of learning dubbed experiential learning theory which is a holistic perspective that combines experience, perception, cognition, and behaviour, (Kolb. 1984). In this theory learning is believed to be the process whereby knowledge is created through the transformation of experience. The theory presents a cyclical model of learning, consisting of four stages as shown in figure 1. One may begin at any stage, but must follow each other in the sequence, (Kolb, 2014). For example, in reference to the diagram, figure 1, it is assumed that when the visually impaired pupils are presented with a 'concrete' Braille letters, that is tantamount to 'seeing' through tactile means. This forces them to feel them properly in order to understand what the letters or their patterns are through 'observation and reflection'. This in turn will trigger inferences about the Braille letters to already known Braille letters or accommodate them as new Braille letters which they can even explain without necessarily looking or feeling them because they would have formed 'abstract information or concepts' about them. So because they have them in abstract form, it means they can use the information stored to 'testing in new situations' as in form of writing and/or reading thereby becoming Braille literate.

Additionally, for example, the teacher may start at: 'testing in new situations' where the teacher's objective is to teach from known to unknown by presenting uncontracted Braille words such as; bathed, standing, mountain, dance and so on and asks the pupils to

identify the parts which need to be contracted. After they have made attempts, then the teacher would introduce the 'concrete experience' with the same words in their contracted forms so as to heighten their level of mastery which would be very helpful to enable the pupils to make 'observations and reflections' about the particular Braille Literacy concepts introduced in a lesson. As a result of that exposure it would be very easy for the pupils to, 'form abstract concepts' emanating from the identified contracted parts of the words seen earlier in their uncontracted forms. In this way, the pupils are expected to become Braille literate because they are practically and cognitively engaged by; trying, seeing, using and storing the vital information about the Braille concepts taught in a lesson by a specialist teacher.



Source: (Kolb, 2014)

Figure 1. Kolb's experiential learning circle

Arising from Kolb's work shown in the above illustration, the theory seems to show that the learners with visual impairment attempting to acquire Braille Literacy are bound to do well if started with relevant 'concrete experience' (CE) in Braille Literacy or activities where the pupil actively experiences Braille Literacy through lessons. In this context the visually impaired pupil is provided with a concrete object in relation to what is to be learnt. The theory also suggests the use of 'reflective observation' (RO) or observations

where a pupil consciously reflects back on that experience in relation to learning Braille Literacy, say reading or writing Braille. In this case the visually impaired pupil consciously feels the object tactilely to 'see' what it is. Then further, the theory provides an 'abstract conceptualization' (AC) or 'think' where the pupil attempts to conceptualize an object or model of what is or has been observed, in this case embossed characters. The visually impaired pupil is able to understand in abstract what has been observed. Another, element of interest in the theory is the issue of 'active experimentation' (AE) or 'plan.' This is where the pupil is trying to plan how to test a model. The theory provides bench marks or plan that brings the practical experience in the acquisition of Braille Literacy skills which provides the desire to learn the content. By so doing the pupils are expected to become Braille Literate through the cultivation of this theoretical framework.

1.11 Summary of the Chapter

This chapter presented the genesis of the problem, the statement of the problem, and the purpose of the study were discussed in this chapter. The intentions of the study have been highlighted after which the objectives and research questions were formulated to guide the study. The significance of the study which highlighted the beneficiaries of the study were also discussed followed by the limitations and delimitation of the study. Further the chapter discussed the theoretical framework which was formulated to guide the study. The chapter ends with the definitions of key terms in the study before indicating the next chapter which is on review of related literature to support the study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Overview

Literature review refers to activities involved in identifying and searching for information on a topic and developing an understanding of the state of knowledge on that topic (Polit & Hungler, 1999). Literature review also refers to an organized written presentation on what has been published on a topic by scholars and a presentation of research conducted in your selected field of study (Burns & Grove, 2009). The literature review used in this study was mainly from journals and online. The focus of literature review was on studies done that are closely related to this topic. This chapter explores relevant literature on Braille Literacy among pupils with visual impairments. Research findings and conclusions made by other researchers on the similar topics are presented in line with the following themes: (i) establish practices in teaching Braille Literacy to the visually impaired, (ii) assessment of methods and techniques used by teachers in teaching of Braille Literacy and (iii) examining the challenges faced by the teachers in teaching Braille Literacy in the education of the visually impaired pupils.

2.2 Historical and Development of Braille Language

Historically, there has never been a successful mode of reading and writing for people with visual impairments better than Braille. Though since its inception it has been a controversial issue among scholars and researchers ranging from what the best code was, to the best methods of teaching it, it has survived to this day as one of the primary means for teaching how to read and write among the visually impaired pupils. However, (AFB, 2009) reported that there is a Braille literacy crisis in America as nearly 90 percent of America's visually impaired pupils are not learning to read and write because they are not being taught Braille or given access to it. The American Printing House for the Blind (2016) estimated that about 60,400 students of visually impaired children between the ages of four and 21 were attending public schools. Here was a breakdown of the literacy percentages for these children: 9.2% of students are defined as auditory readers, 18.3% of students are pre-readers (learning the reading basics), and 29.2% of students were defined as print readers while only 8.5% were identified as Braille readers. In Zambia, however,

it was not clear on how many visually impaired learners between ages of four and 21 were literate or had sufficient Braille Literacy skills. Hence, the current study sought to assess the teaching of Braille Literacy skills to learners with in Zambia.

To that effect, fewer than ten percent of the 1.3 million people who are legally blind in the United States are Braille readers. The current effects of this crisis are dire such that over 70 percent of blind adults are unemployed, and as many as 50 percent of blind high school students drop out of high school. Comparatively, just as ink-print has evolved so is Braille except the difference is that in the recent past its popularity has decreased as reported by many countries such as Kenya, Britain, America and Australia to an extent where the newly blind pupils are not getting access to it in preference to other Literacy modalities, (Ryles, 1996). If indeed the situation were so, then the 70 percent of the adults talked about as being unemployed and 50 percent of the blind high school dropouts were not going to be a dire consequence of Braille Literacy crisis as other literacy modalities would have served the purpose of providing employment and enabling environment for the high school grade progression towards completion of secondary education. Students with visual impairments have unique learning needs that must be addressed if they are going to be ready for further education, employment and/or independent living (Texas Education Agency, 2017). The question however, still remains as to what the literacy levels of persons with visual impairment were in Zambian society. The study was an attempt to assess the teaching of Braille literacy levels and how it contributed to their reading and writing skills in the study school.

However, in Zambia the scenario is worth investigating as special education has been captured in the Persons with disabilities (PDA) (2012) as an integral part to foster effective learning among the visually impaired. To that effect it has become mandatory for teacher training institutions to equip teachers with special education skills MOE (2013) so that they are able to communicate effectively with pupils with special educational needs in the field of work. In support of this development, laws and policies and indeed education guidelines have been received to support the teaching of Braille

Literacy. The study therefore, focus on assessment of teaching practices of Braille Literacy to the pupils with visual impairments in the Zambian school system.

2.2.1 Braille

Braille is a system of embossed dots that allows blind people to read and write tactilely usually on a thick paper called a Braille paper. Anyone can learn to read Braille. It is not a language, such as American Sign Language. It is simply a method of embossing letters and numbers so people who use either the sense of touch or sight can read and write it. Braille is not raised letters but a combination of raised dots within a six-dot cell, (Rogers 2015). However, it was not clear as to what factors might be contributing to low literacy level and performance in subjects like geography and sciences in the Zambian schools (Simalalo, 2006).

Named for its French inventor, Louis Jean-Philippe Braille (1809-1852). It is not a new language but a symbolic code which is the universally accepted method of reading and writing for the blind, Braille is the only system that allows persons with visual impairments people to read and write independently and to do both interactively. Braille always has been and always will be more than just a tool for blind individuals who use it. Braille represents competency, independence, and equality, (Wold Blind Union 2017). Since it is very effective, it has been adapted for almost every written language across the globe. Being versatile, it can be manipulated into other Braille codes such as; mathematical, scientific notation and music. To that effect, even blind computer programmers have a Braille code dubbed computer Braille and the like, (RNIB, 1968). A lot has changed since Braille was invented almost 200 years ago, both in technology and educational practices. Nowadays, various students have access to different kinds of devices such as refreshable braille displays and/or braille note takers (a dedicated computer for braille users). The books in Braille that are used now are often produced by high-speed braille embossers using translation software that converts the printed word into Braille cells. However, the fundamental importance of Braille Literacy remains unchanged and as important as ever, (Wold Blind Union, 2017). Individuals with visual impairments require it as a mode of written communication.

According to Royal National Institute of the Blind (RNIB, 2000). Braille is a system of embossed dots formed with one or more of the six dots in a Braille cell which are arranged in two columns thus, dot 1, dot 2, and dot 3 on one column and dot 4, dot 5, and dot 6 on the other column so numbered for easy reference. It is a system of writing using dots which can be read visually or tactually for pupils with visual impairments, (RNIB, 1968). A sign which occupies one space is termed as one space sign and a sign which occupies three spaces is termed as a three space sign. Dots 1 or dot 4 'is' termed as an upper sign; a sign containing neither dot 1 nor dot 4 is termed as lower sign.

There are two competing hypotheses on how the sense of touch improves in blind people. According to the tactile experience hypothesis, reliance on the sense of touch drives tactile-acuity enhancement. The visual deprivation hypothesis, on the other hand, states that the absence of vision itself drives tactile-acuity enhancement, (Nadeem, 2015).

According to (RNIB 1968; Vision Australia 2014), Braille offers 63 different dot combinations to form the alphabet, numbers, punctuation marks and abbreviations. It is used around the world in many languages and can be about any written information to be presented in Braille including books, music, mathematics and knitting patterns. The possible combinations of 63 dots only 46 of those are used in English Braille. As opposed to ink print which has 26 letters. On top of that, there are 189 English contractions and letter combinations. This adds up for more work for the visually impaired than for the sighted counterparts – because apart from knowing literary the 26 alphabetic letters as it were, they had to memorise the 189 English contractions and combinations. Of course, this cannot be concluded as the cause for Braille literacy crisis. Thence, it was interesting to find out if the numerous signs posed many challenges in Braille masterly especially that they are usually learnt using tactual means. It is not however, clear as whether variations in signs posed challenges to learning of Braille Literacy in the study school in Zambia.

2.2.2 Concept of Braille Literacy

Braille is the vehicle of literacy for the blind – it is the primary medium that enables blind children to continuously grow in literacy (Rex et al., 1994), excel in school and enter

adulthood with a competitive advantage in employment and in life (Holbrook & Koenig, 2000) and, in that way, increase their potential for independence through employment, creativity, and other forms of success (Wormsley & D'Andrea, 1997). The development of Literacy for all persons constitutes the cornerstone of education. Literacy has been in the centre of national concern, and its context and content have been explored by educators, policy makers, and the mass media (Rex, 1989) in (Bell et al, 2013). A common definition of Literacy is the ability to read and write at such a level as to be able to meet daily living needs. Students become literate as they develop the knowledge, skills and dispositions to interpret and use language confidently for learning and communicating in and out of school and for participating effectively in society. Literacy involves students listening to, reading, viewing, speaking, writing and creating oral, print, visual and digital texts, and using and modifying language for different purposes in a range of contexts. It was not clear as to whether pupils in the study school equally followed these aspects in their attempt to learn Braille Literacy, hence, the current study.

Success in any learning area depends on being able to use the significant, identifiable and distinctive literacy that is important for learning and representative of the content of that learning area, Australian Curriculum, Assessment and Reporting Authority (ACARA) (2016). In essence, the acquisition of Literacy skills provides all the prerequisites for achievement in many areas of life from school to employment, (Bell et al, 2013). The study nonetheless, did not specify the prerequisites among Zambian pupils with visually impairment for them to acquire literacy skills. A study of this nature was therefore, necessary.

Literacy skills are equally significant for individuals who are visually impaired (that is, those who are blind or have low vision). The development of Literacy by children who use Braille and print is approximately the same (McCall, 2015). Simply stating that development of by children who use print and Braille is approximately the same signifies that obviously there exists a difference and it is that difference which should be availed so that educators can refocus their attention on how to equalize quality educational opportunities meant for all, MOE (1996). What may differ is the way in which sighted

students and those with visual impairments construe the world and develop Literacy skills (Argyropoulos, 2006). From that assertion, the researcher exposed his ignorance because the fact that one uses tactile and the other uses vision for acquisition of literacy is a major difference as it bears the effect of different learning experiences ranging from the different practices in teaching and learning, different methods and techniques used and possible projected challenges in line with the modality of instructions for literacy acquisition purposes. Literacy involves a continuum of learning to enable an individual to achieve his or her goals, to develop his or her knowledge and potential, and to participate fully in the wider society' (UNESCO, 2004).

Braille is a tactile Literacy system used by people who are blind or visually impaired for reading and writing. As alluded to earlier, Braille is not a different language. Just like the print alphabet, it is a symbolic code used to write various languages such as English. According to the National Braille Press (2015), there is no substitute for the ability to read and write interactively for people who are blind. Braille is therefore, an indispensable tool that aids in the process of becoming literate and being able to acquire Braille skills that is, to read and write with proficiency is to become Braille literate. So Braille Literacy is simply the application of Braille skills for the purpose of reading and writing independently by a Braille user, (Ryles 1996)

2.3. Practices in the teaching of Braille Literacy

2.3.1. Learner participation in the Learning of Braille Literacy

In the study conducted in the United States thousands of the children who were blind were not learning to read and write because they were not being taught Braille. (Riccobono, 2007). Hehir (2002) reported that despite its versatility and elegance, and notwithstanding the fact that it was the official system of reading and writing for the blind in the United States, Braille was not being taught to most blind children or to adults who lost their sight. This has led to a Braille Literacy crisis among persons with visual impairments. Many commentators on the Braille Literacy crisis agree that one of the most significant contributing factors is a negative societal attitude toward Braille (Riccobono, 2006). However, failure to mention a distinct societal attitude towards

Braille may eventually lead us to fail to pin-point such negative attitudes which would have a possible hindrance to addressing the problem. Further, it would be interesting to understand why and how society has come to develop such a negative attitude which never existed in the past when Braille was pronounced as the official medium of instruction for people with visual impairments.

Conversely, since Louis Braille developed the symbolic code, it has been a controversial issue among the scholars. And most of those who were attempting to educate the blind were not blind themselves but sighted people with philanthropic impulses believing that the blind should be taught to read ink print rather than using a separate system. Many educators still believe this today, arguing that Braille is slow and hard to learn and that it isolates blind children from their peers, (Lorimer, 2000; Mellor, 2006). The concept of Braille literacy being slow and hard to learn is quiet personal and may not be an exception to print users either. In a cognitively stable person, learning to read and write has a normal bearing on maturation, reading and writing readiness alongside availability of especially skilled teachers and pedagogical skills employed in the course of teaching and learning. On the contrary, Braille or ink does not separate the children from each other instead it brings them together for knowledge sharing and growth academically as they do same class activities, homework and the like.

In his study Spungin (2003) found that Braille was surrounded by various beliefs among educators although a very significant one was that there was need for improved methods of producing and distributing Braille. He reported that this issue must be addressed if the downward trend in Braille Literacy among the persons with visual was to be reversed. However, in Zambia PDA (2012) put up a measure that the Ministry of education shall prescribe rules and put in place measures as the case may be to ensure facilitation of learning Braille. Though this is not known whether it is in response to negative trends towards Braille as the case is in some countries or it is just a step up measure to enhance Braille Literacy as a medium of instruction. Following this directive MOE (2013) pronounced the first ever inclusion of Braille Literacy as a standalone subject to be offered in teacher training colleges.

2.3.2 Decline in Braille Literacy

The decline in the number of Braille readers since 1963 (Miller, 2002) has been widely discussed by professionals and criticized by consumer groups (Rex, 1992; Schroeder, 1996; Stephens, 1999). However, a decline in braille usage is evident from the 1980's, (DeMario et al., 1998). Some proponents say the decline in Braille instruction was leading to illiteracy among learners with visual impairments, (Faherty, 2006). In a survey conducted among braille readers, in Ghana, Kenya, and South Africa there is evidence of changes in braille trends and needs of braille readers. These changes are in all likelihood caused by affordability and accessibility, (Alden 2015)

Although there is no consensus on the causes of this decline, a number of factors have been cited. Among them are disputes on the effectiveness of the Braille code (Thurlow, 1988), the decline in teachers' knowledge of Braille and methods for teaching it (Schroeder, 1989; Stephens, 1999), whose training usually receive very little training in reading instructions (Kamei-Hannan & Ricci, 2015), negative attitudes toward Braille (Holbrook and Koenig, 2000) greater reliance on speech output and print-magnification technology, and a rise in the number of blind children with additional disabilities who are non-readers (Rex, 1989). Braille Literacy is not only embedded in reading as claimed, but in both reading and writing with and extension to other literacies like arithmetic, ICT and so on. So, to make a mention of little training in reading instructions is actually narrowing the Braille Literacy concept to one aspect of literacy and therefore cannot be an appropriate measure on its own to the decline of Braille literacy. The greatest controversy over whether to teach a child Braille arises when a child has some residual vision; such children accounted for around 85 percent of the total population of blind children (Koenig, 1996). Above all Wormsley (2011) postulated that teachers for the visually impaired must have a wider knowledge about the visually impaired pupils and their individual needs. To the contrary, a crisis that was reported in the United States was as result of scarcity of competent teachers of pupils who are blind or visually impaired, (Amato, 2009). Obviously the question that may rise would be to find out why were the competent teachers not available, of course speculations could be hinged on assumptions some of which could be that may be the training institutions were not enough, or as a

career it was not rewarding so who would be teachers were not attracted to teaching the VI. In that respect, it was necessary to find out how knowledgeable the teachers in the study school were in Braille literacy by observing what they taught and how they taught it alongside establishing possible challenges if any.

Attitudes about Braille according to Koenig (1996) which are often based on myths and misconceptions about the system, are also a barrier to proper Braille instruction. Also as observed by Spungin (1996) one of the major reasons for the increasing illiteracy of the blind and those with low vision is the historical emphasis on teaching visually impaired children with residual vision to read print. This is so because most visually impaired pupils are legally blind but not totally blind, that is, having a (central visual acuity of 20/200 or less in the better eye with the best possible correction, and/or a visual field of 20 degrees or less), Koenig (1992). Nevertheless, many students who have residual vision cannot read print efficiently even with magnification; attempting to read print results in eye strain, headaches, and other problems. Furthermore, many degenerative eye conditions are progressive, meaning that the student's vision will continue to decrease over time, making print harder and harder to read. Such students with low vision were particularly at risk for not receiving appropriate instruction in Braille, (Miller, 2002) and by the time they would want again to switch back to Braille they will have wasted years necessary for Braille foundational skills. This sad state of development usually ignited frustrations resorting to using other modalities like speech output. This is a reason why Roe et al. (2014) advocated for the need to develop early writing skills of visually impaired children if they were to be successful with Braille Literacy by matching their ages and grade levels. However, for writing skills to be effective they must go side by side with reading skills. Usually for one to write properly, they must be able to read what they write. Ironically, for Braille, it is possible for one to be able to write say using a Perkins brailler by simply memorizing the dots but fail to read what they have written and the reason is simple; the patterns of the keys are very different from the embossed characters on the paper.

In America Ianuzzi (2009) reported that others argue that Braille isolates and stigmatizes students from peers who read print a claim he said was not backed by any kind of research, therefore, such beliefs could only be substantiated after this study was concluded. As reported by (Ianuzzi, 2009) a decline in Braille Literacy suggested that the real culprit was the inadequate and inappropriate education of the specialist teachers who were not competent or confident themselves in using Braille. However, in Zambia the trend was supposed to different because MOE (2013) instructed all teacher education institutions to include special education in their programmes in order to equip teachers with necessary knowledge, skills, positive attitudes and values in this area of literacy for the visually impaired pupils. As such it was worth assessing the current practices regarding the teaching of Braille Literacy following that directive in the year 2013.

A study conducted in America by Danielsen (2006) revealed another misconception about Braille that has been attributed to contribute towards the decline in Braille Literacy as the idea that reading Braille is always slower than reading print and that Braille is difficult to learn. While some studies suggested that Braille was slower than print and difficult to learn because of its 189 English contractions and letter combinations, research in this area was unreliable since studies tended to be anecdotal so it was hoped through this study the facts concerning Zambian situation could be availed because others found that Braille was an efficient and effective reading medium, (Wormsley, 2011). It has also been confirmed that the development of Literacy by children who use Braille and print is approximately the same, (McCall, 2015). In this respect it was worthwhile to establish such a difference if any so that each category could be catered for according to their needs. Comparatively, the percentage of blind people using braille varies depending on the country, but it is evident that the total number of braille-literate visually impaired people is rather small - usually around ten percent, (Roe et al., 2014). This is why it was quiet important to have an understanding by using a study school as a starting point in a Zambian context.

2.3.3 Methods of Reading and Writing Braille

The first phase of literacy development involves awareness and exploration, (Wormsley 2016). As with all reading instructions the optimum goals are reading for understanding, learning and pleasure. In his study Mtonga (2011) observed that teaching a letter or symbol identification in Braille reading is not to be separated from teaching correct finger and hand use. Teaching the two skills simultaneously may be confusing especially to the beginners. That is why it is important to lay their foundation in hand preference through reading and writings readiness skills before embarking on actual teaching of alphabetic letters or symbols. So ideally teaching a letter or symbol identification in Braille reading is supposed to be separated from teaching correct finger and hand use starting with the latter and ending with the former.

At the same time for a child who is learning the sounds and names of the letters, contractions and short-form words, it is important for teachers to incorporate a programme to develop tactile perception in addition to proper reading mechanics. In the same vein, Simalalo (2006) revealed that pupils with loss of vision must be taught such skills to manage purposeful movements on the embossed paper, however, she did not pinpoint exactly the applicable methods where Braille Literacy mastery was concerned. As such this research would delve into establishing the methods that could be utilized to teach Braille Literacy effectively. As in their research Thompson & Vaughn (2007) reported that in the early grades pupils should receive foundational skills such as phonemic awareness, phonics, fluency, and vocabulary in relation to Braille symbols, claiming that the expansive goals of reading are the same for all students. While that can be appreciated to a certain degree based on the researcher's report, their challenges may not be necessarily the same arising from the different media of instruction and feedback. According to Wong (1995) phonemic awareness is a skill to identify the smallest unit of sounds in speech in which he observed that it was a subset of phonological awareness where listeners were able to hear, identify and manipulate phonemes which could differentiate meaning. Understanding the differences was a prerequisite to understanding their unique spellings which would lead to correct Braille contractions, (Kosman & Castellano, 2000). In Norway, **(**Vik & Fellenius, 2007) in their study involving six primary

school Braille readers implied that some contractions had potential to interfere with a style of teaching that emphasized phonic analysis, for example, simple upper word signs (such as, 'k' for knowledge, 'p' for people), or where contractions do not align with phonic boundaries (such as, 'the' in 'bathed' and 'of' in 'proof'). So for effective masterly of Braille Literacy there must be an interplay of listening, writing and reading which the researcher thought it was worth investigating by observing how teachers applied related pedagogical skills in teaching Braille Literacy in the study school with a particular attention to teaching alphabetic letters and spellings.

On the concept of writing Braille, Ryles (1996) revealed that most of the teachers preferred using a Brailler to a slate and stylus due to its user-friendliness. From that claim, it was worth finding out if indeed that could be the same in the Zambian context especially that a Brailler like a Perkins may not be so easy to use by lower grades due to the effort needed to press on the keys, (Mathru School for the Blind, 2005) Apart from knowing which keys represented which dots of the Braille cell, the pupil should also learn which fingers are used to press down each key. All fingers are to be on the keys at the same time and exert even pressure. Proper finger placement are achieved more readily if pupils are strong enough to press down more than one key at once to form the various Braille characters, (Wormsley, 2011). Pupils need to practice pressing the keys down simultaneously without having one or two keys lag behind. So the choice for which type of device to choose when writing Braille was quiet critical and it was worth investigating which teaching materials were being used by the teachers in Zambian special schools for the purpose of learning to read and write Braille and to what extent. To that effect, Lamb (1998) advocated that when young blind children learn to read and write using Braille, the importance should be on developing Literacy skills, with Braille being considered as the medium. So it was worth of unearthing methods or techniques used to incorporate Literacy skills in the lessons. In the same vein, Wormsley (2011) found that children are more motivated to learn to read words that are meaningful to them than words that are arbitrarily chosen by the teacher or that appear in a reading series. However, through this study and in reference to the latest curriculum framework of 2013 the researcher is to assess the methods and techniques used by the teachers for this purpose.

2.3.4 Reading Readiness

According to Whitehurst (2008) learning to read is a complex task because it requires coordination of the eye muscles to follow a line of print, spatial orientation to interpret letters and words, visual memory to retain the meaning of letters and sight words, sequencing ability, a grasp of sentence grammatical structures and the ability to analyse and categorize. In addition, the brain must integrate visual cues with memory and associate them with specific sounds which must be associated with specific meanings. Except for the issue of sight, all the complex activities that happen during reading they need also to be done among persons with visual impairments. Fingers have to transmit information to the brain and pass through all the other brain functions in order for an interpretation to be made. Reading challenges do occur when any of these processes are disrupted, (Mtonga, 2011). So, it is for this reason that reading readiness should be conducted to establish readiness in every way that may support reading masterly as a skill. It is assumed that if reading readiness is done properly, actual reading becomes easy for the pupil because they will have learnt the skills associated with reading itself as a skill and Braille Literacy is not an exception, (Thompson & Vaughn, 2007)

In the same vein Susan (2009) observed that, like eyes finger tips have sensitive nerves at the tip which can be improved with training as they are the transmitters of whatever they could be feeling on some surface to the brain. In that way, the brain interprets anything in touch with the finger-tip just as eyes do transmit whatever attention is paid to. For this to happen, a pupil must learn how to press gently on the dots, spread the fingers on paper, and follow the line and simultaneously switching to the next line while observing punctuation marks on the way. These skills can only be attained by someone who has undergone a successful reading readiness training conducted using various reading prerequisite activities. It is however, not clear on how reading readiness is addressed in Braille Literacy in the study school.

2.3.5 Writing Readiness

Some forms of writing challenges emanate from failure to understand phonological and phonemic awareness where phonological awareness refers to the sound production.

Wong (1995) described phonemic awareness as being able to identify the smallest unit of sounds in speech. It relates to the awareness that words can be broken into syllables and sounds, and that these sounds can be put together to create new words. It also refers to the individual's ability to manipulate phonemes either by segmenting, blending, deleting, adding or substituting syllables, Matafwali, (2005). As for the Braille users, this skill is very important as it is the one which helps to do Braille contractions which are an indispensable part of Braille writing. Using phonemic awareness visually impaired pupils are to benefit in terms of writing. Wong (1995) found that phonemic awareness improved children's word reading and reading comprehension, as well as helping children learn to spell which eventually helped them to write correctly. Phonological awareness is ability to distinguish distinct sounds which the visually impaired pupils should nurture if they were to be good writers. Children without phonological understanding might not have learned to hear the difference between similar words such as 'three' and 'tree', 'pig' and 'big', 'kid' and 'kit'. On the other hand, such pupils may face difficulties in contracting words like; 'ambulance', 'independence', 'standard', and 'understanding'. So this is why writing readiness for the visually impaired is not just based on the skills of writing but also based on understanding what constitutes what is to be written through understanding sounds distinctly so that prior spelling map is designed for the desired Braille symbols to represent such sounds especially blended as contractions. It is hoped that after this study. Insights on how phonemic and phonological awareness are taught will come to light.

2.3.6 Teaching the slate and stylus

Slates and stylus often referred to as Braille writer's pencils is probably the most inexpensive, portable writing tool for an individuals with visual impairments though Amato (2002) reported that it has been criticized for being difficult to learn and teach because it requires the writer to work from right to left, so the shapes of the Braille characters were reversed when writing. This assertion can only become factual if the difficultness was universal so not until it is tried and tested in the study school will the researcher have a standpoint on the usage of slate and stylus. Since other Braille writers were reported to be very expensive to be distributed to individual pupils, the Zambian situation could be contrary as MOE (2013) directed educational institutions to allocate

more resources to those institutions in greatest need meaning that what might be looked at to be very expensive in some countries can probably be affordable in Zambia as the PDA (2012) affirmed that the Minister responsible for education shall by statutory order designate public educational institutions to provide the necessary facilities and equipment to enable persons with disabilities to fully benefit from the public educational institutions. Going by that proclamation, it means the situation in Zambia for the pupils with visual impairments could be in a positive direction different from some countries where the situation was to the contrary concerning Braille Literacy.

2.3.7 Paradox of Using Slate and Stylus

The research conducted in India by (Mathru School for the blind, 2005) revealed that the traditional method of writing Braille itself created formidable challenges to Braille Literacy. In developed countries Braille was usually embossed with a six-key typewriter known as Brailler devices which are fast and easy to use but also cost over US$700 each (Perkins, 2017). In developing countries, such devices are prohibitively expensive and Braille is almost always written with a slate and stylus. Using these tools, Braille is written from right to left so that the page can be read from left to right when it is removed from the slate and turned over. For a visually impaired pupil, learning to write Braille in this manner can be difficult. First, children must learn mirror images of all letters which doubles the alphabet and creates a disparity between the written and read forms of each letter. Second, feedback is delayed until the paper is removed and then flipped over and read. For young pupils, this delay can make Braille conceptually challenging since the act of writing has no discernible and immediate effect. It also takes longer for both the student and the teacher to identify and correct mistakes and this may slow the teaching and learning process. Not only that even the thick paper used to write Braille may be expensive or in limited supply. In sum, these challenges contribute to the problem of illiteracy among the visually impaired in developing communities (Mathru School for the blind, 2005). While that may sound to be true but the study was done in India so it is not fair to apply that in a Zambian context although we are among the developing nations. Such a study is supposed to be done and its findings concluded in its respective study sites and not generalized as done by the Indian researchers on this issue.

In Australia Jolley (2015) reported to have found that challenges of Braille comprehension and decoding originated from the traditional methods of embossing Braille because the different combinations of dots produced different characters which could be read on the reverse side of the paper. For the small pupils in particular, the delay between writing and reading which may be several minutes later, made writing Braille conceptually difficult. The delay was long enough that it was difficult to remember exactly which actions produced the dots that then appeared on the paper. To some beginners, of course there appeared to be no effect whatsoever of pressing the stylus into the slate but they could not understand that the indentations on the paper were created by the earlier embossing process. That stood in a marked contrast to sighted children who could immediately see the results of putting a pen to paper, (Mathru School for the blind, 2005). So to avoid this kind of paradox, it was very important to do a lot of writings readiness so that the pupils are properly oriented about which action performed which embossed results. Through this research it would be prudent to find out how pupils were prepared for this important task ahead of actual writing in a special school.

Other aspects of the slate and stylus also interfere with learning as Wormsley (2011) noted that firstly, a Braille cell is very small: the distance between the centres of adjacent dots is about 2.5mm and the distance between adjacent cells is about 6mm. Although this small size minimizes space requirements and improves speed in the skilled reader, small children have difficulty perceiving that there are six dots to a cell and distinguishing between the different dots. Thus, even when they know that the letter ‘b’ consists of dots one and two, they cannot produce the letter. Secondly, reading requires tactile acuity that may not be fully developed in a young child; for example, she may not yet be able to distinguish between the letter ‘b’ (dots one and two) and the letter ‘k’ (dots one and three) and therefore cannot interpret the results of embossed characters. Thirdly, significant force is required to emboss Braille paper and the children soon tire. What determines the force is the type of Braille paper in use – for example, if the pupils are using plastic Braille paper there would be no need for significant force to be applied as the paper is quiet soft and writing force is almost equivalent to a pen on paper. Stephens and Paterson (1996) observed that there were two millimetres (mm), between one dot and the next

nearest dot in Braille. This gap between the dots is quite small for some finger tips. For accurate Braille reading therefore, the right fingertip should at least cover a letter or two in order to quickly interpret the information. Collectively, these features not only make learning difficult, they also create significant frustration and discourage young children from writing, Wormsley (2011). So to help the pupil triumph over these challenges, both reading and writing readiness were supposed to be properly done as a way towards effective progression of Braille Literacy.

2.4 Parental Involvement

Research has demonstrated that when parents and teachers share the same goal of helping children and work in partnership, everyone benefits, students attain higher grades, better performance on tests, attend school with punctuality, display proper behaviour, and show a positive attitude towards themselves and school, (Sacks, 2012). It has been reported by the Division of Student Support Services of Newfoundland and Labrador (2011) in Nadeem (2015) that most parents of children with visual impairments are often dealing with grief and feelings of loss about their child's vision and during this difficult time they should be supported by professionals who are working in this field. While losing sight of a child may be a great loss to the family, it is not different from any other accident which the parents could get over. If family members' are provided with the knowledge of Braille and the right equipment, they can play an important part in fostering the development of appropriate and meaningful early emergent Braille Literacy experiences (Harrison, Cooch & Alsup, 2010). Therefore, the extent to which parents understand and participate in a child's educational needs impacts on his social adjustment positively.

Similarly a study in India by Mathru School for the Blind (2005) in Bangalore reported that the main barrier in India's case were parents who restricted their VI children as they did not realize the possibility or value of educating them at home or in traditional schools because very few people were trained to teach Braille there. Obviously what anchored that stereotype in Indian parents particularly in Bangalore may not be present in Zambia and perhaps the Zambian situation may be way better than as it is mandatory that all teachers are exposed to Braille Literacy skills to enable them communicate effective with

learners with visual impairments, (MOE 2013). Also surrounding their beliefs in that part of India were negative and mostly unfounded stereotypes about blindness. As a result, all too frequently a blind child was given a tape recorder instead of being taught Braille. Braille instruction was often avoided for the wrong reasons, (Division of Student Support Services of Newfoundland and Labrador, 2011) in (Nadeem, 2015).

Lack of Braille books and materials for parents who speak English as a second language is considered as one of the reasons why parents may not actively take part in their child's Braille Literacy experience. Parents can be exposed to their children's Braille Literacy experience if they have access to Braille books in their native language, (Cheryl & Zell, 2012). The dual researchers argued that families and support staff were often not equipped with the necessary skills and knowledge of Braille to help the student with Braille reading because the teachers had focused instructions to the pupil unlike parents. This revelation also provided an impetus for the researcher to find out how specialist teachers in a study school involved the parents in order to enhance the teaching of Braille Literacy with close reference to what other researchers reported above.

2.5 Educational Resources

Without writing devices equivalent to a sighted person's pen and paper, a child who is visually impaired falls behind in acquiring better Braille Literacy. A visually impaired pupil with Braille skills is better able to compete and succeed in the real world equipped with typical and relevant educational resources. Challenges to learn reading and writing Braille exist in the area of adaptations of materials for pupils with visual impairments, (Ryles, 1996). Government is main funder of the public schools and the institutions of training. In Zambia, the current system of procurement of teaching and learning resources which has been described as cumbersome should be reviewed to have a system where the period between purchases is reduced and consultations on requirements between schools and government are conducted in a transparent manner to avoid purchases that are not needed in schools or teacher training institutions, Simalalo, (2017). Earlier it was reported that lack of funds makes it impossible to provide required grade level text books, leisure reading materials and device procurement and

maintenance, (Simalalo, 2006). What was not stated was when or how frequent the funds came, or if the funds did not come at all and to that effect how then learning was conducted. These were some of the questions which the researcher felt needed to be answered after the study was conducted as the answers to be provided would add value towards implementing and achieving Braille Literacy of high quality. In the same vein, (Swenson, 1998) in (Wormsley, 2011) observed that one of the factors that are attributed towards the limited knowledge of Braille for the visually impaired pupils was that they were not provided with the same level of Braille experiences as their same age peers who were reading print. The researcher did not reveal why the visually impaired were not provided with the same level of Braille experiences as their same age peers who were reading print. In this area it would be interesting to find out if what was in ink print was also available in Braille, for example to check the records if programmes like New Breakthrough to Literacy (NBTL), Primary Literacy Programme (PLP) were also available for Braille users each time they were introduced with an extension to establishing whether the curriculum and syllabi were responsive to implementing Braille Literacy.

In Kenya a study by a scholar Kimeto (2010) on English Braille Literacy revealed that the physical learning environment was not conducive for the visually impaired pupils to carry out their studies effectively. That was because of inadequate teaching and learning resources, the frequent breakdown of Braille equipment and lack of trained artisan to repair the equipment such as Brailler and Thermoform machines. Lack of those resources might have contributed to dismal performance in Braille reading and writing in the study schools. Following such a revelation, it was imperative to investigate if teaching and learning resources were available and enough in the study school.

2.6 Braille Environment

The environment for learners with visual impairment needs to be user-friendly, as the physical environment should encourage and promote teaching and learning for learners with barriers (Morelle, 2016); American Foundation for the Blind. (2000). postulated that poor and unstimulating environment could contribute to poor reading culture. To

that effect, an unstimulating environment would include a home where children were not exposed to any reading or writing activities or at least being able to participate in any play program that would activate reading minds. In this view, Wormsley (2010) recommended a framework for providing a Braille-rich environment for visually impaired pupils that included placement of Braille in the surroundings where such pupils would be exposed to it just as pupils who were sighted were exposed to print. Similarly, (Nadeem, 2015) also emphasized on labelling the objects around with Braille so that the children could understand that there was a connection between Braille print and real objects. Roe et al. (2014) suggested that throughout the school there could be displays of work from children with visual impairment, including work produced in Braille, or starting a Braille Club, and so forth. It is further recommended that the education system should promote effective teaching and prevent learning breakdown, and that a system be developed to capacitate educators to overcome barriers which may arise, prevent barriers from occurring and promote the development of an effective learning and teaching environment.

Swenson and Cosart (2010) reported that just as pupils with vision are encouraged to scribble on a paper to practice their writing skills, young visually impaired pupils who would learn Braille should also be encouraged to scribble on their Braille writer, imitating the Braille writing. They should be provided with opportunities to model writing behaviour, where they can pretend to write something in Braille, and then read it back to someone in a same way a student with sight would read back his scribbly lines. All these activities would provide a Braille rich environment which is a natural requirement towards attaining actual Braille competence, (Roe et al., 2014).

In the same vein, the Classroom Teacher's Guide (2008), in (Wormsley, 2011) reported that classroom teachers should be informed that navigation and locating information on a Braille page require longer time than sighted peers reading print. It is also important to understand that when ordering and creating Braille for a student extra time is required. But just to state 'extra time' was not good enough and justifiable but if a percentage of the current duration of time for the period was calculated and established then both

teachers and pupils would be guided properly. So it was hoped that through this study a measure could be established because it was also not clear whether the time allocated for a Braille Literacy lesson on the time table was enough or not.

2.7 Instructors' Qualifications

Gevers and Murphy (2002) defined a teacher of the visually impaired as someone who was trained in teaching students with visual impairments. Johnson (1996) remarked that teachers of visually impaired students had to pass Braille proficiency tests to complete their college training. Passing of a Braille proficiency test did not guarantee that one would be a better teacher while in the field. Usually most of such teachers are sighted but they would be required to teach visually impaired learners whose first educational experience would be in Braille itself. So the focus of this study would be to assess the methods and techniques used to teach Braille Literacy as opposed to knowing who passed in Braille proficiency. Spungin (1996) also advocated that if a child with visual impairments had to be taught Braille Literacy skills, it should be taught by a certified teacher competent to teach Braille. Braille instructions must be conducted by trained personnel, usually the specialist teacher for pupils who are visually impaired, (Nadeem, 2015). Some pupils display reading challenges purely because of instructional inadequacies by teachers. As reported by Mtonga (2011) that there were some pupils whose visual abilities were good, their phonology and phonemic abilities were equally good, however, whenever they were given materials to read, they clearly demonstrated reading challenges. This indicated that a teacher plays a major role in the developing of good reading abilities in pupils. It would therefore be argued that because of poor instructions, a pupil may imitate poor pronunciation of words, poor reading mannerisms, inability to read fluently and so on. Going by the nature and demands of Braille Literacy (Ferrante, 2006) stated that there should be readily available special education teachers to support Braille Literacy and most developing countries have not done well in this sector. Zambia also lacked professionals in the area of special education in general, (Kalabula, 1989). The researcher at that time did not pronounce the major causes as Lusaka College for Teachers of the Handicapped (LUCOTEHA) was already established. He lamented

that although the government trained teachers, the field of special education continued to experience a dire need for trained professionals, (Kalabula, 1989). After a period of about thirty years Penda et al. (2015) also reported about the same challenge of special education not having enough specialist teachers in special schools. Again these researchers did not disclose the causes of shortages of specialist teachers. However, it was assumed that there would be an improvement following MOE (2013) declaration that all teacher education institutions should equip the trainee teachers with special skills such as Braille Literacy. And unlike in the recent past, today in Zambia under the new curriculum, (MOE, 2013) Braille Literacy is a stand-alone subject so through this study it was very important to assess how teachers received it and establish the extent to which not only were they implementing it but also to examine whether the number of qualified specialist teachers had improved and if not find out the underlying reasons.

2.8 Instructional Strategies

2.8.1 Braille Literacy Approaches and Programs

Lorimer (2000) reported that the method of teaching the visually impaired pupils had been a contentious issue throughout the centuries, as the Braille code had developed over the years, so were the methods of teaching Braille as well. For example, Stephens and Paterson (1996) explained that the tactile acuity and sensitivity of a fingertip were supposed to be very high in order for any person with visual impairment to read - and this could possibly be achieved by the specialist teachers who had been exposed to Braille Literacy teaching methodology by virtue of their specialist teaching training. In the study carried out in Singapore Wong (2009) found that the teaching of braille required effective pedagogical methods for visually impaired pupils as teachers needed to identify relevant strategies to effectively offer instruction to their visually impaired pupils. In this regard, it was worthwhile to investigate and establish the methods and techniques used in teaching Braille literacy in the study school.

(Miller, 2002, Farnsworth, 2007) found that every pupil was a unique individual, and one single method of teaching Braille Literacy would not work for all students. To that effect it was essential to find out what different pedagogical skills Zambian specialist teachers

were employing in teaching Braille Literacy. In that respect. This was also to put to test what Miller (2001) reported that there was no 'right' way to teaching Braille given the many variables involved and that teachers were to select the approach that best meet the needs of an individual child in a specific educational setting. The following were some of the recommended ordinary approaches which are modified and used to teach Braille Literacy at various grades and level of competence alongside the severity of visual impairment:

(i) Functional Literacy approach

The (UNESCO, 2004) defined functional Literacy as the ability to understand and employ printed information in daily activities at home, at work, and in the community that is to achieve one's goals and develop one's knowledge and potential. In this context, a Braille user is able to use it in their daily activities such as reading the books, magazines, notes, manuals, lift instructions, money and so on. This is so because one has known and understood Braille both in reading and writing and they can use it for survival.

(ii) Language experience approach

The language experience approach is an approach in which the student's own language and experiences are used to create meaningful reading material. This approach allows the student to observe how writing is produced and read words with which he/she is familiar with (Sarah, 2013). In this context Zambian schools from grades one to four are to learn using a familiar language, so it would be interesting to investigate which approach teachers were using and how they were using it in the study school. For example, how they addressed the following terms in *Ichibemba* to begin with; cell, dot, stylus, frame, contraction, upper, middle, lower and the like.

(iii) Skills-centred approach

Rex et al. (1994) described the skills-centred approach as one which focuses on decoding print symbols into words and emphasizes the component of skills in reading. Equally, since this approach was tested on the sighted pupils, it would be necessary to find out whether teachers were using it on the pupils with visual impairments and if they did, find

out how they employed it. This is so because it has been confirmed that the development of Literacy by children who use Braille and print is approximately the same, (McCall, 2015). It is worthwhile to delve into the study and appreciate either the distinct similarities or differences.

(iv) Literature-based approach

Literature-based approach was defined as a meaning centred approach that utilized interesting and challenging children's literature and focused on the meaning, interpretation, and enjoyment, (Rex et al, 1994). The researcher would use this opportunity to observe the available pupils' Braille literature and analyse whether such an approach was employed and determine how useful it was for the visually impaired pupils towards acquisition of Braille Literacy.

(v) Balanced approach

Wormsley (2004) explained that the balanced approach was an interactive approach that selected from all of the various approaches according to the needs of the pupil and the context of instruction. It would be necessary to ascertain whether this method was used and if so, find out how teachers were using it in their teaching of Braille Literacy.

(vi) Order of teaching Braille alphabets

Hampshire (1981) noted that one of the earliest skills for Braille Literacy development was the ability to name individual characters correctly. For example, this can be done either way, the teacher names a letter which the learners have to identify how many it appears on paper or the pupils are given different combination of letters and allowed to name them in sequence as they appear on paper. Struggle in learning this foundational skill hinders in the acquisition of learning more complex Braille reading skills later on, such as producing and joining the letter sounds. The researcher further highlighted the significance of naming Braille letters correctly as an antecedent for Braille reading, (Toussaint and Tiger 2010). Following such revelations, it would be important to establish the order of teaching Braille alphabet in the study school.

(vii) Mangold Braille Program of Tactile Perception and Braille Letter Recognition

Mangold (1978), designed (The Mangold Braille Program of Tactile Perception and Braille Letter Recognition), which is used to teach tracking and beginning to learn Braille. The students gained the ability of recognizing tactile symbols by touch and read letters in a right way without any confusion. 90 percent of Braille readers in Mangold's study benefited from this approach, (D'Andrea 2009). The following is the order of teaching letter names:

(i) Teaching g, c, and l.

(ii) Review the previous letters and introduce the letters d and y.

(iii) Review the previous letters and introduce the letters 'a' and 'b'.

(iv) Review the previous letters and introduce the letter s.

(v) Review the previous letters and introduce the letter w.

(vi) Review the previous letters and introduce the letters p and o.

(vii) Review the previous letters and introduce the letter k.

(viii) Review the previous letters and introduce the letter r.

(ix) Review the previous letters and introduce the letters m and e.

(x) Review the previous letters and introduce the letter h.

(xi) Review the previous letters and introduce the letters n and x.

(xii) Review the previous letters and introduce the letters z and f. (D'Andrea 2009).

However, depending on the grade level it was important to establish which methods Zambian specialist teachers were employing and establish how effective they were. All the approaches discussed above were defined by different scholars after having tried them in other countries. So it is prudent to find out which one if any were Zambian

teachers using to teaching Braille Literacy and if perhaps none of them was used then investigate what they were using instead.

2.9 Effects of Assistive Technology on Braille Literacy

There are indications that Braille on paper is declining in the face of new technology, creating both opportunities and challenges. There were also suggestions of over–reliance on audio communications in some instances and questions about the availability of trained teachers. These issues require attention in the light of persistence of disadvantages experienced by visually impaired children and adults, (Woodin 2018). The survey carried by Sullivan (2006) in Britain reported that assistive technology would benefit people with visual impairments, for example, the audio output of a computer was typically faster than its Braille output, but the cultivation of Braille Literacy skills would be delayed significantly by use of audio output rather than Braille, and illiteracy would increase among the visually impaired. That was later supported by Grenc (2009) when he reported that although much of the assistive technology available enhanced the use of Braille, some people incorrectly believed that talking computers and audiotapes would replace Braille, an assertion he disagreed with by stating that access to information auditorily did not replace print or Braille Literacy. It only supplemented those essential literacy media. It is also important to note that Braille translation software was not sufficient to ensure accurate Braille production because the use of such software required persons knowledgeable about the Braille code itself. Students who rely solely on listening as a means of learning find themselves deficient in areas like spelling and composition, (Ryles, 1996). Most teachers of visually impaired pupils, (89.4 percent) according to Grenc (2009) agree that technology should be used as a supplement to Braille Literacy rather than as a replacement. It was worth investigating to what extent ICT was being incorporated in the study school with a particular attention to the teaching of Braille Literacy.

Johnson (1996) argued that it is important to realize that when interacting with the sighted world, children who are blind or visually impaired will not use Braille mostly, they will use computer word processors to produce print so it is better that they are print literate than being Braille literate. However, Samuels (2008) also argued that just as with print readers who accessed information on computers, technology did not take away the need for them to read and write in print, instead, it increased the importance of strong Literacy skills, so was expected for the visually impaired pupils. According to Grenc (2009) technology hindered the need for Braille Literacy. He further stated that the availability of text-to-speech technology and audio texts, for example, was advanced as an argument against the use of Braille Literacy. But Literacy is the ability to read and write, and while using speech output and recorded books was a way for students to gain information, it did not teach them Braille reading and writing skills. For some visually pupils, the emphasis on using residual vision, combined with technology development that enabled easier and cost-effective access to enlarged print, had led a great number of visually impaired persons to use print as their primary literacy medium (Spungin, 1996). In spite of the widespread use of various technology devices that rely on audio output, braille remains the only method of true literacy for blind people. Therefore, it is essential that every blind child receives adequate braille instruction that will enable him or her to be independent, to fully participate in society and to achieve his or her full life potential, (Penava et al., 2018)

2.10 Inclusion versus Exclusion

Kenyon (2010) reported that forty years ago in Canada there were several residential schools for the pupils with visual impairments, where all students were expected to learn Braille but now there is only one school. Several researchers (Chandler, 1980; Garcia, 2003) indicated that children who attended residential schools for students who are visually impaired had an isolating experience because had to live away from their homes (Bowman, 2006). In contrast, National Braille Press (2015) reported that the decline in learning Braille Literacy for school-age children can be attributed to their integration into the public school system, where less time is assigned for learning Braille. Kenyon (2010) also confirmed that the integration of visually impaired pupils in the mainstream

classroom settings provided less one-on-one time between teachers and such pupils. Therefore, less consistent Braille instruction resulting in many students as being Braille illiterate, (Wormsley, 2011). So it is worth investigating what education type was being used between inclusive education and special education thereby get some insights to establish the extent of benefits in the teaching of Braille Literacy in the study school.

Despite the undisputed value of Braille as alluded to earlier, however, globally there are no reliable data on the inclusion or exclusion of visually impaired persons in education and this has a negative effect on taking into account the reliable estimates on the visually impaired persons who are Braille literate. Additionally, definitions and methods for measuring visual impairment vary across countries and this has a bearing on choosing a medium of instructions for such learners; either Braille literacy, large print or computer based. There is no universally agreed definition for visual impairment which is a core determinant for eligibility into Braille Literacy learning as a result comparison of data is hampered globally, (WHO, 2008). In Zambia, the Zambia Agency for Persons with Disability (2015) reported that current statistics estimated that, one in every forty people was blind but did not go further to categorically state who were Braille literate or not.

2.11 Summary of the Chapter

The chapter has looked at the historical development of Braille and the concept of Braille Literacy. It has also highlighted the current practices of teaching Braille Literacy, parental involvement, education resources and teachers' qualifications. It has also looked at the methods and techniques which are used to teach Braille Literacy. Among them being Braille instructional strategies, order of teaching Braille alphabet and the effect of assistive technology on teaching Braille Literacy. The follow up chapter does present the methodology that was used in the present study.

CHAPTER THREE: METHODOLOGY

3.1 Overview

In this chapter, the researcher outlines the procedure and strategies that were used in the study. It focuses mainly on the following sub sections; research design, location of the study, target population, sample size and sampling technique, research instruments, pilot study validity and reliability, data collection techniques, and data analysis. It ends with a discussion of ethical considerations and a summary of the chapter.

3.2 Research Design

This study employed a mixed methods design. A mixed methods design is characterized by the combination of at least one qualitative and one quantitative research component, (Schoonenboom & Johnson, 2017). It is a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides more viewpoints, data collection, analysis, inference techniques for the broad purposes of breadth and depth of understanding and corroboration of research problems than using either approach alone, (Creswell, 2014)

3.3 Target Population

A target population refers to the entire group of individuals or objects to which researchers are interested in generalizing the conclusions. It is a complete set of individuals, cases or objects with some observable characteristics, (Mugenda and Mugenda, 2003). Similarly, Kombo & Tromp (2006) claim that a population is an entire group of persons that have at least one thing in common. Adhering to that proposition, the target population in this study comprised all grades one to four visually impaired pupils at a special school in the study district in Zambia. These grades are a range in

which basic Braille Literacy concepts are supposed to be introduced to the learners beginning with uncontracted Braille before switching to contracted Braille.

3.4 Sample Size

Sample size refers to the total number of subjects selected to participate in a given study, (Kombo and Tromp, 2006). The sample size is an important feature of any empirical study in which the goal is to make inferences about a population from a sample, (Gary 2011). The sample of this study was 70 participants, consisting of 35 pupils Braille literacy learners (that is, all grades one to four classes), 28 teachers who had experience in teaching the visually impaired learners including two teachers who were doing teaching practice at the time - making a total of teachers 30 and five lecturers from two teacher education institutions with special education training in the preparation of teachers for the visually impaired pupils.

3.5 Sampling Procedure

The sample in this study was drawn using purposive sampling for the pupils, teachers and lecturers. This type of sampling was chosen because it helped to select the respondents who were the key informants in the above selected institutions who might had the information relating to the study, (Bogdan and Biklen, 1982). Purposive sampling also known as selective, or subjective sampling technique relies on the judgement of the researcher when choosing who to ask to participate (Creswell, 2014). As such the researcher chose the 35 pupils by considering the classes of the beginners in acquiring Braille concepts through Braille Literacy, as a representative sample to suit the study with relevant characteristics. In the same way, the researcher identified the other respondents with relevant characteristics from teacher training institutions and the study school and then selected them for participation in the study. Purposive sampling has the advantage of being time and cost effective to perform whilst resulting in a range of responses which may be very useful in both qualitative and quantitative research, (Ben-Shlomo et al., 2013).

3.6 Research Instruments

Questionnaire, (Appendix C and D), focus group discussion (Appendix F) and observation schedule (Appendix E) were used to gather information. The questionnaires were used because data could be generated from a large sample within a short time and was fairly easy to tabulate and analyse. The focused group discussion was used among pupil-participants to help the researcher get the first hand information, (Mugenda and Mugenda, 2003). On the other hand, (Gary, 2011) defined an observation schedule as a form prepared prior to data collection that delineates the behaviour and situational features to be observed and recorded during observation, thus, an observation schedule enabled the researcher to observe real application of teaching and get direct information related to the study in the study school. The purpose of using these methods was to maximize the data base out of which reliable and realistic conclusion could be drawn.

The information collected during pilot testing revealed that despite introducing Braille Literacy as a subject in schools by the Ministry of Education in 2013, Braille Literacy teachers faced a lot of challenges ranging from teaching practices, methods in use and lack of teaching and learning resources.

3.7 Data Collection Procedure

The researcher obtained an introductory letter (Appendix A) from the Assistant Dean (Postgraduate) of the School of Education, University of Zambia (UNZA). The DEBS had to date stamp on the introductory letter from UNZA as an authorization and introduction to the head of the study school. Before administering the instruments, the researcher availed the consent form to all participants (Appendix B) and the study commenced.

3.8 Data Analysis

The data that was obtained through questionnaires, focus group discussion, and observation schedule was analysed quantitatively and qualitatively. For the former, it involved getting frequencies and percentages from the tables and analysed them as they were tabulated while for the latter, it involved getting themes and sub-themes emerging

from the responses and analysed them accordingly. Themes are abstract constructs which investigators identify before, during, and after data collection. They come from the characteristics of the phenomena being studied and from researcher's values and personal experience with the subject matter - a sub theme is born out of a parent theme, (Russell, 2000). Therefore**, t**hematic analysis was used to analyze data where themes categorization and narrations were made. Major themes were derived from the objectives of the study and then description of each theme was done, analysed and interpreted objectively. Thereafter, the researcher examined the data to ensure consistency, accurateness and totality. The interpretation of data from observation schedule and focus group discussions were represented by the use of italics and descriptions of respondents' views. Italics denoted the actual voices of respondents. Therefore, the analyzed data was presented descriptively and verbatim. The responses from the FGD and questionnaires were coded and grouped to establish the merging themes. Then the similarities and differences were identified and presented in form of a detailed description of the observed situation in the study school.

3.9 Trustworthiness

3.9.1 Triangulation

Triangulation in research is the use of more than one approach to researching a question. The objective is to increase confidence in the findings through the confirmation of a proposition using two or more independent measures. The combination of findings from two or more rigorous approaches provides a more comprehensive picture of the results than either approach could do alone, (Heale & Forbes, 2013). As such, this study employed triangulation to strengthen the depth, validity, and reliability of its results. It was established that triangulation in this study worked effectively in that data from the questionnaires was supported by data focus group discussions besides what was observed using the observation schedule.

3.9.2 Pilot Test

Kombo & Tromp (2006) encouraged researchers to do a pilot test as a practice of pre-testing effectiveness of research tools. They argued that pre-testing of research tools helped the researcher to redesign their tools in case the researcher did not seem to get the correct information from the respondents. Pre-testing would also provide an opportunity to the researcher to learn what would be the possible outcome of their study if the tools were able to elicit the correct responses. For this purpose, Mano Secondary School in Mufulira district was used to verify the validity and reliability of the research tools. The school was chosen for pilot testing of instruments because it had both teachers who taught Braille Literacy and pupils with visual impairments who depended more on Braille in their learning activities. After a pilot test was conducted, it was established that certain questions had to be adjusted. For example there was need to include how Braille literacy was taught using a familiar language and find out if ICT supported teaching and learning of Braille Literacy.

3.10 Ethical Considerations

Ethical issues were taken into account in this study by assuring all respondents of confidentiality. The researcher had to ask for permission to conduct the study from Research Ethics Committee at the University of Zambia. The names of all the respondents and the research site in this study remained anonymous. The researcher also considered designing questions that would not cause psychological harm to the respondents emotionally. Consent from the actual participants before collecting the data was also sought. The respondents were further guaranteed of confidentiality on data obtained assuring them that it would be used for. Respondents were also fully informed about the aim of the study.

According to Eric (2009) the principle of confidentiality and respect are the most important ethical issues requiring compliance on the part of the researcher. Thus, the measures taken to ensure compliance with ethical issues included: keeping the identity of the respondents confidential. Therefore, in ensuring that confidentiality was up-held, respondents were coded as P (pupil), TR (teacher), LT (lecturer), Colleges A and B were

used to represent two names of teacher training institutions. Informed consent was then sought and obtained from both the respondents and the people in charge of the places where the research was carried out. All respondents received equal treatment and with dignity.

3.11 Summary of the Chapter

The chapter has discussed various methodologies used when writing the study in-depth. It has covered the research design which has been described as the whole plan used to generate answers to research questions set in chapter one. The area where the study was conducted has been described. The target population which was the population to be used to generalize the result of the study has been also discussed. The sampling techniques and sample size have also been discussed. The research instruments which included collecting data procedure used to collect data have been described and explained the tools used for collecting data have been described and explained. The method of data analysis and ethical consideration have equally been discussed before providing a summary of the chapter. The next chapter presents the findings of the study.

CHAPTER 4: PRESENTATION OF FINDINGS

4.1 Overview

This chapter presents the findings on an assessment of teaching Braille Literacy to the visually impaired in selected special schools in Zambia. It comprises the views of the respondents in the questionnaires, focus group discussions and class observation schedules. The findings have been portioned according to the following research questions:

1. What are the current practices in the teaching of Braille Literacy to the visually impaired pupils?
2. What methods and techniques were teachers using in teaching of Braille Literacy to visually impaired pupils in the study school?
3. What challenges if any do teachers face in teaching Braille Literacy to pupils with visual impairments?

Quantitative findings have been presented using frequencies as well as percentages separately in tables whilst qualitative findings have been presented through themes and supported by verbatim. Furthermore, all the findings are presented according to different categories of respondents who participated in the study. These are; lecturers, teachers and pupils respectively.

4.2 Characteristics of the Respondents

	Code	Gender		Trained		Trainee		Low Vision		Totally Blind		Sighted		**Total**
		M	F	M	F	M	F	M	F	M	F	M	F	
Lecturers	LT	2	3	2	3	-	-	-	-	-	-	2	3	**5**
Teachers	TR	18	12	14	13	1	2	6	1	7	7	2	7	**30**
Pupils	P	21	14	-	-	-	-	10	7	12	6	-	-	**35**
Total														**70**

Table 1. Characteristics of Lecturers, teachers and pupils

Research Question 1.

4.3 What are the Practices in the Teaching of Braille Literacy to the visually impaired Pupils?

4.3.1 *Lecturers:* - Qualification in Relation to Teaching Braille Literacy.

On the practices in the teaching of Braille Literacy to the student teachers, the study sought to find out whether the Lecturers were trained to teach Braille Literacy. The findings were that the five lecturers were not trained in teaching Braille Literacy but had attended several workshops about it which made them relevant to the study. LT5 from College B had this to say:

> *I am not trained to teach Braille Literacy but I have received insights through workshops concerning what Braille Literacy was all about; reading, writing, methodology and related skills.*

4.3.2 *Teachers:* - Teachers' Qualification in Relation to Teaching visually impaired pupils

The same question was posed to the teachers when finding out whether they were qualified to teach pupils with visual impairments and the following Table 2 shows their qualifications in relation to teaching visually impaired pupils. Most of the respondents 18 (60%) indicated that they had ordinary teaching qualifications but not necessarily teaching the visually impaired, 4 (14%) had certificates in special education, 3 (10%) indicated that they had diplomas in special education. So it is clear that majority of the teachers 18 (60%) did not qualify to teach the visually impaired pupils as acknowledged by TR4 who said that:

> *To mitigate the challenge, we taught collaboratively with other teachers who were specialist teachers and had experience teaching Braille Literacy to the* visually impaired *pupils.*

Response	Frequency	Percentage
Ordinary Teaching Qualification	18	60%
Certificate in Special Education	4	14%
Diploma in Special Education	3	10%
Others	3	10%
Degree in Special Education	2	6%
Total	**30**	**100%**

Table 2: Qualification in Relation to Teaching Visually Impaired Pupils

4.3.3 Views from a FGD on Qualification in Relation to Teaching visually impaired pupils

An attempt was made to find out from the pupils whether they learnt Braille Literacy as a subject in classes. Eight out of ten pupils said while it was there on the time table, in most cases it was not learnt as a single subject and usually it was not handled as a separate subject in most case it was taught through other subjects. This was supported by one of the pupils, P6 who had this to say:

> *In most cases we do not learn Braille Literacy as a separate subject. It is difficult to learn Braille because some of the teachers who are supposed to be teaching us, they do not know it especially contractions. So during a period for Braille it is as if we are teaching ourselves.*

4.3.4 *Lecturers*: - Teaching of Braille Literacy in the teacher training institutions

When lecturers were asked whether they trained teachers in Braille Literacy at their institutions, the response was that Braille was taught as a subject at the two teacher training institutions but not as Braille Literacy as enshrined in the curriculum framework 2013 and no reason was given. However, one lecturer, LT2 from College A revealed the following:

> *Although we do not call it Braille Literacy but simply 'Braille', we teach them main Literacy concepts about reading and writing besides methodology to enable them go and teach Braille reading and writing tantamount to Braille Literacy.*

4.3.5 *Teachers:* - Teaching of Braille Literacy in study school

It was in the same vein that the teachers were asked whether they provided accessibility to Braille Literacy for their visually impaired pupils and the responses were as tabulated in Table 3 where 3, 13 (43%) admitted that they provided Braille Literacy to visually impaired pupils while another half 13 (43%) said they only provided accessibility to Braille Literacy sometimes and not always. 4 (14%) respondents said they did not at all provide accessibility to Braille Literacy in classes. From the table it was clear that accessibility to Braille Literacy as a programme was not implemented fully as demanded by the Ministry of general education

Response	**Frequency**	**Percentage**
We do provide accessibility	13	43%
We sometimes do provide	13	43%
We do not provide	4	14%
Total	**30**	**100%**

Table 3: Accessibility to Braille Literacy in Special Schools

4.3.6 Views from FGD on Accessibility to Braille Literacy in the Study School

Enquiring from the pupils whether they were taught Braille Literacy as a subject, all the ten pupils said they did not learn Braille separately as a subject but learnt it through other subjects and P8 pointed out that:

> *Tatusambililila Braille yeka. Ilingilile Braille tatuisambilila ngecisambililo yeka awe, filyafine ngatulesambilila ifisambililo fimbi elyo nayo tuisambilila. Ngacakwebati naulufyanya ukulemba elyo ba ticha bakulanga ifyakulemba bwinobwino lilya balekuconga.* (We do not learn Braille on its own. In most cases we do not learn Braille separately as a subject. While learning other subjects that is when we also learn it. If you have made a mistake in writing that is when the teacher would show you how to write properly during marking).

The findings were in line with the MOE (2013) pronouncements that Braille Literacy should be taught to visually impaired pupils. Except at the three levels assessed, that is;

lecturer, teacher and pupil, Braille Literacy as it was supposed to be called was still called 'Braille' and not 'Braille Literacy' as assumed in the curriculum framework 2013 though the implied meaning was the same as it hinged on literacy concepts of reading and writing. Literal meaning was different as the former is a code while the latter is an application of the code for the purpose of reading and writing.

4.3.7 *Lecturers:* - Braille Literacy Skills taught to Students

In order to find out what Braille Literacy skills were taught to students, Lecturers were asked about the kind of Braille Literacy skills they taught them. In response to that question, LT4 from College B had this to say:

> *Students are taught skills about how to modify approaches to suit individuals with visual impairments. Some of the skills were based on training on hand movement, language experience, syllabic, phonics, alphabetic and look and say.*

4.3.8 *Teachers:* - Basic Braille Literacy Skills taught to Pupils to develop Writing Competence

Teachers were also asked a similar question so as to find out what basic Braille Literacy skills they taught their pupils and the responses were as indicated in Table 4. Most of the respondents 19 (63%) indicated the basic Braille Literacy skills taught were; pre-writing activities; wrist wriggling, mentioning dots loudly, finger dexterity, tracing simple patterns, sorting similar items and right to left movement as basic Braille Literacy skills. On the other hand, 6 (20%) of the participants stated tactile skills, listening and speaking skills, reading skills, reciting skills and writing skills were basic Braille Literacy skills. So it is clear from the findings that most teachers taught basic Braille Literacy. TR28 had this to say:

> *when pre-writing activities; wrist wriggling, mentioning dots loudly, finger dexterity, tracing simple patterns, sorting similar items and right to left movement are properly practiced and learnt, that the solid foundation for effective writing skills.*

Response	Frequency	Percentage
Pre-writing activities; wrist wriggling, mentioning dots loudly, finger dexterity, tracing simple patterns, sorting similar items and right to left movement	19	63%
Tactile skills, Listening and speaking skills reading skills, reciting skills and writing skills	6	20%
Phonic and syllabic skills	3	10%
Functional Literacy skills and medium of instruction	2	7%
Total	**30**	**100%**

Table 4: Basic Braille Literacy Skills taught to Pupils to develop Writing Competence

4.3.9 Views from FGD on Basic Braille Literacy Skills taught to Pupils to develop Writing Competence

During focus group discussion, pupils were asked to mention some of the basic Braille Literacy skills they were taught. P3 said the following:

> *Sorting similar items, finger training, writing full dots; wrist training, mentioning dots loudly, tracing simple patterns and right to left movement.*

4.3.10 *Lecturers:* - Strategies Lecturers used to enhance Braille Writing Skills

Lecturers were asked how they trained their teachers to enhance Braille writing skills. One of the lecturers LT1 from College A said:

> *This was done through research work patterning to the questions asked concerning issues of Braille reading and writing and thereafter their feedback were written in essay form which we marked and graded accordingly.*

4.3.11 *Teachers:* - Strategies Teachers used to enhance Braille Writing Skills

To find out the strategies teachers were using to enhance Braille writing skills, teachers were asked to mention the most used strategy to enhance Braille writing skills. The following table outlines their responses as tabulated; 20 (66%) indicated that most of the respondents used dictation as a strategy to enhance Braille writing skills. However, 8

(27%) of the respondents indicated note-taking as a strategy whilst 2 (7%) used copying of passages as a strategy. TR19 had this to say:

> *Dictation was favoured because it worked simultaneously enhancing listening skills, spelling skills and word formation skills which together promoted writing skills generally.*

Response	**Frequency**	**Percentage**
Dictation	20	66%
Note-taking	8	27%
Copying of passages	2	7%
Total	**30**	**100%**

Table 5: Strategies Teachers used to enhance Braille Writing Skills

4.3.12 Views from the FGD Strategies Pupils used to enhance Braille Writing Skills

In the same vein the pupils were asked to explain how they were taught how to read and write Braille. Three of the pupils said they learnt how to read and write through thermoformed texts. P7 pupil mentioned that:

> *We usually learn reading and writing through dictation of passages and spellings. After dictation we carry the papers for practicing reading seldom does the teacher give us word cards.*

4.3.13 *Lecturers:* - Procedure of Provision of Braille Reading and Writing Readiness Activities to the Pupils

Procedure of provision of Braille reading and writing readiness activities to the visually impaired pupils plays an important role of laying a solid foundation for further Braille instruction and mastery. So lecturers were asked to identify favourable procedures for provision of Braille reading and writing readiness. All the five of them said there was no specific procedure as different pupils were treated as different individuals with unique strengths and weaknesses. LT3 of College A reemphasized by stating that:

> *Usually we recommend teaching using the use of an IEP which works by building on the weaknesses established in an individual pupil. As such one's weakness may be another one's strength – so pupils are treated as individuals and procedures for teaching reading and writing are tailor-made.*

4.3.14 *Teachers:* - Procedure of Provision of Braille Reading and Writing Readiness Activities to the Pupils

In order to find out how the pupils were introduced to Braille Literacy, it was imperative to find out the procedure taken by teachers to provide Braille reading and writing readiness activities. The responses were as displayed in Table 6. From the readings in Table 6 , 11 (37%) of respondents indicated that reading and writing readiness activities were driven by the individual pupils, but 10 (33%) of the respondents indicated that reading readiness was done first then writing readiness second to individual pupils, whilst 9 (30%) indicated that writing readiness was done first followed by reading readiness to individual pupils. From the readings above, it is evident that there was no much difference between 37 percent and 33 percent on the procedure of providing reading readiness to the visually impaired pupils. TR23 had this to say:

> *Pupils with visually impairments are to be treated as individuals not as a group as such any activities given should be driven by an individual's pace of masterly of the concepts taught. This should be done by identifying strengths against weaknesses and then develop from the established weaknesses and if need be formulate an IEP.*

Response	**Frequency**	**Percentage**
Driven by the individual pupils	11	37%
Reading readiness first then writing readiness second individually	10	33%
Writing readiness first then reading readiness second individually	9	30%
Total	**30**	**100%**

Table 6: Procedure of Provision of Braille Reading and Writing Readiness Activities to the Pupils

4.3.15 Observations on Procedure of Provision of Braille Reading and Writing Readiness Activities to the Pupils

From the Observations the study observed that an IEP was a typical procedure which was followed by most of the teachers. It was confirmed that that there was no specific procedure which was followed by all the teachers as each teacher had different pupils so were the different procedures embedded in the IEP in Braille Literacy in the study school.

4.3.16 *Lecturers:* - Activities done in Reading Readiness

Before engaging pupils in actual reading experiences pre-reading skills were necessary to lay a foundation for developing reading fluency. Lecturers were asked about the reading readiness activities they recommended and LT2 from College A had this to say:

> *Following straight lines and zigzag lines, matching textures, wrist control and line switching, hand identification and tip finger sensitivity training.*

4.3.17 *Teachers:* - Activities done in Reading Readiness

To find out how Braille Literacy reading was introduced, the study sought to establish the activities done as pre-requisite to Braille reading. The findings were as displayed in Table 7. It can be noted that in Table 7 half of the respondents 15 (50%) indicated hand identification and tip finger sensitivity training were the activities to be done in as activities for reading readiness, whereas 14 (47%) indicated matching textures and wrist control and line switching as favoured pre-requisite activities. So form the minimal difference between 15 (50%) and 14 (47%) it is clear that most of the teachers were providing activities for reading readiness. One of the teachers TR27 had this to say:

> *Hand identification was very important as in turn it provided a finger which was to be leading in the Braille reading while the other hand helped in quick line switching to maintain fluency.*

Response	Frequency	Percentage
Hand identification and tip finger sensitivity training	15	50%
Matching textures and Wrist control and line switching	14	47%
Following straight lines and zigzag line	1	3%
Total	**30**	**100%**

Table 7: Activities done in Reading Readiness

4.3.18 Views from FGD on Activities done in Reading Readiness

Pupils were asked to share what they were learning to read before they were actually introduced to the actual Braille reading. Seven of the ten pupils said they were trained to follow zigzag and straight lines they were also trained to identify which hand and finger to use for reading, classifying of objects and so on. One of the pupils P3 had this to say:

> *We are taught to read different texts on different types of paper. We are also taught how to match textures, wrist control skills and how to observe punctuation marks, follow and switch lines sequentially without skipping. We are also tested to identify sharp and blunt dots on the papers as we read.*

4.3.19 *Lecturers:* - Grade in which Contractions were introduced to the Pupils

Basically Braille Literacy being taught in two grade levels it was important to find out the grade in which the switching was done. Lecturers were asked the grade in which they recommended when the switching from uncontracted to contracted Braille should be done. LT1 from College A said:

> *Grade three was suitable as most of the spellings were known by that grade which made word formation and contractions possible.*

4.3.20 *Teachers:* - Grade in which Contractions were introduced to the Pupils

Because uncontracted Braille was different from contracted Braille, it was important to find out the grade in which the pupils were supposed to switch from uncontracted Braille to contracted Braille and the findings from the teachers were as displayed in Table 8, 16 (53%) respondents indicated that contractions were supposed to be introduced in grade

four, whilst 6 (20%) of the respondents indicated grade three and 5 (17%) indicated grade five. On the whole Braille contractions were introduced in Literacy education in grade four classes for the visually impaired as was acknowledged by TR22 had this to say:

> *Grade four was suitable as most of the words and spellings were known by this grade and contractions depended more on the knowledge of letter combination which formed words through spellings.*

Response	**Frequency**	**Percentage**
Grade four	16	53%
Grade three	6	20%
Grade five	5	17%
Grade two	2	75%
Grade six	1	3%
Total	**30**	**100%**

Table 8: Grade in which Contractions were introduced to the Pupils

4.3.21 Views from the FGD on Grade in which Contractions were introduced to the Pupils

On the issue of the grade in which contractions should begin, seven of the pupils were of the view that learning of contractions should be started in grade four. One of the pupils P9 affirmed the view by saying that:

> *In grade four most of them had known how to spell the words correctly and had mastered how to read properly using the uncontracted Braille.*

4.3.22 *Lecturers:* - How Classroom are made Braille rich Environment

Lecturers were asked to state how classrooms were made Braille rich environments. Four of the lecturers said that they encouraged their students to use items from local environment to make the environment Braille rich. LT5 from College B said:

One aspect of transforming environments into Braille rich was to display objects with Braille labels.

4.3.23 *Teachers:* - How Classroom are made Braille rich Environment

Just as the sighted counterparts' classrooms are made print rich environments so should be for Braille. Teachers were asked as to how they made the learning environments Braille rich and the findings were as tabulated in Table 9. In Table 9, 18 (60%) indicated using talking walls for making their classrooms Braille rich environment, 6 (20%) indicated labelling objects and also 6 (20%) indicated making user friendly teaching aids. The findings showed that classrooms were made rich learning environment in Braille Literacy through talking walls by tactile pictures.

Response	**Frequency**	**Percentage**
Talking walls	18	60%
Labelling objects	6	20%
Make user friendly teaching aids	6	20%
Total	**30**	**100%**

Table 9: How Classroom are made Braille rich Environment

4.3.23 Views from the FDG on how Classroom are made Braille rich Environment

However, when the pupils were asked a similar question, most of them agreed that pictures on the walls were available but the books were not enough. One of the pupils P5 had this to say:

The pictures are displayed around the classrooms and the names are labelled on each picture for us to read what exactly is in the picture. But some pictures are just large prints and our friends explain to us what they are.

The findings however, revealed unsuitable methods of making a Braille rich environment as some teachers used large print where the partially sighted were to explain to their totally blind peer what the pictures were about.

4.3.24 *Lecturers:* - Tools used by lecturers in Teaching Braille Literacy

Lecturers were asked what tools they used to teach Braille Literacy and all of them said they had used a slate and stylus while a Perkins Brailler was just used to demonstrate how it works. LT4 of College B said:

> *Perkins Brailler is more quick and easy to use but was not readily available to cater for all the students as a result a slate and stylus was used.*

4.3.25 *Teachers:* - Tools used by teachers in Teaching Braille Literacy

In order to find out how Braille was written and read the researcher sought to find out what kind of tools were used in teaching Braille Literacy and the following were the findings. In Table 10, respondents 18 (60%) reported that they were able to use a Perkins Braille r to teach Braille Literacy for the purpose of teaching, whilst 12 (40%) reported the use of slate and stylus during their Braille Literacy lessons. TR17 shared her views as follows:

> *A Perkins Brailler was easy to learn and also easy to teach and correct the work of the writer there and then without any delay caused by the slate and a stylus. It is also easy to rub and make corrections immediately without tempering with the paper's grip.*

Response	**Frequency**	**Percentage**
Perkins Brailler	18	60%
Slate and stylus	12	40%
Other	0	00%
Total	**30**	**100%**

Table 10: Tools used in Teaching Braille Literacy

4.3.26 Views from the FGD on Tools used in learning Braille Literacy

The above revelation was also confirmed by the pupils during a focus group as most of the pupils admitted that nine of their teachers had challenges using the most available writing devices a frame and a stylus and P3 had this to say:

> *Our teacher does not know how to use a stylus and a hand frame, she gives us ideas based on a Perkins Brailler which we do not know how to use as it is usually used by the teachers. A Perkins is very difficult to learn and makes a lot of noise as compared to a writing frame and stylus.*

4.3.27 *Lecturers:* - System of Education enhancing Teaching of Braille Literacy

Lecturers were asked to state which form of education system between inclusive and special education was favourable for enhancement of Braille Literacy. Five lecturers felt special education enhanced Braille Literacy better than inclusive education. LT5 from College B said:

> *Pupils received more individualized attention under special education than under inclusive education comparatively. This is possible because under special education the number of learners per class is very minimal usually below ten as compared to inclusive education.*

4.3.28 *Teachers:* - System of education enhancing Teaching of Braille Literacy

Today teachers are met on the crossroad between special education and inclusive education, so it was important in the interest of Braille Literacy to find out which education system they felt favoured teaching of Braille Literacy. The findings are displayed in Table 11. There were 16 (53%) who indicated that special education enhanced the teaching of Braille Literacy, while 9 (30%) indicated that inclusive education enhanced teaching of Braille Literacy and 5 (17%) indicated both. It was clear that most teachers supported the teaching of Braille Literacy through special education as was acknowledged by TR4 who said:

> *Special education accorded a maximum individualized interactions between teachers and pupils. This is possible because learners under special education were very few in number to be managed under a period for a lesson.*

Response	Frequency	Percentage
Special education	16	53%
Inclusive education	9	30%
Both	5	17%
Total	**30**	**100%**

Table 11: System of education enhancing Teaching of Braille Literacy

4.3.29 Views from FGD on System of Education enhancing Teaching of Braille Literacy

Concerning inclusive education and special education P1 who came from an inclusive school to this boarding school had this to say:

> *Most of their teachers who did not know Braille and were not specialists had to teach and send them to the resource room to copy notes and exercises from their friends. In most cases transcription took a long time which also delayed marking subsequently delaying corrections were necessary.*

4.3.30 *Lecturers:* - Institutions are funded Running Costs to Support Literacy Education

From time to time devices for writing needed to be repaired or procured and this required funding. So the researcher enquired if the colleges were funded accordingly. LT3 from College A said:

> *Device maintenance is difficult as we cannot afford to hire technicians to work on them. So most of them were lying in the store room yet the students did not have enough devices to use. Braille paper was also expensive and it was sourced outside the country so it was not readily available as we have to wait for the ministry to source it at their convenience. So in most cases Braille was taught using the black board and the responses are done on ordinary papers using a pencil or ball pen.*

4.3.31 *Teachers:* - Institutions are funded Running Costs to Support Literacy Education

Teachers' views were sought to establish whether their institutions were properly funded to maintain the running costs of Braille Literacy equipment. The findings are shown in Table 12. From the findings in Table 12, most respondents 22 (73%) reported that the institution was not properly funded whilst 6 (20%) reported that the institution was properly funded with the least 2 (7%) indicating that they were not funded at all. From the readings in the table, it is very clear that institutions were not properly funded and TR24 had this to say:

> *Our school is not properly funded and this explains why there is a lot of unrepaired devices lying in the store room because the school cannot afford to pay craftsmen to repair them.*

Response	**Frequency**	**Percentage**
Not properly funded	22	73%
Properly funded	6	20%
Not funded at all	2	7%
Total	**30**	**100%**

Table 12: Institutions are funded Running Costs to Support Literacy Education

4.3.32 Views from FGD on how equipment for Braille Literacy are maintained

Six of the pupils said that once a slate was damaged or broken it was difficult to replace because they were not found in local shops. P7 indicated that:

> *Most of the broken hand frames and broken styluses were just kept in the strong room together with defunct Braille writers like Perkins.*

4.3.33 *Lecturers:* - Intervention Measures put in place by Lecturers to enhance the Teaching of Braille Literacy

Lecturers were asked about the intervention measures put forward to enhance Braille Literacy, LT4 from College B had this to say:

> *One of the intervention measures was to use local made teaching aids like a six dot slate made from wood and black balls representing dots which is used to teach the concepts of Braille in the absence of Braille paper. And since Braille paper is quiet in short supply, group work helps to cater for all the students as they share among themselves.*

4.3.34 *Teachers:* - Measures put in place by Teachers to enhance the Teaching of Braille Literacy

To ensure consistence and continuity in the learning Braille Literacy, teachers were asked what measures were put to enhance its teaching. From the findings displayed in table 13 most teachers 22 (73%) reported that the intervention measures put in place to enhance the teaching of Braille Literacy was to recycle Brailion paper so they could use it several times before it was completely worn out whilst 6 (20%) used homework as intervention measure with only 2 (7%) using any other methods. So it is clear from the findings that paper recycling was a major intervention put in place to enhance the teaching of Braille Literacy.

Response	**Frequency**	**Percentage**
Recycled paper	22	73%
Home work	6	20%
Any other	2	7%
Total	**30**	**100%**

Table 13: Measures put in place by Teachers to enhance the Teaching of Braille Literacy

4.3.35 Views from FGD on Intervention Measures put in place to enhance the Teaching of Braille Literacy

Pupils were asked how they enhanced the learning of Braille Literacy and one of them P6 had this to say:

> *I have most of the books and spelling applications recorded on my memory card which I listen to for word spellings and word constructions which later help me to do Braille contractions with less difficulty.*

Research Question 2.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1 Overview

The foregoing chapter looked at the discussion of findings pertaining to this study. The current chapter presents the summary arising from the findings of the study.

6.2 Summary of the Study

The study investigated the teaching of Braille Literacy in a special school of Ndola district in Zambia. A mixed method design was conducted in a special school for the visually impaired on thirty-five pupils, thirty teachers and five lecturers. Purposive sampling was used to select the respondents.

The study has been divided into six chapters. Chapter one consisted of the background of the study, statement of the problem, purpose of the study, objectives, research question, the significance of the study, limitation and delimitation of the study and definition of key terms as used in the report. Chapter two reviewed related literature while chapter three contained the research methodology. Chapter four presented the findings of the study while chapter five discussed the findings. Chapter six covered the summary, conclusion and recommendations arising from the findings of the study

Data was collected using an observational schedule, focus group discussions and the questionnaires. An observational schedule was used to take account of what the

researcher observed in the study school. Questionnaires were administered to the teachers and lecturers while the focus group discussions were held with the pupils.

The findings of the study revealed that the practices of teaching Braille Literacy included having an influx of specialized teachers to teach Braille Literacy to the visually impaired pupils. It was observed that teachers teach Braille Literacy were not trained specialists. On the other hand, some of the methods and techniques used like 'look and say' to teaching Braille Literacy were found not to be suitable. It was also found that teaching and learning resources were not enough in the study school. Besides that, it was also established that ICT did not contribute to the learning of Braille Literacy as audio information could not replace Braille as it were in the study school.

6.3 Conclusion

In conclusion, from the study it was evident that most of the teachers for the visually impaired pupils are not trained in the teaching of Braille Literacy. The identified insufficiency of special skills gap need to be bridged by deploying more qualified teachers to the schools for the visually impaired to teach Braille Literacy. For this reason, the findings presented herein should prompt all stakeholders to get concerned and provide support to pupils with visual impairments in the area of Braille Literacy education.

6.4 Recommendations

In the light of the discussed findings of this study, the following are recommendations:

(i) The Ministry of Education should:-

a) procure more teaching and learning resources to be used for teaching Braille Literacy

b) improve on providing running costs in special schools.

c) provide various reading material ranging from readers, fiction, magazines and scientific.

(ii) The Curriculum Development Centre should:-

a) come up with a responsive curriculum that addresses the enhancement of Braille Literacy.

b) come up with a Zambian Braille primer that meets the modern learning trends and support teaching and learning Braille Literacy in a familiar language from grades one to four.

c) ensure that books that are in ink print are transcribed into Braille to support the teaching and learning of Braille Literacy.

d) promote the usage of ICT in the curriculum as a supplement to acquisition of Braille Literacy

(iii)Teacher Training Institutions should

a) consider employing more lecturers to teach Braille Literacy in their teacher training institutions.

b) procure enough modern Braille Literacy devices and materials to be used for teaching of Braille Literacy.

(iv)Teachers should:-

a) as much as possible train their pupils to use Braille Literacy skills when teaching.

b) vary their teaching methods and techniques to capture the interests of all the pupils especially in Braille Literacy.

c) improvise locally made tactile teaching and learning aids to support Braille Literacy.

(v) Pupils with visual impairments should:-

a) desist from over reliance on ICT as it cannot replace Braille Literacy but can help to improve Braille Literacy.

b) develop the culture of reading various Brailled books.

6.5 Suggested Topics for Further research

Researchers should consider:-

(i) taking up a study in Braille mathematical literacy education in Zambia.

(ii) conducting a comparative study on Braille Literacy between urban and rural schools for pupils with visual impairments.

4.4 What Methods and Techniques were Teachers using in teaching of Braille Literacy?

The following findings were based on the above research question and their responses were as follows:

4.4.1 *Lecturers:* - Teaching Methods Favorable to teaching Reading and Writing Braille Alphabet in Braille Literacy

In order to find out how teaching of reading and writing were taught and learnt, it was important to know the methods lecturers favoured to introducing new words to VI pupils. In response the LT1 from College A said:

> *Some of the methods favoured were Phonic and syllabic. Phonic method was better for the visually impaired pupils because it provided both audio and tactile learning modes which are usually suitable for such pupils.*

4.4.2 *Teachers:* -Teaching Methods Favourable to teaching Reading and Writing Braille Alphabet in Braille Literacy

In the same vein teachers were asked to state the teaching methods favourable to teaching reading and writing of Braille alphabet in Braille Literacy. The findings were as displayed in Table 14 where 14 (47%) of the respondents reported that most common the order as 'Sounds, Braille letters, number of dots' whilst 7 (23%) of the respondents felt the order was 'Sounds, numbering of dots then letters' and 6 (20%) felt the order was 'Braille letters, then sounds, number of dots'. The least likely order was 3 percent of teaching reading and writing of Braille alphabet or Braille Literacy lessons was number

of dots, letter then sound. It was evident from the study that use of sound, Braille letter, number of dots was the most common order of teaching reading and writing Braille in Braille Literacy. One of the teachers TR16 had this to say:

> *The sound raised curiosity which was necessary for motivation, then exposed to the letter after which the dots were mentioned, this method raised the masterly levels.*

Response	**Frequency**	**Percentage**
Sounds, Braille letters, number of dots	14	47%
Sounds, numbering of dots then letters	7	23%
Braille letters, then sounds, number of dots	6	20%
Numbering of dots, letters then sound	3	10%
Total	**30**	**100%**

Table 14: Teaching Methods Favourable to teaching Reading and Writing Braille Alphabet in Braille Literacy

4.4.3 Views from FGD on Methods Favourable to learning Reading and Writing Braille Alphabet in Braille Literacy

During a focus group discussion, a question was asked to find out what methods of learning to read and write the pupils favoured. Seven of the ten pupils said that they favoured to listen to letter sounds then introduced to Braille letters and then the number location of dots for the letters. One of the pupils, P3 had this to say:

> *When I listen to the sound of the letter it becomes very easy to associate the letter sound with the Braille letter thereby making it very easy also to locate its distinct dot numbers combination and locations in a cell.*

4.4.4 Observations on the Teaching Methods Favorable to Teaching Reading and Writing Braille Alphabet in Braille Literacy

Having looked at the lesson plan and witnessing the class sessions it was found that 20 of the teachers favoured Phonic and syllabic methods of teaching. When the researcher enquired, one of the teachers TR25 had this to say:

> *Since I do not use a black board for my pupils majority of which are totally blind, so phonic and syllabic methods fit in very well for me as a teacher and my pupils.*

4.4.5 *Lecturers:* - Activities Provided for Writing Readiness in Braille Literacy

Writing Braille is quiet involving and writing legibly is what makes reading easy. So it was important to find out the activities given to visually impaired pupils for writing readiness. LT5 from College B had this to say:

> *It is recommended that as for the beginners it is better they first understand the arrangement of the cells on the flame in relation to the dots then teach movements from right to left, top and down taking care of the hand preference of the individual pupils.*

4.4.6 *Teachers:* - Activities Provided for Writing Readiness in Braille Literacy

Before introducing the actual Braille writing to the pupils it was important to acclimatize them with transitional fundamental skills and understandings necessary for minimum success in completing a writing task. Table 15 shows the activities for such a purpose. It was noted that most respondents 17 (57%) indicated that writing readiness was done by way of embossing full dots. There were 5 (17%) of respondents who indicated that orientation of movement from right and left on slate. This clearly shows that the majority of the teachers let to pupils to emboss full dots as a writing readiness activity as compare to orientation and movement from right to left or inserting papers and dot identification. T21 had this to say:

> *Embossing of full dots helps the pupils to acquaint themselves with the layout of the cell, agility and dexterity besides holding of a stylus in a correct and firm order.*

Response	Frequency	Percentage
Let pupils emboss full dots	17	57%
Orientation of movement from right and left on slate	5	17%
Inserting of paper and dot identification.	4	13%
Following commands from the teacher	4	13%
Total	**30**	**100%**

Table 15: Activities Provided for Writing Readiness in Braille Literacy

4.4.7 Views from FGD on Activities Provided for Writing Readiness in Braille Literacy

During a focus group discussion a question was asked as to what activities they did before the actual learning of Braille and one of the pupils P8 revealed that:

> *The teachers brought transcribed passages which we usually learn from, at times exercises are transcribed then we write answers in response which the teacher marks afterwards.*

4.4.8 *Lecturers:* - Most effective Approach for Teaching of Braille Literacy to the VI Pupils

There are several approaches towards teaching of reading and writing, however lecturers were asked to state the most effective approach for teaching of Braille Literacy. One of the lecturers, LT3 from College A said:

> *Among the pupils with visual disabilities there is no one methods which works for all, so pupils are supposed to be treated as individuals and not as groups and the approach to achieve that is the balanced approach.*

4.4.9 *Teachers:* - Effective Approach for Teaching of Braille Literacy to the VI Pupils

Every effective teaching to take place it must take a suitable approach for the purpose of learning. The teachers were asked to state the most effective approach for teaching of Braille Literacy to visually impaired pupils and the findings are tabulated in Table 16 having 16 (53%) of the respondents reported that the balance approach in the teaching of Braille Literacy was the most effective for teaching of Braille Literacy to visually impaired pupils, whilst 5 (17%) reported the literature based approach followed by 4

(13%) respondents who the language experience approach were effective in Braille Literacy. However, the findings showed that skill centred approach and Mangold Braille Program of Tactile Perception and Braille Letter Recognition respectively were least used approaches in the teaching of Braille Literacy in the study schools.

Response	**Frequency**	**Percentage**
Balanced approach	16	53%
Literature-based approach	5	17%
Language experience approach	4	13%
Skills-centred approach	3	10%
Mangold Braille Program of Tactile Perception and Braille Letter Recognition	2	7%
Total	**30**	**100%**

Table 16: Effective Approach for Teaching of Braille Literacy to the VI Pupils

4.4.10 Observations on the most effective Approach for Teaching of Braille Literacy to the VI Pupils

During observations the researcher observed that 16 of the teachers used a balanced approach, Literature-based approach and Language experience approach and T28 had this to say:

> *Balanced approach was a better approach because it accorded every pupil to learn at their own pace thereby meeting their special educational needs*

4.4.11 *Lecturers:* - Strategies used to teach Spelling of Words in Braille Literacy

Word formation is dependent on correct order of letter arrangement in form of spellings to form different words, so it was important to find out what strategies teachers were using to teach spelling of words in Braille Literacy. LT2 from College A had this to say:

> *There is no difference with ordinary pupils so any of these methods can be used; word cards, look and say, syllabic, phonic and dictation.*

4.4.12 *Teachers:* - Strategies used to teach Spelling of Words in Braille Literacy

Spelling being the combination of alphabetic letters to form a written word requires a number of strategies for pupils to master the art. Teachers were asked to share the strategies they used to teach spelling of words in Braille Literacy. Table 17 shows the responses given by the respondents. As presented in Table 16 there were 18 (70%) of respondents who stated the use of the 'phonic' method, 'look and say', 'word cards' and 'dictation.' However, 12 (30%) of respondents indicated 'syllabic' method and 'dictation' as method in spelling of words. Based on the findings of the study teaching of spelling of words was done through the phonic method, look and say, word cards as well as dictation.

Response	**Frequency**	**Percentage**
Using phonic method, look and say, word cards and dictation	18	70%
Syllabic method and dictation	12	30%
Total	**30**	**100%**

Table 17: Strategies used to teach Spelling of Words in Braille Literacy

4.4.13 Views from the FGD on Strategies used to teach Spelling of words in Braille Literacy

Pupils were asked how they learnt the spellings of the words in Braille Literacy. Four of the pupils said they had learnt them orally through the means of dictation. One of the pupils P3 had this to say:

> *At times our teacher would give us a text to read after which she collect the scripts and then asks us to spell the words found in the script.*

4.4.14 *Lecturers:* - How Pupils Space Words in Sentences Evenly in a Slate

Letters form words which form sentences and for a meaningful reading words needed to be spaced. So lecturers were asked how they taught their student teachers to space the letters evenly. Two of the lecturers said that spacing of words in Braille was done by the mere mention of the word 'space' itself wherever it needed to be placed. One of lecturers LT5 of College B had this to say:

Spaces were created by the mode of reading distinctly marking independent words coupled with pauses and correct word pronunciations.

4.4.15 *Teachers:* - How Pupils Space Words Evenly in Sentences in a Slate

Since the paper was clamped between the back and the front part of the slate while the pupil was writing from right to left, it was important to find out how the pupils were taught how to space the words using the stylus in the slate. Table 18 carries the responses from the respondents. 24 (80%) reported that the teacher reads words loudly and indicate where there was a space in a sentence. On the other hand, 6 (20%) reported that the teacher presents written words on a paper, then read them word for word showing spaces in between them. The overall findings of the study was that teachers ensured that pupils spaced words in sentences evenly in a slate by reading words loudly and indicating where there was a space in a sentence. TR16 observed that:

The word 'space' was to be mentioned loudly and checking was done after every writing activity for corrections where necessary.

Response	**Frequency**	**Percentage**
Teacher reads words loudly and indicate where there is a space in a sentence.	24	80%
Teacher presents written words on a paper, then read them word for word showing spaces in between them	6	20%
Total	**30**	**100%**

Table 18: How pupils Space Words Evenly in Sentences in a Slate

4.4.16 Observations on how Pupils Spaced Words Evenly in Sentences in a Slate

Using the observations the researcher sought to find out how the pupils were spacing the words in sentences evenly in a slate. It was found out that the voice intonation, stress and rhythm played a pivotal role in word spacing in a slate.

4.4.17 *Lecturers:* - Instructional Strategies favorable for teaching Braille Literacy to VI pupils

Not all the instructional strategies can be effective towards teaching Braille Literacy as a result a question was asked to find out the instructional strategy which were favoured for teaching visually impaired pupils Braille Literacy. LT5 from College B said:

Whole language strategy and pre-reading strategy were some of the instructional strategies that work well for the VI pupils.

4.4.18 *Teachers:* - Instructional Strategies favorable for teaching Braille Literacy to VI pupils

There are a lot of instructional strategies for teaching Braille Literacy, so the teachers were asked to name some of the favourable instructional strategies for teaching Braille Literacy to visually impaired pupils. The findings are as shown in Table 19. There were 18 (60%) of respondents who felt that pre-reading activity strategies was an instructional strategy for teaching Braille Literacy whilst 9 (30%) of the respondents showed that teachers favoured the whole language approach to Braille Literacy in the teaching of visually impaired pupils.

Strategies	**Frequency**	**Percentage**
Pre-reading strategy	18	60%
Whole language strategy	9	30%
Basal readers strategy	2	7%
Language experience strategy	1	3%
Total	**30**	**100%**

Table 19: Instructional Strategies favourable for teaching Braille Literacy to VI pupils

4.4.19 Observations on Instructional Strategies favorable for teaching Braille Literacy to VI pupils

During class observations it was revealed that pre-reading activities were involved as teaching strategies in the study school. This was also confirmed by the lecturers in teacher training colleges as one of the favoured strategies.

4.4.20 *Lecturers:* - Order of Teaching Reading and Writing Braille Alphabet

Effective teaching of Braille alphabet depends on its orderly presentation of Braille concepts. For this reason, it was imperative to find out the order of teaching reading and writing of Braille alphabet. Most of the Lecturers said they followed the American Braille primer format but LT3 from College A had this to say:

Depending on the type of pupils there are two ways either you begin with numbering of dots then show a letter and sound it or you first sound the letters then show the letter and then name the letter beginning with upper signs of dots 1,2,4, and 5 and gradually add dot 3 before involving dot 6.

4.4.21 *Teachers:* - Order of Teaching Reading and Writing Braille Alphabet

Braille is divided into three types of signs; upper, middle and lower signs. For this reason, there must be an order through which it ought to be taught a question which the teachers were asked and the responses are as shown in Table 20. The findings in Table 20 revealed that most teachers 27 (90%) of them started with the upper signs as the order of teaching reading and writing Braille Literacy whilst 3 (10%) reported to have started with middle signs as the order of teaching reading and writing Braille Literacy. It is concluded that most teachers used the order of starting with the upper signs for teaching or reading and writing Braille alphabet.

Response	***Frequency***	***Percentage***
Upper signs	27	90%
Middle signs	3	10%
Lower signs	0	0%
Total	***30***	***100%***

Table 20: Order of Teaching Reading and Writing Braille Alphabet

4.4.22 Views from the FGD concerning the order of Teaching Reading and Writing Braille Alphabet

Three pupils said they had learnt Braille alphabet starting with letters 'A' to 'E', then 'F' to 'J' and the rest of the letters follow. One of the pupils P10 had this to say:

We learnt 'A' to 'J' alongside numbers from '1' to '0' then a dot '3' was added to 'A' to 'J' to create 'K' to 'T' and lastly add dot '6' to make 'U' to 'Z' with an exception of letter 'W'.

4.4.23 *Lecturers:* - Methods of Teaching visually impaired pupils to Identify Letters of the Alphabet

The lecturers were asked to identify methods of teaching the letters of the alphabet. Most of them said it was dependent on the reading readiness and severity of visual impairment in an individual pupil. However, one LT1 of College A said:

> *Modifying look and say method as 'touch and say' method worked well for the visually impaired pupils; first to identify the shape of the letter, second to identify the dot patterns and numbers used and third to name the letter embossed.*

4.4.24 *Teachers:* - Methods of Teaching visually impaired pupils to identify Letters of the Alphabet

As the letters in print are different in shape so are the letters in Braille which are not only different from each letter but also bear different dot numbers as well. For this reason, it was important to enquire the methods used to teaching the visually impaired pupils how to identify letters of the alphabet. The findings were as tabulated in Table 21. In this table, 20 (67%) reported using look and say method was good in teaching visually impaired pupils letters of the alphabet, whilst 6 (20%) indicated using letter and word cards and 3 (10%) showed using the syllabic method was good. The overall findings were that using letter identification by using look and say method was better in Braille Literacy.

Methods	**Frequency**	**Percentage**
Using look and say method	20	67%
Using letter and word cards method	6	20%
Using the syllabic method	3	10%
No response	1	3%
Total	**30**	**100%**

Table 21: Methods of Teaching visually impaired pupils to identify Letters of the Alphabet

4.4.25 Views from FGD on Methods of Teaching visually impaired pupils to identify Letters of the Alphabet

Five of the pupils said that they had to be exposed to the letters first and then name the letters afterwards. P8 had this to say:

> *Our teacher gives us a mixture of letters from which we have to identify the letters she asks us about or she will mention the dot numbers and then we have to find such a letter saying such dots mentioned from a list of mixed alphabetic letters.*

4.4.26 Lecturers - Effectiveness of Teaching Braille Literacy in a Familiar Language

The ministry of general education reviewed that all the teaching and learning in all the learning areas at the Lower Primary level will be in familiar Zambian Languages – Grades one to four. This is because there is evidence that children learn more easily and successfully through languages that they know and understand well, (MOE, 2013). It was important to find out how Lecturers prepared their teachers to teaching Braille Literacy in familiar local languages. One of the lecturers LT4 from College B said:

> *Teaching English Braille in any local language was not quiet applicable because in the first place teachers under training came from different provinces and they are likely to be sent wherever their services would be needed so a college we give instructions about Braille in English.*

4.4.27 *Teachers:* - Effectiveness of Teaching Braille Literacy in a Familiar Language

The findings of how effective it had been to teaching of Braille Literacy in familiar language *Icibemba* had been in the study school are shown in the Table 22 where 25 (83%) indicated that teaching Braille Literacy in local language was not effective. 3 (10%) showed that it was effective. Few teachers, 2 (7%) believed that it was very effective. The general findings were that teaching Braille Literacy using local languages was not effective in classes for the pupils with visual impairments.

Response	Frequency	Percentage
Not effective	25	83%
Effective	3	10%
Very effective	2	7%
Total	**30**	**100%**

Table 22: Effectiveness of Teaching Braille Literacy in a Familiar Language

4.4.28 Views from the FGD on Effectiveness of Teaching Braille Literacy in a Familiar Language

During a focus group discussion pupils were asked how effective was learning of Braille Literacy in a local language, *Icibemba*. All of them expressed ignorance as they had never heard of Braille Literacy being taught in any other language apart from English. P2 had this to say:

> *Nshatala unfwapo ukusambilila Braille mucibemba. Elyo mwaisambilila atishani? Okay ba Sir, ngolefwaya ukulemba 'Z' mucisungu ni Dots 1,3,5,6 nomba mucibemba elyo mwasambilila atishani? Akapumba kabumo, akabutatu, akabusano nakamutanda? Awe ba Sir, tafileepaanga seeensi.* (I have never heard of learning Braille in Bemba. How can you learn it? Okay Sir, if you want to write 'Z' in English it is just Dots 1,3,5,6 but in Bemba how would you learn it? (Numbers in Bemba)? No Sir, it does not make sense).

Research Question 3.

4.5 What challenges do teachers face in teaching Braille Literacy to pupils with Visual Impairments?

4.5.1 *Lecturers:* - Challenges faced in Teaching Braille Literacy in Classes for the VI

Lecturers have a wider exposure to Braille Literacy from training to observing the students teach the pupils. So when asked to identify the challenges faced in teaching Braille Literacy most of the lecturers cited lack of teaching and learning resources. LT4 from College B said:

Lack of teaching and learning resources derailed the smooth delivery of intended objectives in Braille Literacy. This is so because most of the resources needed are not locally sourced making it difficult for teachers to use their initiative in most cases.

4.5.2 *Teachers:* - Challenges faced in Teaching Braille Literacy in Classes for the VI

Challenges of any kind in teaching Braille Literacy could undermine its effectiveness, so it was prudent to establish if teachers faced any challenges in teaching Braille Literacy. The findings are displayed in Table 23 showing 12 (40%) of respondents as having indicated Lack of teaching and learning resources and 10 (33%) indicated limited time for Braille theory and practice, whilst 8 (27%) indicated too many pupils in one classroom as a challenge. It was clear that teachers faced challenges of accessing teaching resources to effectively teach Braille Literacy. One of the teachers TR30 had this to say:

Lack of teaching and learning resources made Braille Literacy to be derailed as teachers were stuck as nothing could replace Braille naturally and attain its Literacy as it were,

Response	**Frequency**	**Percentage**
Lack of teaching and learning resources	12	40%
Limited time for Braille theory and practice	10	33%
Too many pupils in one classroom	8	27%
Total	**30**	**100%**

Table 23: Challenges faced in Teaching Braille Literacy in Classes for the VI

4.5.3 Views from FGD on Challenges faced in Teaching Braille Literacy in Classes for the VI

During the focus group discussion pupils were asked to state if they faced any challenges in learning Braille Literacy. Eight of the pupils cited the scarcity of teaching and learning resources which they said made learning difficult. One of the pupils P3 had this to say:

At times we transformed ordinary ball pens into styluses by fixing a hardened wire replacing the finished nib but we face a lot of challenges with the slates as most of them are old and clips are broken making the Braille paper to be loose and move about as we write.

In the same vein, another pupil P9 had this to say:

> *Slates and styluses were not enough, so teachers helped us to exchange from one class to the other. And most of the slates were old and the clips were broken so it was quiet very difficult to come up with quality Braille.*

4.5.4 *Lecturers:* - Braille books or Supplementary Readers for the visually impaired pupils are available

Lecturers were asked if the Braille books or Supplementary Readers for the visually impaired pupils were available as they were a medium through which Braille reading could be practiced and mastered. All the five lecturers reported that neither the Braille books nor supplementary readers were enough. LT1 from College A said:

> *Compared to the sighted counterparts, the grade readers and/or supplementary readers were not enough in some grades they were not available at all.*

4.5.5 *Teachers:* - Braille books or Supplementary Readers for the visually impaired pupils are available

Effective learning of Braille Literacy requires practice using various books and/or supplementary readers and as such the researcher enquired if the books and/or supplementary were available and enough to enable individual practice reading. The findings were as tabulated in table 24. Most of the respondents, 24 (80%) indicated that Braille books or supplementary readers for the pupils are not available whilst 6 (20%) indicated that only some grades had them. It was clear that Braille books and supplementary readers were not available to support Braille Literacy in study schools.

Response	**Frequency**	**Percentage**
They are not available	24	80%
Only in some grades	6	20%
Total	**30**	**100%**

Table 24: Braille books or Supplementary Readers for the visually impaired pupils are available

4.5.6 Observations Concerning the Availability of Braille Books and Supplementary readers

Using the Observation Schedule, the researcher found that Braille Books and Supplementary readers were not available in all grades. For example, Grades six and five did not have grade readers in Braille and the teacher had to transcribe excerpts from ink print grade readers.

4.5.7 *Lecturers:* - Effectiveness of Braille Curriculum/syllabus in teaching Braille Literacy

Following the decree in curriculum framework 2013 that Braille Literacy was to be taught in all teacher training institutions, it was necessary to find out how effective the curriculum and or syllabus were in teaching Braille Literacy. One of the lecturers, LT5 from College B said:

> *Neither the Braille curriculum nor the syllabus is effective towards teaching of Braille Literacy. As a result, an American Braille primer is still useful to serve for this purpose.*

4.5.8 *Teachers:* - Effectiveness of Braille Curriculum/Syllabus in Teaching Braille Literacy

Preparation of what teachers ought to teach were enshrined in the curriculum and guided by the syllabus. So it was necessary to find out from the teachers how effective the curriculum and the syllabus were regarding the teaching of Braille Literacy. Table 25 shows the responses from the teachers. The findings from Table 25 show that most respondents 24 (80%) reported that the curriculum and the syllabus were not effective regarding to the teaching of Braille Literacy while 6 (20%) reported that the curriculum and the syllabus were effective. So from the findings it was clear that the curriculum and the syllabus were not effective with regards to teaching of Braille Literacy. One of the teachers, TR21 had this to say:

> *The latest if they are there they are nowhere to be seen, the only syllabus I see is a 2009 one which is not better than a Braille Primer. In fact the only reference we have at the moment is the American Braille Primer*

Response	Frequency	Percentage
Not effective	24	80%
Effective	6	20%
Others	0	0%
Total	**30**	**100%**

Table 25: Effectiveness of Braille Curriculum/Syllabus in teaching Braille Literacy

4.5.9 Observations Regarding the Effectiveness of the Curriculum and the Syllabus

The researcher observed that the curriculum and the syllabus were not effective. The curriculum 2013 only makes a mention that Braille Literacy was to be taught in teacher training colleges and ends at suggesting subject to be combined with Braille Literacy without providing further road map towards implementation. The syllabus in the study school was that one produced in 1996 which did not provide any relationship to the curriculum framework of 2013. So it is from such observations that the researcher concluded that both the curriculum and the syllabus were not effective.

4.5.10 *Lecturers:* - Type of pupils who give challenges in teaching Braille Literacy

Lecturers were asked to identify the types of pupils who generally give challenges in teaching Braille Literacy. All the five lecturers cited partially sighted pupils as the ones who gave more challenges to teach Braille Literacy than the totally blind. LT2 of College A said:

> *The totally blind had no other influence as the partially sighted who were influenced by the residue vision and this made teaching the totally blind very easy and consistent unlike the partially sighted who were at times struggling to use ink print at the expense of Braille Literacy.*

4.5.11 *Teachers:* - Type of pupils who give challenges in teaching Braille Literacy

Visual impairment covers a myriad of visual challenges though they have been put into two main groups as low vision or partially sighted and the totally blind who cannot see anything at all. So it was important to find if their category of vision loss had a bearing on learning Braille Literacy. The findings were as tabulated in Table 26. There were 21

(70%) of respondents who indicated that they had challenges with low vision pupils, 8 (27%) had challenges with those who were totally blind while only 1 (3%) indicate to have challenges with both type of pupils. It was evident from the findings that low vision pupils tend to give more problems in the teaching of Braille Literacy in the study schools. One of the teachers TR22 had this to say:

> *Most of the low vision students preferred either to use large print or the computers for educational purposes both for reading and writing and this it difficult to concentrate on Braille learning.*

Response	**Frequency**	**Percentage**
Low vision	21	70%
Totally Blind	8	27%
Both pupils	1	3%
Total	**30**	**100%**

Table 26: Type of pupils who give challenges in teaching Braille Literacy

In figure 2, the pupil on the left is low vision and was trying as much as possible to use the residue sight first to read the question on the paper on which she has rested her left arm and second to see where to emboss in the writing frame the tasks which had caused her to maintain a very poor posture, whereas the pupil on the right is totally blind and was using both hands simultaneously and had better posture enabling him not to tire quickly. The left hand is reading while the left hand is writing making the work for the teacher not only easier but also quicker.

Figure 2. Challenges in teaching between the totally blind and the low vision. Source: Study School (Photo taken on 16/07/2018)

4.5.12 Views from the FGD on Type of pupils who give challenges in teaching Braille Literacy

The researcher asked if their severity of sight loss had an influence on how they learnt Braille Literacy. It was discovered that differences in visual impairments posed a challenge in learning Braille Literacy especially to those pupils with some residue vision who were caught between using large print and Braille a procedure which delayed their Braille literacy acquisition.

4.5.13 *Lecturers: -* Introduction of (ICT) is being helpful in the teaching of Braille Literacy

ICT is part of the Zambian curriculum, so it was significant to find out how helpful it was in the teaching of Braille Literacy. Most of the lecturers said it made their teaching very easy as ICT was a supplementary to not only teaching but also learning of Braille Literacy. LT3 of College A said:

> *The text to speech software for example made reading of Braille practice easy as it provided correct spellings and pronunciations of words supplementing on the teaching and learning of Braille Literacy.*

4.5.14 *Teachers:* - Introduction of (ICT) is being helpful in the teaching of Braille Literacy

Today in Zambia ICT is part of the curriculum which also promotes Literacy, so in this regard it was imperative to find out how helpful it was in teaching Braille Literacy. Table 27 shows how the findings were. In Table 27, 25 (83%) indicated that ICT was not helpful, whilst 5 (17%) indicated that ICT had been helpful. The general findings were that introduction of ICT in schools did not help the teaching and learning of Braille Literacy in the study schools. TR13 had this to say:

> *Pupils preferred using computer software like JAWS (Job Access with Speech) but it only robbed them the time they should have spent on improving or perfecting their reading and writing skills in Braille .*

Response	**Frequency**	**Percentage**
Not helpful	25	83%
It has been helpful	5	17%
Total	**30**	**100%**

Table 27: Introduction of (ICT) is being helpful in the teaching of Braille Literacy.

4.5.15 Views from FGD on Introduction of (ICT) in the teaching of Braille Literacy.

During focus group discussion a question was asked to find out if the pupils found ICT to be helpful in learning of Braille Literacy and P9 had this to say:

> *Ine efyo naposelako amano sana mukusambilila computer pantu yena takwaba ati amapepala tapali nangu ati amabooks tapali. Yena yalikwata fyonse elyo futi ukubonfya Braille ninshi nama computers epoyali kumoneka mpofu sana.* (That is why I concentrate so much on learning a computer because there is nothing like shortage of papers or books. It has everything and using Braille amidst computers one looks more blind).

4.5.16 *Lecturers:* - Engaging parents/guardians in 'Braille' learning progression of the pupils

Lecturers were asked whether it was necessary to engage the parents or guardian of visually impaired pupils who were learning Braille Literacy. Two of the lecturers said it

was extremely important to engage the parents or guardians in the learning of Braille Literacy. One of the Lecturers, LT4 of College B had this to say:

> *When the parents are involved it made the work of the teacher easier as there would be continuity of learning Braille Literacy even at home under the tutorage of the parents or the guardian.*

4.5.17 *Teachers:* - Engaging parents/guardians in 'Braille' learning progression of the pupils

Parents play a pivotal role in the whole development of their children so teachers were asked how often they engaged the visually impaired pupils' parents or guardians in the learning of Braille Literacy. Table 28 shows how the findings were. In this table, 18 (60%) of the respondents indicated only during open days whilst 6 (20%) stated that they sometimes through the phone engage the parents while the other 6 (20%) indicated that they did not at all engage the parents. In relation to engagement of parent or guardians in the learning of Braille Literacy. It was clear that parents were involved during open days. One of the teachers TR27 observed that:

> *We only interacted with the parents during open days because the school was a boarding and pupils came from different places across the country.*

Response	Frequency	Percentage
only during open days	18	60%
Sometimes through the phone	6	20%
Not at all	6	20%
Total	30	100%

Table 28: Engaging parents/guardians in 'Braille' learning progression of the pupils.

4.5.18 Views from the FGD on Engaging parents/guardians in 'Braille' learning progression of the pupils

During the focus discussion pupils were asked if their parents or guardians were engaged in their learning of Braille Literacy. Six of them said that their parents were not engaged and knew nothing about Braille Literacy. One discussant P1 had this to say:

> *It is very difficult for the parents to be involved in our learning because we come from different places across the country and only close twice a year. So some parents can only come once and others cannot come at all since we can manage to come and go home on our own.*

4.5.19 *Lecturers:* - Teaching Resources in schools for the teaching of Braille Literacy are enough

Writing Braille requires different types of writing devices which usually go by age and or grade. In this regard a pocket frame, a hand frame and a Perkins Brailler are used from lowest, middle and upper classes respectively. So it was important to find out if all the sectors were equipped accordingly with teaching resources. Four lecturers responded that all the sectors were not properly equipped with teaching resources. One of the lecturers LT1 of College A said:

> *Today pocket frames are scarce and what is in use is the writing frame from grades one to college level as the Perkins Braillers are feared to be expensive. Even the writing frame is not locally made*

4.5.20 *Teachers:* - Teaching Resources in schools for the teaching of Braille Literacy are enough

Teaching of Braille Literacy is highly dependent on the availability of teaching resources without whom Braille Literacy could not be taught at all. So a question was asked to find out if the teaching resources were enough for the teaching of Braille Literacy. The findings are shown in Table 29. From Table 29, 24 (80%) of respondents indicated that they didn't have teaching resources at both primary and secondary school, whilst 4 (13%) said that they had enough teaching resources at secondary section and not primary. It was clear that the majority of respondents acknowledged that they did not have enough teaching resources to support the teaching of Braille Literacy in classes for pupils with visual impairments.

Response	Frequency	Percentage
We do not have enough in both primary and secondary	24	80%
We have enough at secondary and not primary	4	13%
We have enough at primary and not secondary	2	7%
Total	**30**	**100%**

Table 29: Teaching Resources in schools for the teaching of Braille Literacy are enough

In Figure 3, the pupil is using improvised counters made from bottle tops as the school does not have apparatus like; cubes, abacus and/or terror frames for counting which are visually impaired friendly.

Figure 3. Improvised teaching aid for counting. Source: Study School.
(Photo taken on 17/07/2018)

4.5.21 Observation on Teaching Resources to teach Braille Literacy in the Study School.

Going by the observation it was revealed that hand frames and styluses were not enough. They were still using the old traditional writing devices of a slate and stylus instead of at least a Perkins Brailler which was not only faster to write but also easier to teach

someone how to write at the same time reading what they were writing thereby reducing on time taken to teach. Braille paper was also rationed making it difficult to practice writing.

4.5.22 *Lecturers:* - Assignments, Exercises and Homework as a way to enhance Braille Literacy

After every teaching feedback is necessary to evaluate the level of mastery of what has been learnt. Lecturers were asked if they gave out assignments, exercises and homework and if they did how regular they did it. All five lecturers said that traditionally they gave out assignments concerning Braille Literacy yet exercises were given every after a topic in the Braille primer. One of the lecturers LT2 from College A had this to say:

> *Assignments were given for the students to go and carry out research concerning the topics given. As for exercises, every after a topic in the Braille primer there are two exercises one for first attempt while the second one was for remedial work and these were the ones we even used for homework.*

4.5.23 *Teachers:* - Assignments, Class exercises and Homework as a way to enhance Braille Literacy

Teachers were asked if they gave out assignments, class exercises and homework and if they did how regular they did it. The findings in this regard are tabulated in Table 30. Most of the respondents 23 (76%) reported that they gave out class exercises as a way of enhancing Braille Literacy whilst 6 (20%) gave out homework and only 1 (3%) gave out assignments as a way of to enhance Braille Literacy. So from the findings, it is clear that class exercise were the main way through which teachers enhanced teaching of Braille Literacy.

Response	**Frequency**	**Percentage**
Exercises	23	77%
Home work	6	20%
Assignments	1	3%
Total	**30**	**100%**

Table 30: Assignments, Class exercises and Homework as a way to enhance Braille Literacy

4.5.24 Views from FGD based on Assignments, Class exercises and Homework as a way to enhance Braille Literacy

During the FGD pupils were asked how they benefited from the assignments, Class exercises and home work as a way to enhance Braille Literacy. Nine of the pupils said they did not do any assignments but did a lot of class exercises as opposed to homework. One of the pupils P5 exclaimed:

> *Homework lisengo lyambwa, nshileibukisha unushiku elyo batupelepo Homework. Ifyakulembelako ngatwainuka kupela bambi ukubonfyako filyafine. (*Home work is very rare and I don't remember when we were given one because we have to give the next class the devices for writing after knocking off).

In Figure 4, pupils in grade one using cut empty egg trays as a six dot Braille cell due to shortage of writing frames, Braille paper and styluses. Small stones in empty spaces represent 'dots' which are also representative of letters being learnt about.

Figure 4. Improvised teaching and learning aid for writing and reading. Source: Study School. (Photo taken on 16/07/2018).

4.5.25 *Lecturers:* - Lecturers to train teachers in Colleges are there

Effective training of teachers depended on the availability of Lecturers with a suitable student lecturer ratio. So it was important to find out if Lecturers to train specialist teachers in Braille Literacy were available and enough. All the lecturers said the lecturers were not enough and that made their work difficult. LT5 from College B said:

> *At times it was difficult to share classes because of what is involved like teaching, practice, exercises, assignments and marking were all time consuming and demanding, so certain things were cut off.*

4.5.26 *Teachers:* - Specialist Teachers to teach visually impaired pupils are there

Effective implementation of Braille Literacy is dependent on the availability of specialist teachers who can teach it. So teachers were asked to state whether teachers were enough to cater for this task. Table 31 shows the responses. From Table 31, most of the respondents 23 (77%) reported that classes were too big for one teacher, 6 (20%) indicated that classes were of medium size while 1 (3%) reported that classes were small. From the findings, it was clear that at 77 percent the classes for the visually impaired pupils were too big to be handled by one teacher.

Response	**Frequency**	**Percentage**
Too big classes	23	77%
Medium size classes	6	20%
Small classes	1	3%
Total	**30**	**100%**

Table 31: Specialist Teachers - Visually Impaired pupil's ratio

4.5.27 Observation on Specialist Teachers Visually Impaired pupil's ratio

From the observations made, teachers were not enough considering the number of the pupils in some classes like grade four which had nine pupils.

4.6 Summary of the Chapter

This chapter presented the findings of the study on an assessment on the teaching of Braille Literacy. The presentation of the findings was done through research questions.

On the practices of teaching Braille Literacy, it was found that most teachers were not qualified to teach Braille Literacy. Braille Literacy was taught although not as a stand-alone subject and most of the activities when teaching were not different from literacy in ordinary schools. On the methods and techniques teachers were using in teaching of Braille Literacy, it was found that some teachers did not favour methods like; look and say, phonic and syllabic. On the challenges teachers faced in teaching Braille to pupils with visual impairments, it was found that the new curriculum did not address any challenges faced in the past and did not provide the road map towards implementation apart from introducing Braille Literacy as a stand-alone subject besides its training combination with other subjects. There was also insufficient teaching skills, lack of teaching and learning resources and limited work spaces in the study school. The following chapter discusses the findings. The discussion is based on afore elucidated presentation of findings in this chapter and arranged according to objectives of the study.

CHAPTER FIVE: DISCUSSION OF FINDINGS

5.1 Overview

The previous chapter presented the findings of the study in relation to the research questions. This chapter presents the discussion of the findings on teaching Braille Literacy to the visually impaired pupils in a special school of Ndola district. The discussion is based on afore elucidated presentation of findings in accordance with the set research objectives which are:

1) To establish practices in the teaching of Braille Literacy to the visually impaired pupils in the study school.
2) To assess methods and techniques used by teachers in teaching of Braille Literacy in the study school.
3) To examine challenges teachers face in teaching Braille Literacy to pupils with visual impairments in schools.

5.2 Establishing Practices Teachers use in the Teaching of Braille Literacy to the visually impaired pupils in the Study School

5.2.1. Practices in the teaching of Braille Literacy

On the part of teachers in the study school it was established as showed in Table 2 that; 18 (60%) of them had ordinary teaching qualifications and besides that, Table 1 shows that a good number of teachers for the visually impaired were also visually impaired who had generally a know-how of reading and writing Braille by virtue of being visually impaired. However, that does not mean that when one is visually impaired then they are capable of teaching the visually impaired pupils as Gevers and Murphy (2002) defined a teacher of the visually impaired as someone who was trained in teaching students with visual impairments. So the notion in the study school did not only disadvantage the visually impaired pupils by giving them visually impaired teachers but also exhibited a stereotypical attitude that had potential to derail the smooth flow and progression of Braille Literacy among the pupils with visual impairments. This revelation was consistent with (Riccobono, 2006) who affirmed that many commentators on the Braille Literacy crisis agree that one of the most significant contributing factors is a negative societal attitude towards Braille. It was wrong to suggest that when one was a visually

impaired teacher then automatically they could teach Braille Literacy. To some extent that explains why eight out of ten pupils in a focus group discussion said that while Braille Literacy was there on the time table, in most cases it was not learnt as a single subject but was learnt through other subjects. The findings were also against MOE (2013) declaration which clearly stated that Braille Literacy should be taught as a subject among other subjects on the time table. In the same vein, some of the sighted teachers did not know how to read and write using Braille yet it was supposed to be the medium of instruction and feedback.

Looking at that scenario Braille Literacy was seemingly just pronounced without necessarily putting benchmarks for implementation purposes as Johnson (1996) remarked that teachers of visually impaired students had to pass Braille proficiency tests to complete their college training. This was found not to be the case as most of the teachers exhibited incompetence towards teaching of Braille Literacy. This revelation was in line with Kalabula (1991) who observed that there was lack of knowledgeable and trained human resource to provide relevant knowledge to pupils with visual impairments, a challenge that has continued up to this day. To that effect, the MOE (2015) in Chipili (2017) reported that there were less than two thousand qualified special education teachers against nine thousand schools in the country. Thus, that did not warrant an even distribution of skilled specialist teachers in schools. This clearly showed that there was a crisis of human resource in the field of Braille Literacy as well as other aspects of school curriculum such as ICT, (Chipili, 2017).

The findings also revealed that all the five lecturers were not trained in teaching Braille Literacy as a subject but had attended several workshops about it. To begin with the several workshops talked about did not equate to the full training of Braille Literacy as it were. And workshops did not have the potential to give a comprehensive training about Braille Literacy. Actually lecturers were supposed to be the first ones to be equipped with the special skills concerning the teaching of Braille Literacy which they should have also transferred to student teachers to go and finally teach the visually impaired pupils but the opposite was true as MOE (2013) just pronounced the first ever inclusion

of Braille Literacy as a standalone subject to be offered in teacher training colleges when the lecturers themselves were not trained in that specialty. For example, most of the lecturers were not trained to teach Braille Literacy but had received insights through workshops concerning what Braille Literacy was all about, that is; reading, writing, methodology and related skills. That was contrary to Spungin (1996) who postulated that if a child with visual impairment had to be taught Braille Literacy skills effectively, it should be taught by a certified teacher competent to teach Braille and so should be the same for the teachers who should be taught by certified lecturers. Conversely, workshops did not contain a full Braille Literacy training curriculum worth certification for Braille competence as they just offered insights to Braille Literacy. So there were no two ways about how a teacher to teach Braille Literacy ought to receive training because Braille Literacy instructions must be conducted by trained personnel, usually the specialist teacher for pupils who were visually impaired, (Division of Student Support Services of Newfoundland and Labrador, 2011) in (Nadeem, 2015).

As (Ferrante, 2006) reported that going by the nature and demands of Braille there should be readily available special education teachers to support Braille Literacy and most developing countries have not done well in this sector. This emerged to be true in the study school and perhaps across Zambia as observed by (Kalabula, 1989) that Zambia lacked professionals in the area of special education in general where he lamented that although the government trained teachers, the field of special education continued to experience a dire need for trained professionals. One of the reasons to that artificial shortage of teachers was lack of incentives such as special education allowance which was scrapped off making the sector not to be attractive. After a period of about thirty years Ndhlovu & Kasonde-Ng'andu (2015) reported about the same challenge in special education sector of not having enough specialist teachers in special schools. While some teachers indicated that that to mitigate the challenge, they taught collaboratively with other teachers who were specialist teachers and had experience teaching the visually impaired pupils, this still did not equate them to being trained and it meant that when those trained were absent then the whole process of delivering Braille Literacy was derailed until such a time they would be present. This is why it was

established that some visually impaired pupils found it difficult to learn Braille because some of the teachers who were supposed to be teaching them did not know it especially contractions. So during a period for Braille Literacy it was as if the pupils were teaching themselves. The findings were in line with (Schroeder, 1989) who affirmed that one of the causes of the decline in Braille Literacy was teachers' knowledge of Braille and methods for teaching it. Effective teaching of Braille Literacy required a teacher with all necessary Braille Literacy skills at the finger tips and pupils should look up to such a teacher as a source of knowledge and inspiration a trend that could motivate and enhance the teaching and learning progression of Braille Literacy.

5.2.2 Accessibility to Braille Literacy in Special Schools

From the findings in Table 3, 13 (43%) of the teachers admitted that they provided Braille Literacy to visually impaired pupils while another half 13 (43%) indicated that they only provided accessibility to Braille Literacy sometimes and not always. With 4 (14%) responding that they did not at all provide accessibility to Braille Literacy in classes. From these findings it was clear that accessibility to Braille Literacy as a subject was not implemented fully as demanded by the MOE (2013). At the three levels assessed, that is; lecturers', teachers' and pupils', Braille Literacy was still called 'Braille' and not 'Braille Literacy' as assumed in the curriculum framework 2013 though the meaning was found to be the same as it hinged on literacy concepts of reading and writing. The finding was in line with (UNESCO, 2004) which defined literacy as involving a continuum of learning to enable an individual to achieve his or her goals, to develop his or her knowledge and potential, and to participate fully in the wider society. Equally for the visually impaired pupils this could only be achieved if they have access to Braille Literacy which at the moment was not given to them fully as enshrined in the ZECF, (MOE, 2013).

On the other hand, (Spungin, 2003, NFB, 2009)) reported that Braille Literacy had declined in the United States to the point where it was estimated that only 10 percent of visually impaired children were learning it. However, in Zambia the scenario was different from the findings as 43 percent of the pupils had access to Braille Literacy and

the other 43 percent sometimes received Braille Literacy indicating that Braille Literacy in the study school was not as declined as in the United States. The findings were also not in line with PDA (2012) which stated that MOGE shall prescribe rules and put in place measures as the case might be to ensure facilitation of learning Braille. If indeed it was so, the percentage of accessibility would have been higher than 43 percent. The reflection of the findings indicated non adherence to such measures of implementing Braille Literacy in totality as it was the case with other subjects.

When lecturers were asked whether they trained teachers in Braille Literacy at their institutions, the response was that Braille was taught as a subject at both teacher training institutions but not as Braille Literacy as enshrined in the curriculum framework of 2013 and no reason was given. It was found that although they did not call it Braille Literacy but simply 'Braille', they also taught their students main Braille Literacy concepts about reading and writing besides methodology to enable them go and teach Braille reading and writing. However, this was not supposed to be the case as Braille Literacy should stand out to be distinct in nature and be addressed and taught in totality as such and not to look for some equivalent concepts to Braille Literacy. By virtue of not calling it Braille Literacy it had a potential to be misunderstood by some students. The question which begged more answers but was not answered was why Braille Literacy was still referred to as 'Braille' when the two were different where the former was an ability to read and write while the later was the code of writing for the blind, (RNIB, 1968).

From the pupils it was found that Braille Literacy was in most cases not taught as a separate subject but was incorporated in other subjects. This was against what was enshrined in the MOE (2013) with most teachers stating that time was not enough to cater for all subjects evenly. However, following the declaration that all teacher education institutions should equip the trainee teachers with special skills such as Braille Literacy, it was hoped that after such pronouncements the current trend would have witnessed positive change but it was rather the same if not worse as most of the challenges cited by other scholars were still in use when executing of Braille Literacy. As observed in the study school the findings revealed a similarity with Koenig (1992)

who reported that attitudes about Braille was often based on myths and misconceptions about the system which were a barrier to proper Braille Literacy instruction.

5.2.3 Basic Braille Literacy Skills taught to Students

The findings from Table 4 showed 19 (63%) respondents indicated pre-writing activities; wrist wriggling, mentioning dots loudly, finger dexterity, tracing simple patterns, sorting similar items and right to left movement. So it was clear from the findings that most teachers taught basic Braille Literacy skills taught to students. During focus group discussion, pupils were asked to mention some of the basic Braille Literacy skills they were taught. It was found that sorting similar items, finger training, writing full dots; wrist training, mentioning dots loudly, and tracing simple patterns and right to left movement were some of the basic Braille Literacy skills which they acquired. The findings were in line with Rex et al, (1994) who reported that Braille Literacy skills should be imparted to visually impaired pupils before the introduction of reading and writing Braille itself to prepare them for what they were to encounter later in school life.

The findings were also in line with Hampshire (1981) who found that pupils with loss of vision who had been taught tactual sense discrimination from very early ages usually did not have many problems with Braille reading if they did not have any other complications. This simply means that an effective teaching of Braille Literacy lies predominantly on the initial and timely exposure to Braille Literacy skills which are building blocks towards realizing Braille Literacy. In the same vein, from the findings lecturers revealed that training colleges taught Braille Literacy skills about how to modify approaches to suit individuals with visual impairments.

The above findings were in agreement with Rex et al, (1994) as they observed that pupils with visual impairments had to be taught to use touch, just like sighted pupils are taught to use vision. When children are not involved in reading readiness and pre-Braille activities, they are bound to experience problems with finger dexterity and hand movement. As such prior transitional practice relevant to Braille Literacy ought to be introduced sequentially in order to create relationships among what is said or observed, written and read in order to avoid confusions. These findings were also in line with

various research studies like that of (Wormsley, & Baker, 1994) who also agreed that in the absence of vision, it was important to give a pupil sensory training to the remaining senses like the sense of touch and the sense of hearing so that they might be used as sources of information thereby learning Braille Literacy using the remaining audio and tactile modalities.

5.2.4 Strategies used to enhance Braille Reading and Writing Skills

Upon being introduced to basic Braille Literacy skills there ought to be other means through which Braille Literacy could be enhanced within the learning structures of reading and writing. The findings from the teachers in Table 5 showed that 20 (66%) indicated that most of the respondents used dictation as a strategy to enhance Braille writing skills. 8 (27%) indicated that the preferred using note taking as a strategy and 2 (7%) reported using copying of passages. It was established that dictation was favoured because it worked simultaneously enhancing listening skills, spelling skills and word formation skills which together promoted writing skills generally. It was also found that three of the pupils said they learnt how to read and write through thermoformed texts. P7 mentioned that they usually learnt reading and writing through dictation of passages and spellings. The trend of enhancing Braille writing skills was in conformity with Mangold (1978) who felt that teachers must also be able to recognize inefficient hand movements and learn how to eliminate them and replace them with efficient ones. This means that while the visually impaired pupils were writing through dictation teachers were to observe how they engaged both hands alongside finger preferences for specific fine motor skill development. This would in turn help the teachers to select suitable teaching resources and/or pedagogical skills enabling writing of Braille becoming a reality. This was in agreement with Lowenfeld (1983) in America who revealed that pre-reading instructions were given during pre-school years. During such instructions pupils were guided on the best hand/fingers to use in reading Braille. Pupils who were sighted were exposed and they were always seeing their siblings or parents reading or writing. Thus, by age three or four years a sighted child was already scribbling and learning to hold reading materials. However, that is not the case with the child with visual impairments. Such revelations were in line with Mtonga (2011) who postulated that dictation helped

visually impaired pupils to learn to write, especially spellings. This is so because through dictation it was like the pupils were always on spelling training as a result they sharpened their skills in spellings which play a pivotal role where blending of words in short form is concerned in Braille Literacy.

5.2.5 Procedure of Provision of Braille Reading and Writing Readiness Activities to the Pupils

In order to find out how the pupils were introduced to Braille Literacy, it was imperative to find out the procedure taken by teachers to provide Braille reading and writing readiness activities. Table 6 showed 11 (37%) of respondents indicated that reading and writing readiness activities were driven by the individual pupils, but 10 (33%) of the respondents indicated that reading readiness was done first then writing readiness second to individual pupils, whilst 9 (30%) indicated that writing readiness was done first followed by reading readiness to individual pupils. From the findings it was evident that there was no much difference between 37 percent and 33 percent on the procedure of providing reading readiness to the visually impaired pupils. Actually TR 23 said that pupils with visual impairments were to be treated as individuals not as a group as such any activities given to them should be driven by an individual's pace of masterly of the concepts taught. The findings were in line with Mangold (1978) in America who found out that there were a number of mechanical skills that were unique to Braille reading. Those skills must be well developed before placing emphasis in decoding of Braille words, phrases or sentences. Teachers of those children should combine teaching of math concepts and counting with fine motor activities. The study further noted the importance of demonstrating correct finger position to the child, making some simulated reading materials to help teach hand movement and also demonstrating smooth, independent movements of the hands to the students. This is why procedure of providing reading and writing Braille Literacy was quiet important. Conversely, this should be done by identifying strengths against weaknesses and then develop from the established strengths where need be the teacher must formulate an IEP. Equally, from the observations the researcher observed that an IEP was a typical procedure which was followed by most of the teachers. It was confirmed that that there was no specific procedure which was

followed by all the teachers as each teacher had different pupils so were the different procedures embedded in their IEPs. So the type of strengths identified in a visually impaired pupil towards acquiring Braille Literacy should guide or provide a starting point for a procedure for provision of Braille Literacy activities which should solely be individualized.

Procedure of provision of Braille reading and writing readiness activities to the visually impaired pupils plays an important role of laying a solid foundation for further Braille instruction and mastery. So lecturers were asked to identify favourable procedures for provision of Braille reading and writing readiness. Three of them said there was no specific procedure to be followed as different pupils were treated as different individuals with unique strengths and weaknesses. LT3 emphatically said they usually recommended the use of an IEP which worked by building on the strengths established in an individual pupil. As such one's weakness could be another one's strength– so pupils were treated as individuals and procedures were tailor-made. These findings were in line with NFB (2010) which confirmed that every student with a visual impairment should be provided with an IEP that sets out the accommodations and support their education needs.

5.2.6 Activities done in Reading Readiness as aspects of Braille Literacy

The researcher sought to establish the activities done as pre-requisite to Braille reading. It was noted that half of the respondents in Table 7, 15 (50%) indicated hand identification and tip finger sensitivity training were the activities to be done for reading readiness, whereas 14 (47%) indicated matching textures and wrist control and line switching as favoured pre-requisite activities. So from the minimal difference between 50 percent and 47 percent it was clear that most of the teachers were providing reading readiness activities for reading readiness to support Braille Literacy skills. TR 27 pointed out that hand identification was very important as in turn it provided a finger which was to be leading in the Braille reading while the other hand helped in quick line switching to maintain fluency. Lecturers were asked about the reading readiness activities they recommended and some of their recommendations was the use of following straight lines and zigzag lines. Such activities enable the pupils to master the dot positions in a cell.

The above findings correlates with Kusajima (1974) as he argued that teachers should pay close attention at the beginning of Braille reading instruction to teach the child how to move his or her hands on the Braille materials and to constructing materials that allow for movement across lines and characters in the manner of the most efficient readers. The findings were also in line with Marshall and Hunt (2002) who further revealed that it was of paramount importance that special attention be given to the development of tactual perception and listening skills before beginning to teach reading to a pupil using Braille. These are important pre- reading activities usually incorporated in reading readiness programmes for beginners.

It was noted by Hampshire (1981) that pupils with visual impairments who had been taught tactual sense discrimination from very early ages usually did not have many problems with Braille reading if they did not have any other complications. When children are not involved in reading readiness and pre-Braille activities, they are bound to experience problems with finger dexterity and hand movement. Pupils were asked to share what they were learning to read before they were actually introduced to the actual Braille reading. Five of the pupils said they were trained to follow zigzag and straight lines and they were also trained to identify which hand and finger to use for reading purposes. One of the pupils P3 said they were taught to read and write using both hands and advised strongly to choose the hand which worked better in either reading or writing. That was better because if the pupils are involved in making choices of preference it would aid them to persevere towards the responsibilities taken while the teacher offers minimal but technical guidance.

Equally teachers in the study school agreed that they did not usually prepare activities for reading readiness in Braille. From observations pupils explored the best ways of reading Braille on their own. In Braille reading, the teacher paid little attention to the mechanics of reading, which was, the movements of the hands and the fingers. The findings were contrary to (Evans, 1991) who reported that a Braille Literacy teacher must help pupils develop good hand movements if they were to become efficient readers. In his study in America with 20 children who had visual impairments and characterized by being

overweight with weak upper limbs and low aerobic capacity in which he found out that proper muscular maturation was paramount for proper reading instruction in Braille; a good readiness programme for Braille reading would require fine motor hand coordination.

5.2.7 Grade in which Contractions were introduced to the Pupils

Since uncontracted Braille was different from contracted Braille, it was important to find out the grade in which the pupils were supposed to switch from uncontracted Braille to contracted Braille and the findings from the teachers in Table 8 showed; 18 percent of them indicated that contractions were supposed to be introduced in grade four. On the whole Braille contractions were introduced in grade four classes for the visually impaired pupils. Grade four was suitable as most of the words and spellings were known by this grade and contractions depended more on the knowledge of letter combination which formed words through spellings. When the pupils were asked during the FGD concerning the grade in which contractions should begin, seven of the pupils were of the view that learning of contractions should be started in grade four. One of the pupils, P9 commented that in grade four most of them had known how to spell the words correctly and had mastered how to read properly using the uncontracted Braille. The findings were contrary to the (Danielsen, 2006) who observed that the vocabulary in children's reading materials would not contain all of the Braille contractions until they have reached a third grade reading level. Okungu (2005) also found that pupils established reading habits at about the time of class three. Conversely, providing materials at a first, second or third grade reading level may not ensure that the child would be able to recognize or interpret the Braille symbols that do appear. In addition to the symbols themselves, Braille readers must learn rules of usage of the Braille symbols that print readers do not have to contend with. This means that Braille readers have an extended period of time during which they are still learning their literacy medium, while their sighted classmates have moved on beyond learning their code.

5.2.8 How Classroom are made Braille rich Environment

From the findings Table 9 showed that; 18 (60%) indicated using talking walls for making their classrooms Braille rich environment. It generally showed that classrooms were made rich learning environment in Braille Literacy through talking walls. However, when the pupils were asked a similar question, six of them agreed that pictures on the walls were available but the books were not enough. The pictures were displayed around the classrooms and the names are labelled on each picture for pupils to 'see' what exactly was in the picture. But some pictures were in large print and low vision pupils helped to explain what they were about. However, the findings revealed unsuitable methods of making a Braille rich environment as some teachers used large print where the partially sighted were to explain to their totally blind peers what the pictures were about. This also meant that the totally blind pupils were to be dependent on the partially sighted in order to function academically and still that did not give a detailed description of shapes and sizes as could have been understood by oneself interaction with such objects.

The other negativity was that not all partially sighted had the needed visual acuity for a detailed explanation which might just distort the whole thing through faulty explanations. These findings were a contradiction to what Wormsley (2000) recommended as a framework for providing a Braille -rich environment for the pupils that included placement of Braille in the surroundings where individual pupil would be exposed to it, just as pupils who were sighted were exposed to print. So the emphasis is that a Braille -rich environment should be readily explored by the individual visually impaired pupil unlike some pupils depending on others whether low vision or totally blind. Lecturers were asked to state how classrooms were made Braille rich environments. Four of the lecturers said that they encouraged their students to use items from local environment to make the environment Braille rich. One aspect of transforming environments into Braille rich was to display objects with Braille labels. Just as the sighted counterparts' classrooms are made print rich environments so should be for Braille.

5.2.9 Tools used in Teaching Braille Literacy

Tools for writing Braille are in different types and the findings in Table 10 revealed that 18 (60%) reported that they were able to use a Perkins Brailler to teach Braille Literacy. This was not very helpful as the school did not have enough Perkins Braillers which were referred to when teaching. The arrangement of keys for dots on the Perkins Brailler and the arrangement of the cells and dots on the slate were quiet very different not only by design but also by operation. One of the teachers TR17 pointed out that a Perkins Brailler was easy to learn and also easy to teach and correct the work of the writer there and then without any delay as it was the case with the slate and a stylus. But despite the claim that it was easy to use for teaching, such teaching would not be effective as what was being used for writing were different tools with their specific procedure for usage.

The above revelation was also confirmed by the pupils during a focus group discussion as eight of the pupils admitted that most of their teachers had challenges using the most available writing devices a frame and a stylus. P3 actually confirmed that their teacher did not know how to use a stylus and a hand frame as she only gave them ideas based on a Perkins Brailler which they did not know how to use and no pupil had one. The findings were in line with (Ianuzzi, 2009) who postulated that a decline in Braille Literacy suggested that the real culprit was the inadequate and inappropriate education of the specialist teachers who were not competent or confident themselves in using Braille. The difference between the tools which teachers and pupil knew better to use delayed the acquisition of Braille Literacy as most of the teachers exhibited incompetence on the use of what was readily available slate and stylus which were a traditional tools for writing Braille. The findings were in line with Mathru School for the Blind (2005) which comparatively observed that in developing countries, Braillers were prohibitively expensive and Braille was almost always written with a slate and stylus.

5.2.10 System of Education enhancing Teaching of Braille Literacy

Today the trend globally is advocating for change from special education to inclusive education so it was necessary to find out from the teachers about their views where teaching of Braille Literacy was concerned. The findings in Table 11 showed that; 16 (53%) of the teachers indicated that special education enhanced the teaching of Braille

Literacy. It was clear that most teachers supported the teaching of Braille Literacy through special education stating that Special education accorded a maximum individualized interactions between teachers and pupils. The findings were consistent with National Braille Press (2015) which reported that the decline in learning Braille Literacy for school-age children can be attributed to their integration into the public school system, where less time is assigned for learning Braille. Surely inclusive education could not support Braille Literacy because in the first place the visually impaired child was made to learn almost all the subjects the whole day orally since most of the work was presented on the black board, without even tactile learning aids as teachers were Braille illiterate and copying of what was learnt in class depended on the availability of well-wishers among friends. This meant that if they were busy the visually impaired pupil would wait until such a time they were free. Their friends also did not know Braille which made it impossible to learn cooperatively thereby lagging far too behind in acquisition of Braille Literacy. This confirms that special education at the moment supported enhancement of Braille Literacy because of availability of specialist teachers and relevant teaching resources within the school environment.

5.2.11 Institutions are funded Running Costs

Teachers' views were sought to establish whether their institution was properly funded to maintain the running costs of Braille Literacy. Among them in Table 12 revealed that; 22 (73%) reported that the institution was not properly funded whilst 6 (20%) reported that the institution was properly funded. The findings were contrary to what was observed way back and enshrined in the MOE (1977) that there would be need for adequate funding in order for special education to be more meaningful and beneficial. In the same vein three of the pupils said that once a slate was damaged or broken it was difficult to replace because they were not found in local shops. From the observations, it was established that the study school was not adequately funded due scarcity of Braille paper, Braillers and so on.

From time to time devices and material for writing needed to be repaired and/or procured and this required funding. So the researcher enquired if the colleges were funded accordingly towards implementing Braille Literacy. LT3 lamented that device maintenance was difficult as they could not afford to hire technicians to work on them. So most of them were lying in the store rooms yet the students did not have enough devices to use. Braille paper was also expensive and it was sourced outside the country so it was not readily available as they had to wait for the ministry to source it at their convenience. So in most cases Braille was taught using the black board and the responses were done on ordinary papers using a pencil or ball pen and only exercises were done in Braille. The findings were contrary to MOE (2013) which directed allocation of more resources to those institutions in greatest need where special education institutions should be among them. In the same vein PDA (2012) affirmed that the Minister responsible for education shall by statutory order designate public educational institutions to provide the necessary facilities and equipment to enable persons with disabilities to fully benefit from the public educational institutions. However, the findings were contrary to the direction of the MOE (2013) and PDA (2012) as a result Braille Literacy was negatively affected.

5.2.12 Intervention Measures put in place to enhance the Teaching/Learning of Braille Literacy

From the findings in Table 13 most teachers 22 (73%) reported that the intervention measures put in place to enhance the teaching of Braille Literacy was to recycle Brailion paper so they could use it several times before it was completely worn out. So it was clear from the findings that paper recycling was a major intervention put in place to enhance the teaching of Braille Literacy. From observations, recycling of paper allowed continuity in writing and reading where Braille paper was in short supply as was the case with the situation in the study school. Equally the study pointed out that one of the intervention measures was to use local made teaching aids like a six dot slate made from wood and black balls representing dots which was used to teach the concepts of Braille in the absence of Braille paper and when Braille paper was in short supply, group work helped to cater for all the students as they share among themselves. Such skills training initiative received by the students from colleges had potential to drive Braille Literacy forward and

consequently result in its successful implementation. In the same vein, pupils were asked how they enhanced the learning of Braille Literacy and P6 said that he had most of the books and spelling applications recorded on her memory card which she listened to for word spellings and word constructions which later helped her to do Braille contractions with less difficulty. For example, Figure 4 shows the initiative taken by a teacher where empty egg trays were cut to represent Braille cells and stones used as dots to form letters. The findings were in line with (Whittle, 2007) who advocated for initiating programmes for interventions involving teaching the Braille alphabet first by using different medium like a peg board with six pegs, Brailed single letter, word cards and so on.

5.3 Assessing Methods and Techniques used by Teachers in Teaching of Braille Literacy in the Study School

5.3.1 Teaching Methods Favourable to teaching Reading and Writing Braille Alphabet in Braille Literacy

The alphabet constitutes the basic concept of letter formation which later builds up to make words and sentences to be written and read. As such, in order to find out how teaching of reading and writing of new words were done, it was important to know the methods favoured to introducing new words to the visually impaired pupils. Table 14 showed that most of the respondents 14 (47%) reported that most common order was 'Sounds, Braille letters, number of dots', and 3 (10%) felt the order was 'Braille letters, then sounds, number of dots'. The least likely order was 3 percent of teaching reading and writing of Braille alphabet or Braille Literacy lessons was number of dots, letters then sounds. It was evident from the study that use of sound, Braille letter, number of dots was the most common order of teaching reading and writing Braille in Braille Literacy. Having looked at the lesson plans and witnessing the class sessions it was also found that most of the teachers favoured Phonic and syllabic methods of teaching. The findings were in line with (MOE, 2013) whose curriculum frameworks emphasized that it was the responsibility of all teachers to be aware of and sensitive to students' diverse needs. In that regard, teachers had the responsibility of adapting their teaching methods to meet their students' strengths and weaknesses. In that case, the strength of the pupils was

the auditory and tactile media through which they received the messages as opposed to the visual medium. It was found that some of the methods favoured were Phonic and syllabic. Phonic method was better for the visually impaired pupils because it provided both audio and tactile learning modes which were usually suitable for such pupils. The findings were also in line with (Thompson & Vaughn, 2007) who reported that in the early grades visually impaired pupils should receive foundational skills such as phonemic awareness and phonics in relation to Braille symbols, claiming that the expansive goals of reading are the same for all students. Once the visually impaired pupils develop their listening skills writing and reading Braille become easier because Braille is highly dependent on contractions which can only be done better if an individual understands the letters that make up different words. However, special attention should be on certain words whose contractions do not align with phonic boundaries such as; 'of' in proof, 'ou and gh' in cough and so on.

5.3.2 Activities done in Writing Readiness.

Smooth progression in writing proficiently is embedded in the foundational activities which a pupil is exposed to prior to actual writing. So it was important to find out the activities given to visually impaired pupils for writing readiness. The findings revealed in Table 15 showed that most respondents 17 (57%) indicated that writing readiness was done by way of embossing full dots. There was 5 (17%) of respondents who indicated that orientation of movement from right and left on slate. 4 (13%) indicated inserting of paper and dot identification and another 4 (13%) reported following of commands from the teacher. This clearly showed that the majority of the teachers allowed pupils to emboss full dots as a writing readiness activity as compared to orientation and movement from right to left or inserting papers and dot identification. TR21 emphasized that embossing of full dots helped the pupils to acquaint themselves with the layout of the cell, agility and dexterity besides holding of a stylus in a correct and firm order. During a focus group discussion, a question was asked as to what activities they did before the actual learning of Braille Literacy and one of the pupils said the teachers brought transcribed dot patterns which they usually copied. These findings were in agreement with a study carried out by Mathews and Claassen (1999) in some Kindergarten classes in

Britain where they found out that writing readiness activities were included in all instructional programmes. In some instructional programmes, writing was taught separately whereas in others it was part of the basic reading and writing instructions. The writing programme a teacher chose and modified, determined when and how he/she would handle writing readiness activities, (Mathews & Klaassens, 1999). This means that before exposing a pupil to any writing material, some relevant writing readiness must be put in place to acquaint the pupil with what they expect in the actual writing experience. This was also echoed who said that before introducing the actual Braille writing to the pupils it was important to acclimatize them with transitional fundamental skills and knowledge necessary for a successful attainment of writing skills.

5.3.3 Most favoured Approach for Teaching of Braille Literacy to the visually impaired Pupils

There are several approaches towards teaching of reading and writing. Teachers were also asked to state the most favoured approach for teaching of Braille Literacy to visually impaired pupils and the findings in Table 16 showed that; 16 (53%) of the respondents reported that the balance approach in the teaching of Braille Literacy was the most favoured for teaching of Braille Literacy to visually impaired pupils, while 5 (17%) reported the literature based approach followed by 4 (13%) respondents who indicated the language experience approach as being favoured in teaching Braille Literacy. 3 (10%) used skills-centred approach and 2 (7%) used Mangold Braille program of tactile perception and Braille Letter recognition. However, the findings showed that skill cantered approach and Mangold Braille Program of Tactile Perception and Braille Letter Recognition respectively were least used approaches in the teaching of Braille Literacy in the study school. During observations the researcher observed that most of the teachers used a balanced approach, Literature-based approach and Language experience approach. The findings were in line with Wormsley (2004) who postulated that the balanced approach was an interactive approach that selected from all of the various approaches according to the needs of the pupil and the context of instruction. This meant that that teachers were not restricted to using one method or approach but were supposed to use a method that would suit the individual needs of the pupils. Even then, they were

free to tap into an approach that would assist at any point during the teaching of Braille Literacy. So effective teaching of Braille Literacy should be pupil driven and it is the duty of the teacher to identify which approach would work well circumstantially fitting in tailor-made pedagogical skills to make it an effective teaching and learning reality. This was also echoed who acclaimed that among the pupils with visual disabilities there was no one method which works for all, so pupils were supposed to be treated as individuals and not as groups and the approach to achieve that was the balanced approach. The above findings were in line with (Miller, 2002, Farnsworth, 2007) who reported that every student was a unique individual and one single method of teaching Braille Literacy would not work for all students.

5.3.4 Strategies used to teach Spellings of Words in Braille Literacy

Word formation is dependent on correct order of letter arrangement in form of spellings to form different words. So it was important to find out what strategies teachers were using to teach spelling of words in Braille Literacy. Teachers were also asked to share the strategies they used to teach spelling of words in Braille Literacy. Table 17 showed that 18 (70%) of them stated the use of the 'phonic' method, 'look and say', 'word cards' and 'dictation.' However, 12 (30%) of respondents indicated 'syllabic' method and 'dictation' as a method in spelling of words. Based on the findings of the study teaching of spelling of words was done through the phonic method, look and say, word cards as well as dictation. The findings were contrary to what Beers (2003) reported that using look and say method worked well with the sighted pupils and not the visually impaired pupils as the use of word cards with pictures and accompanying words disadvantaged the pupils using Braille. Indeed, using look and say method for visually impaired pupils had a lot of flaws as observed, firstly, what was supposed to be looked at was supposed to be modified as 'touch and say' unlike the manner it was done in, and secondly, all the word cards which had pictures were also supposed to be drawn tactilely to enable the visually impaired pupils to 'see' them for the development of words' associations. Mostly especially the totally blind were left behind as they kept on repeating what their low vision counterparts were saying. Look and say method did not favour the visually impaired pupils generally but if it could be modified as touch and say most probably it

could serve the intended purpose. When pupils were asked how they learnt the spellings of the words in Braille Literacy. Seven of them said they had learnt them orally through the means of dictation. This was in line with (Beers, 2003 & Templeton, 2002) as they found that spellings were a developmental process and consisted of stages that were compatible with students' understanding of letter-sound relationships. This simply means that when the phonic method is used alongside look and say methods with modifications, the visually impaired are to benefit to the most maximum in acquiring spelling skills.

5.3.5 How Pupils Space Words in Sentences Evenly in a Slate

A combination of letters form words whose combination form sentences and for a meaningful reading words needed to be spaced accordingly. The findings in Table 18 revealed that 24 (80%) respondents reported to read words loudly and indicate where there was a space in a sentence. On the other hand, 6 (20%) reported that they presented written words on a paper, then read them word for word showing spaces in between them. The overall findings of the study was that teachers ensured that pupils spaced words in sentences evenly in a slate by reading words loudly and indicating where there was a space in a sentence. Using observations, the researcher sought to find out how the pupils were spacing the words in sentences evenly in a slate. It was found out that the voice intonation, stress and rhythm played a pivotal role in word spacing in a slate. Both findings were in agreement with Mtonga (2011) who observed that teaching a letter or symbol identification in either reading or writing was not to be separated from teaching correct pronunciation which helped to create mental maps whenever such words or symbols were mentioned. A correct identification of letters, easy to combine depended on the number of dots which composed the letter or letters especially in circumstances involving group signs like; (and, the, with) as found in words like (brand, apartheid, without) respectively, their organization and the relation of such letters with the other letters within the perceptive field was supposed to be mastered in the first place to avoid a mix up or wrong contraction which would lead to wrong spacing of words.

5.3.6 Instructional Strategies favourable for teaching Braille Literacy to visually impaired pupils

Not all the instructional strategies can be effective towards teaching of Braille Literacy as a result a question was asked to find out the instructional strategy which was favoured for teaching visually impaired pupils Braille Literacy. Teachers were asked to name some of the favourable instructional strategies for teaching Braille Literacy to visually impaired pupils. It was found as shown in Table 19 that 18 (60%) of respondents felt that pre-reading activity strategies was an instructional strategy for teaching Braille Literacy while 9 (30%) of the respondents showed that teachers favoured the whole language approach to Braille Literacy in the teaching of visually impaired pupils. 2 (7%) favoured Basal readers strategy and 1 (3%) favoured language experience strategy. During class observations it was revealed that pre-reading activities were involved as teaching strategies in the study school. This was also confirmed by the lecturers in teacher training colleges as one of the favoured strategies. In agreement with these findings was a similar study by Lowenfeld (1983) in America which revealed that pre-reading instructions were given during early grades in school. During such instructions pupils were guided on the best hand/fingers to use in reading Braille. Language reading and writing skills begin to develop in the first three years of life. This is also confirmed by Mtonga (2011) as he observed that it was important to incorporate suitable instructional strategies to develop tactile perception in addition to proper reading mechanics. So when teaching visually impaired pupils, for the instructions to be suitable teachers should focus on the type of pupils in an individualized manner and their inadequacies in terms of Braille Literacy needs.

5.3.7 Order of Teaching Reading and Writing Braille Alphabet

As Braille was divided into three types of signs; upper, middle and lower signs, there could be an order through which it ought to be taught prompting a question to be asked to the teachers. Table 20 showed the findings as follows; 27 (90%) of them started with the upper signs as the order of teaching reading and writing Braille Literacy while 3 (10%) reported to have started with middle signs as the order of teaching reading and writing Braille Literacy. It was concluded that most teachers used the order of starting with the

upper signs for teaching reading and writing Braille alphabet. Equally nine of the pupils said they had learnt Braille alphabet starting with letters 'A' to 'E', then 'F' to 'J' and the rest of the letters followed. The findings were consistent with Hampshire (1981) who noted that one of the earliest skills for Braille Literacy development was the ability to name individual characters correctly starting with the upper signs. Struggle in learning this foundational skill hinders the acquisition of learning more complex Braille -reading skills later on, such as producing and joining the letter sounds. Naming of Braille letters correctly was an antecedent for Braille learning, (Toussaint and Tiger, 2010). So knowing of a Braille letter was not only in the knowing of the shape but also understanding the dot numbers that represent a particular letter as each letter differed in shape from the other, so were their numbers which constituted them as separate entities.

5.3.8 Methods of Teaching visually impaired pupils to identify Letters of the Alphabet

The teachers were asked to identify methods of teaching the letters of the alphabet. The findings in Table 21 were that 20 (67%) reported using look and say method whilst 6

(20%) indicated using letter and word cards, 3 (10%) showed using the syllabic method. The overall findings were that using letter identification by using look and say method was better in Braille Literacy. Six of the pupils said that they had to be exposed to the letters first and then name the letters afterwards. One of the pupils said their teacher gave them a mixture of letters from which they had to identify the letters she asked them about or she would mention the dot numbers and then they had to find such dots of a letter mentioned from a list of mixed alphabetic letters. Unfortunately, in look and say method the teacher had flash cards with words and sentences which the pupils were supposed to read after the teacher and the visually impaired pupils had to repeat the words and sentences probably without attaching any meaning to them since they could not see the pictures or patterns accompanying the words and sentences. This was in line with Beers (2003) who reported that any method involving sight did not work well when teaching visually impaired pupils. In fact, it should be noted from the onset that before anything is planned to be taught be it Braille Literacy or any subject the teacher should have the visually impaired pupils in mind and second look for the best method which can deliver

the intended objective. The lecturers also highlighted that it was dependent on the reading readiness and severity of visual impairment in an individual pupil suggesting that first the pupil ought to identify the shape of the letter, second to identify the dot patterns and numbers used and third to name the letter embossed. As the letters in print were different in shape so were the letters in Braille which were not only different from each letter but also had different dot numbers as well.

5.3.9 Effectiveness of Teaching Braille Literacy in a Familiar Language

The curriculum framework 2013 stipulated that familiar local languages should be used as medium of instruction in lower primary section for all pupils from grade one to four. The teachers were asked about how effective was teaching Braille Literacy in *Icibemba* in the study school. Table 22 showed 25 percent indicated that teaching Braille Literacy in local language was not effective. The general findings were that teaching Braille Literacy using local languages was not effective in classes for the persons with visual impairments. During a focus group discussion pupils were asked how effective was learning of Braille Literacy in *Icibemba*. Ten of them expressed ignorance as they had never heard of Braille Literacy being taught in any other language apart from English. P2 exclaimed that she had never heard of learning Braille in Bemba and wondered how it could be done. Gave an example on writing a letter 'Z' in English which was just Dots 1,3,5,6 but wondered how it would be learnt in Bemba. The findings were contrary to (Sarah, 2013) who reported that the language experience approach was an approach in which the student's own language and experiences were used to create meaningful reading material as the approach allowed the students to observe how writing was produced and read words with which he/she was familiar with. Such findings were totally contrary to the notion especially that Braille itself was in English.

5.4 Examining Challenges Teachers face in Teaching Braille Literacy to Pupils with Visual Impairments in the Study School.

5.4.1. Challenges faced in Teaching Braille Literacy in Classes for the visually impaired.

Teachers have a wider exposure to Braille Literacy a competence gained through training and subsequent teaching of visually impaired pupils as a result they ought to know the

successes and challenges involved in executing Braille Literacy. The findings in Table 23 showed 12 (40%) of respondents indicating lack of teaching and learning resources and 10 (33%) indicated limited time for Braille theory and practice, whilst 8 (27%) indicated too many pupils in one classroom as a challenge. It was clear that teachers faced challenges of accessing teaching resources to effectively teach Braille Literacy. During the focus group discussion pupils were asked to state if they faced any challenges in learning Braille Literacy. Eight of the pupils cited the scarcity of teaching and learning resources which they said made learning very difficult. It was also observed as in figure 3 above that the pupils were using improvised counters made from bottle tops as the school did not have apparatus like; cubes, abacus and/or terror frames as teaching and learning resources.

These findings were consistent with what (Kimeto, 2010) found in Kenya where he observed that the physical learning environment was not conducive for the visually impaired pupils to carry out their studies effectively because of inadequate teaching and learning resources. Usually lack of such resources contributes to dismal performance in Braille reading and writing, It is just like a paper and a pen if they were missing or in short supply it would mean that the students no matter how determined they would be to learn, such learning would be derailed as a result of missing indispensable tools for making teaching and learning a reality.

5.4.2 Braille books or Supplementary Readers for the visually impaired pupils are available

Effective learning of Braille Literacy requires practice using various books and/or supplementary readers and as such the researcher enquired from the teachers if the books and/or supplementary were available and enough to enable individuals practice reading. Table 24 showed 24 (80%) of respondents indicated that Braille books or supplementary readers for the pupils were not available while 6 (20%) indicated that only some grades had them. It was clear that Braille books and supplementary readers were not available to support Braille Literacy in study schools. From the observation made the researcher found that Braille Books and Supplementary readers were not available in all grades. For example, Grades six and five did not have grade readers in Braille and the teacher had to

transcribe excerpts from ink print grade readers. The findings defeated what Griggs (2000) postulated that when children are just learning to read it is important to choose books that really interest them. If boys like cars, the teacher should choose a book with pictures and simple words about cars. This would keep their interest and they would enjoy learning with the teacher. If girls like dolls on the other hand, then the teacher gets a book with doll pictures and simple words. This method encourages enthusiasm because children are actually looking at something they can relate to. To that effect, the visually impaired are not an exception to this phenomenon as tactile graphics or pictures could be drawn and the stimulation and motivation would equally be the same and eventually the essence of teaching Braille Literacy would have been achieved by so doing. The findings departed from MOE (2013) which stressed that the transcription of print materials into Braille will be an important ingredient for effective learning for the visually impaired pupils, however, this was not the case in the study school. If such a directive had some follow up plan for implementation, the researcher would have found assorted transcribed grade readers for all the grades in place and various supplementary books for reading as a way of promoting Braille Literacy. In the same vein, all the five lecturers reported that neither the Braille books nor Braille supplementary readers were available in their colleges to give enough exposure to their trainee teachers about the importance of having a class library for the visually impaired pupils. Most probably this had a trickle-down effect to the schools where such teachers were deployed as observed in the study school.

5.4.3 Effectiveness of Braille Curriculum/Syllabus in Teaching Braille Literacy

Preparation of what teachers taught was dependent on the curriculum and guided by the syllabus. So it was necessary to find out from the teachers how effective the curriculum and the syllabus were regarding the teaching of Braille Literacy. As shown in Table 25, it was found that 24 (80%) reported that the curriculum and the syllabus were not effective regarding teaching of Braille Literacy while 6 (20%) reported that the curriculum and the syllabus were effective. So from the findings it was clear that the curriculum and the syllabus were not effective with regards to teaching of Braille Literacy. From the observation made the researcher established that the MOE (2013) only made a mention that Braille Literacy was to be taught in teacher training colleges and ended at suggesting

subject to be combined with Braille Literacy without providing further road map towards implementing it. Equally, the syllabus in the study school was that one produced in 1996 which did not provide any relationship to the curriculum framework of 2013. So it is from such observations that the researcher concluded that both the curriculum and the syllabus were not effective. Indeed the findings confirmed that the curriculum was not effective as the MOE (2013) only stated that the transcription of print materials into Braille will be an important ingredient for effective learning for the visually impaired pupils, this has been dome without follow up activities to fulfil the implementation. This is why even in the teacher training colleges lecturers were still using the American Braille primer at the expense of the local Braille Literacy curriculum.

5.4.4 Type of pupils who give challenges in teaching Braille Literacy

Visual impairment covers a myriad of visual challenges though they have been put into two main groups as low vision or partially sighted and the totally blind who cannot see anything at all. So it was important to find out if their category of vision loss had a bearing on the progression of learning Braille Literacy. The findings in Table 26 revealed 21 (70%) of respondents indicating that they had challenges with low vision pupils 8 (27%) had challenges with those who were totally blind while only 1 (3%) indicated to have challenges with both type of pupils. It was evident from the findings that low vision pupils tend to give teachers more challenges in teaching them Braille Literacy in the study schools. The findings were in line with (Spungin, 1996) who reported that one of the major reasons for the increasing illiteracy of the blind and those with low vision is the historical emphasis on teaching visually impaired children with residual vision to read print. This is so because most visually impaired pupils are legally blind but not totally blind, that is, having a (central visual acuity of 20/200 or less in the better eye with the best possible correction, and/or a visual field of 20 degrees or less), Koenig (1992) But many students who have residual vision cannot read print efficiently even with magnification; attempting to read print results in eye strain, headaches, and other problems. Furthermore, many degenerative eye conditions are progressive, meaning that the student's vision will continue to decrease over time, making print harder and harder to read. Such students with low vision were particularly at risk for not receiving

appropriate instruction in Braille, (Miller, 2002) and by the time they would want again to switch back to Braille they will have wasted years necessary for Braille foundation skills and that ignited frustrations resorting to using other modalities like speech output which did not equate Braille Literacy. This is a reason why Roe et al. (2014) advocated for the need to develop early writing skills of visually impaired children if they were to be successful with Braille Literacy by matching their ages and grade levels.

On the views from the FGD on type of pupils who give challenges in teaching Braille Literacy, the researcher found that severity of visual loss had an influence on how the visually impaired pupils learnt Braille Literacy. It was discovered that the differences in visual impairment had a bearing on acquiring Braille Literacy as others were using fingers to read while others were using their partial sight. For example figure 2 shows how the pupil on the left who is low vision is trying as much as possible to use the residue vision first to read the question on the paper on which she has rested her left arm and second to see where to emboss in the writing frame, whereas the pupil on the right is totally blind and is using both hands simultaneously. The left hand is reading while the left hand is writing making the work for the teacher not only easier but also quicker. As for pupil on the left, four things are likely to happen –firstly, she is likely to rub some Braille dots where she is resting her arm, secondly, she is likely to lose her line or cell on the writing frame, thirdly she is likely to fail to read correctly when some dots are rubbed or become faint and fourth she is likely to get tired quickly because of poor posture. All these challenge are to be shifted to the teacher who is to be by her side to ensure that none of such challenges occurs while abandoning other pupils who may also need some assistance here and there.

From observations, it was revealed that the severity of visual loss influenced learning of Braille Literacy in many ways. Mostly typical of pupils who gave challenges in teaching Braille Literacy were those with residue vision., the time spent on trying to use the residue vision to read either large print or use computer is simply robbing one self's time to learn or cultivate into Braille Literacy. Many are times when such residue vision reduce gradually over time as the individual grows as a result when they decide to fall

back on Braille exclusively, they would be late for their grade level which is usually determined by two domains; rate of reading and writing Braille accurately.

5.4.5 Introduction of (ICT) is being helpful in the teaching of Braille Literacy

Today in Zambia ICT is part of the curriculum which also promotes Literacy, so in this regard it was imperative to find out how helpful it was in teaching Braille Literacy. Table 27 showed that 25 (83%) of the respondents indicated that ICT was not helpful, whilst 5 (17%) indicated that ICT had been helpful. The general findings were that introduction of ICT did not help the teaching and learning of Braille Literacy in the study school. From the FGD it was found that ICT did not help in learning of Braille Literacy as many visually impaired pupils concentrated so much on learning a computer whose functionalities did not provide actual Braille Literacy experience. The findings were in line with (Ryles, 1996) who reported that visually impaired pupils who rely solely on listening as a means of learning find themselves deficient in areas like spelling and composition. It was observed that some pupils preferred using computer software like JAWS which robbed them the time they should have spent on improving or perfecting their reading and writing skills in Braille. The findings were also in line with Grenc (2009) who observed that most teachers of visually impaired pupils (89.4 percent) agreed that technology should be used as a supplement to Braille Literacy rather than as a replacement. Although it was observed that some visually impaired pupils resorted to using computers because it was self-contained which did not need any external things like; Braille papers or books and writing devices, it had potential to bring about stigma as confirmed by the views from FGD where P9 uttered that using Braille amidst computers one looked to be more blind and backward. However the findings did not depart from a survey carried by Sullivan (2006) in Britain in which she reported that assistive technology would benefit people with visual impairments for example, the audio output of a computer was typically faster than its Braille output, but the cultivation of Braille Literacy skills would be delayed significantly by use of audio output rather than Braille and illiteracy would increase among the visually impaired. In as much as computer software today are well developed none of them can be equated to Braille

Literacy as Braille Literacy means to know Braille in itself as embossed and not any other means as a replacement.

5.4.6 Engaging parents/guardians in 'Braille' learning progression of the pupils

Parents play a pivotal role in the whole development of their children. So teachers were asked how often they engaged the visually impaired pupils' parents or guardians in the learning of Braille Literacy. The findings in Table 28 revealed 18 (60%) of the respondents indicated that parents were engaged only during open days whilst 6 (20%) stated that they sometimes through the phone engaged the parents while the other 6 (20%) indicated that they did not at all engage the parents. It was clear that parents were involved during open days. During the focus group discussion five pupils reported that their parents were not engaged and knew nothing about Braille Literacy. One of the pupils P1 said that it was very difficult for the parents to be involved in their learning because they came from different places across the country and only closed school twice a year. So some parents could only come once and others could not come at all since their children could manage to come and go home on their own.

The findings indicated that parents were rarely involved in Braille learning of their children contrary to Canter (1996) who reported that research had demonstrated that when parents and teachers share the same goal of helping children and work in partnership, everyone benefits, students attain higher grades, better performance on tests, attend school with punctuality, display proper behaviour, and show a positive attitude towards themselves and school. However, the scenario at the study school was different as it was a boarding meaning that the pupils did not go home until after school closed which did so only twice a year meaning if parents were to be engaged these were the only times teachers could do so a situation which departed from the importance of creating partnerships between parents and teachers. From this outcome it meant that the visually impaired pupils stood to lose the benefits of parent-teacher partnerships and this meant that parents had no or rare input in the learning of Braille Literacy. The lecturers also echoed that it was necessary to engage the parents or guardian of visually impaired pupils who were learning Braille Literacy because when the parents were involved in the

learning of their children it made the work of the teacher easier as there would be continuity of learning Braille Literacy even at home under the tutorage of the parents or the guardians.

5.4.7 Teaching Resources in schools for the teaching of Braille Literacy are enough

Teaching of Braille Literacy is highly dependent on the availability of teaching resources without whom Braille Literacy could not be taught at all. In this respect, teachers were asked to find out if the teaching resources were enough for the teaching of Braille Literacy. The findings in Table 29 showed 24 *(*80%) of respondents indicated that they did not have teaching resources at both primary and secondary school, whilst 4 (13%) reported that they had enough teaching resources at secondary section and not primary. 2 (7%) indicated they had enough at primary and not secondary section. It was clear that the majority of respondents acknowledged that they did not have enough teaching resources to support the teaching of Braille Literacy in classes for the pupils with visual impairments. From the observations made it was revealed that most of the teaching devices were not enough. They were still obsolete traditional writing devices of a slate and stylus instead of at least a Perkins Brailler among other modern Braillers which were not only faster to write but also easier to teach someone how to write at the same time reading what they were writing thereby reducing on time taken to teach. Braille paper was also rationed making it difficult to practice writing. So when such essential aids for writing are not there, it is difficult on both parties that is the teacher and the pupil. The findings were in line with what was reported in Kenya by a scholar Kimeto (2010) on English Braille Literacy which revealed that the physical learning environment was not conducive for the visually impaired pupils to carry out their studies effectively because of inadequate teaching and learning resources and the frequent breakdown of Braille equipment.

5.4.8 Assignments, Exercises and Homework as a way to enhance Braille Literacy

After every teaching feedback is necessary to evaluate the level of mastery of what has been taught and learnt. Teachers were asked if they gave out assignments, class exercises and homework and if they did how regular they did it. The findings in this regard 23

(76%) reported that they gave out class exercises as a way of enhancing Braille Literacy while 6 (20%) gave out homework and only 1 (4%) gave out assignments as a way to enhance Braille Literacy. So from the findings, it was clear that class exercises were the main way through which teachers enhanced teaching of Braille Literacy. During the FGD pupils were asked how they benefited from the assignments, class exercises and home work as a way to enhance Braille Literacy. Nine of the pupils said they did not do any assignments but did a lot of class exercises as opposed to homework. The findings were contrary to what Susan (2009) reported that using homework children are more exposed to early reading related programs through continuity in learning. Subsequently, homework help the children develop good reading skills at an early age. This is so because there is continuity of learning in different settings under different guidance which makes a pupil more exposed to what they have to learn thereby getting more committed and experienced which is one of the factors to building a solid foundation to any learning activity at any level of education.

5.4.9 Specialist teacher - visually impaired pupil Ratio

The number of pupils per class has a bearing on the failures or success of teaching and learning. It was important to ascertain the numbers of pupils per class in relation to the number of teachers teaching them. Table 31 showed 23 (77%) reported that the classes were too big, 6 (20%) reported that the classes were of medium size while 1 (3%) indicated that classes were small. From the findings, it is clear that at 76% the classes were too big to be managed by one teacher. From observations, the teachers were less than the number of the pupils which made individualized learning not to be applied accordingly as time was limited. The findings were not in agreement with Spungin (1996) who advocated that there should be a minimal number of about three to six pupils per class unlike what was obtaining at the study school where some classes like that of grade five had nine pupils. Deploying ordinary teachers to this school also defeated the essence of promoting Braille Literacy. It was observed that most visually impaired teachers were deployed to this school not because they were specialist teachers but because they were visually impaired. The truth of the matter is that not every teacher with visual impairment is a specialist teacher in this case for Braille Literacy until one had undergone specialist

training - unlike the scenario discovered in the study school. The study school has had about 20 visually impaired teachers out of which ten have upgraded to becoming specialist teachers while at the same school. This prompted the researcher to conclude that someone somewhere might have deployed visually impaired teachers to that school with a wrong assumption that they were qualified to teach the visually impaired pupils despite not having been specially trained. Findings from the lecturers to train specialist teachers in Braille Literacy also revealed that they were not enough. All the five lecturers said the lecturers were not enough and that made their work difficult. This scenario had potential to compromise the standard of training given to student teachers especially that some students exhibited incompetence despite being specially trained. These revelations were in line with Wormsley (2011) who postulated that effective teaching at any level requires knowledge equal to the task obtained through a standard training by qualified personnel.

5.5 Summary of the Chapter

This chapter discussed research findings of this study on teaching of Braille Literacy in special schools of Zambia. The discussion was done according to themes derived from the objectives of the study. Furthermore, the themes which emerged in between the objectives were clearly stated. Inferences were made in support to other studies in line with the topic. Necessary arguments were put forward. The next chapter presents the conclusion of the study and recommendations to policy makers and other researchers.

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APPENDICES

APPENDIX A

INTRODUCTORY LETTER

THE UNIVERSITY OF ZAMBIA

SCHOOL OF EDUCATION

Telephone: 291381 P. O. Box 32379

Telegram: UNZA, LUSAKA Lusaka, Zambia.

Telex: UNZALU ZA 44370 Fax: +260-1-292702

Date.....

TO WHOM IT MAY CONCERN

Dear Sir/Madam

RE: FIELD WORK FOR MASTERS/PhD STUDENTS

The bearer of this letter Mr./Ms.....computer number.....is a duly registered student at the University of Zambia, School of Education.

He/She is taking a Masters/PhD programme in Education. The programme has a field work component which he/she has to complete.

We shall greatly appreciate if the necessary assistance is rendered to him/her.

Yours faithfully

Emmy Mbozi (Dr.)

ASSISSTANT DEAN POSTGRADUATE STUDIES – SCHOOL OF EDUCATION

cc Dean-Education

Director-DRGS

APPENDIX B

CONSENT FORM FOR PARTICIPANTS

AN ASSESSMENT OF THE TEACHING OF BRAILLE LITERACY IN ZAMBIA: A CASE OF A SCHOOL FOR THE VISUALLY IMPAIRED IN NDOLA DISTRICT

This consent form serves to give the respondents an understanding of the purpose of this research and subsequently the procedure to be followed when undertaking it. Further implications for their participation are explained. Hence, anyone participating in this study should read the information sheet carefully, or that it has been explained to them and to their satisfaction.

1. Description: this study is an academic research and likely to inform educationists and policy makers so as to improve the teaching and learning of Braille Literacy among pupils with visual impairments. For validity and credibility's' purposes, the focus group discussion will be recorded using an e-voice recorder.

   Furthermore, the researcher is a University of Zambia student pursuing a Master's degree of Education in Special Education. This research is one of the major requirements to complete the Programme.
2. Purpose: The researcher wishes to assess the teaching of Braille Literacy in a special school of Ndola district, Zambia.
3. Consent: Participation in this exercise is on voluntary basis and the respondents are not compelled to take part against their will.
4. Confidentiality: Participants are assured of anonymity in this research. All the data collected from this research will be treated with confidentiality.
5. Rights of Respondent: The rights of the respondents will be protected and respected. Participants are free to ask for clarifications at any point during the exercise and to inform the researcher if they feel uncomfortable about any procedure in the research and may withdraw if they so wish.

DECLARATION OF CONSENT

I have read through the participant information sheet. I now consent voluntarily to be a participant in this project.

Participant's Name…….

Signature…….

Date…….....

APPENDIX C

QUESTIONNAIRE FOR TEACHERS OF THE VISUALLY IMPAIRED PUPILS

Dear Respondent,

I am a postgraduate student at the University of Zambia in the School of Education, Department of Educational psychology, sociology and special education. I am conducting a research on Teaching Braille Literacy in a Special School. You have been selected to participate in the study. The information that you will provide will be used for academic purposes only and will be treated with strict confidence.

Tick the appropriate answer or write in the provided spaces.

Gender: F [ ] M [ ]

SECTION A.

1. What qualification do you have in relation to teaching pupils with visual impairments? If not a specialist, briefly explain how you manage to teach Braille Literacy?

- **a)** Degree in Special Education.
- **b)** Diploma in Special Education.
- **c)** Certificate in Special Education.
- **d)** Ordinary Teaching Qualification.

2. Do you provide accessibility to Braille Literacy for the VI pupils?

- **a)** We do provide accessibility.
- **b)** We sometimes do provide.
- **c)** We do not provide.

3. What basic Braille Literacy skills do you teach the pupils to develop writing competence?

- **a)** Pre-writing activities; wrist wriggling, mentioning dots loudly, finger dexterity, tracing simple patterns, sorting similar items and right to left movement.
- **b)** Tactile skills, Listening and speaking skills reading skills, reciting skills and writing skills.
- **c)** Phonic and syllabic skills.

4. Identify the most used strategy to enhance Braille writing skills. Briefly justify your answer.

a) Dictation.

b) Note-taking.

c) Copying of passages.

5. How do you provide Braille reading and writing readiness activities do your pupils? Briefly give reasons for your answer.

a) Driven by the individual pupils

b) Reading readiness first then writing readiness second individually

c) Writing readiness first then reading readiness second individually

6. What activities do you provide for reading readiness? Give a concise explanation for your answer.

a) Hand identification and tip finger sensitivity training

b) Matching textures and Wrist control and line switching

c) Following straight lines and zigzag line.

7. In which grade are the contractions supposed to be introduced to the Pupils? Provide a brief justification for your answer.

a) Grade four

b) Grade three

c) Grade five

d) Grade two

e) Grade six

8. How do you make classrooms Braille rich Environment?

a) Talking walls

b) Labelling objects

c) Make user friendly teaching aids

9. What tools do you use to teach Braille Literacy? Give reasons for your answer briefly.

a) Perkins Brailler

b) Slate and stylus

c) Other

10. What system of education enhances teaching of Braille Literacy? Briefly give reasons.

a) Special education

b) Inclusive education

c) Both

11. Is the school properly funded running costs to support literacy education? If not briefly explain how you manage to teach Braille Literacy effectively.

a) Not properly funded

b) Properly funded

c) Not funded at all

12. What measures have you put in place to enhance the teaching of Braille Literacy?

a) Recycled paper

b) Home work

c) Any other

SECTION B.

13. What teaching methods are favourable to teach reading and writing Braille alphabet? Briefly justify your answer.

a) Sounds, Braille letters, number of dots

b) Sounds, numbering of dots the

c) Numbering of dots, letters then n letters

d) Braille letters, then sounds, number of dots

14. What activities do you provide for writing readiness in Braille Literacy? Briefly give reasons.

a) Let pupils emboss full dots

b) Orientation of movement from right and left on slate

c) Inserting of paper and dot identification.

d) Following commands from the teacher

15. Identify an effective method for teaching of Braille Literacy to the VI Pupils

a) Balanced method

b) Literature-based method

c) Language experience Method

d) Skills-centred method

e) Mangold Braille Program of Tactile Perception and Braille Letter Recognition

16. What strategies do you use to teach spelling of words in Braille Literacy? Briefly explain how it is done.

a) Using phonic method, look and say, word cards and dictation

b) Syllabic method and dictation

c) Other

17. How do you teach the pupils to space words evenly in sentences in a slate?

a) Teacher reads words loudly and indicate where there is a space in a sentence.

b) Teacher presents written words on a paper, then read them word for word showing spaces in between them

c) Other.

18. What instructional strategies are favourable for teaching Braille Literacy to VI pupils?

a) Pre-reading strategy

b) Whole language strategy

c) Basal readers strategy

d) Language experience strategy

19. What type of signs do you begin with when teaching reading and writing Braille Alphabet?

a) Upper signs

b) Middle signs

c) Lower signs

20. Identify the method for teaching of visually impaired pupils to identify letters of the Alphabet

a) Using look and say method

b) Using letter and word cards method

c) Using the syllabic method

d) No response

21. How effectiveness is teaching Braille Literacy in a familiar language.

a) Not effective

b) Effective

c) Very effective

SECTION C.

22. What challenges do the teachers face in teaching Braille Literacy in classes for the VI?

a) Lack of teaching and learning resources

b) Limited time for Braille theory and practice

c) Too many pupils in one classroom

23. Are the Braille books or supplementary readers for the visually impaired pupils available? If not available briefly share the experience.

a) They are not available

b) Only in some grades

24. How effective is the Braille curriculum/syllabus in teaching of Braille Literacy? If not effective briefly explain what you used to teach Braille Literacy.

a) Not effective

b) Effective

c) Others

25. Which type of pupils give challenges when teaching them Braille Literacy? Concisely give reason for your answer.

a) Low vision

b) Totally Blind

c) Both pupils

27. Has the introduction of (ICT) been helpful in the teaching of Braille Literacy? Whichever is your answer briefly share the experience.

a) Not helpful

b) It has been helpful

28. Do you engage parents/guardians in 'Braille Literacy' learning progression of their children?

a) Only during open days

b) Sometimes through the phone

c) Not at all

29. Are the teaching resources in school for the teaching of Braille Literacy enough? Briefly explain how you managed to teach Braille Literacy according to your answer.

a) We have enough at secondary and not primary

b) We have enough at primary and not secondary

30. What do you use as a way to enhance Braille Literacy?

a) Exercises

b) Home work

c) Assignments

31. Are specialist teachers to teach visually impaired pupils enough?

a) Not enough

b) Enough

c) Other

APPENDIX D

QUESTIONNAIRE FOR LECTURERS OF TEACHERS FOR VISUALLY IMPAIRED PUPILS.

Dear Respondent,

I am a postgraduate student at the University of Zambia in the School of Education, Department of Educational psychology, sociology and special education. I am conducting a research on Teaching Braille Literacy in a Special School. You have been selected to participate in the study. The information that you will provide will be used for academic purposes only and will be treated with strict confidence.

Tick the appropriate answer or write in the provided spaces.

Gender: F [ ] M [ ]

SECTION A

1) What qualification do you have in relation to teaching the VI pupils? If not a specialist lecturer, briefly explain how you manage to teach Braille Literacy.
2) Do you train your teachers in Braille Literacy at your teacher training institution? Briefly explain how your programme is
3) What kind of Braille Literacy skills do you provide to your student teachers?
4) What strategies do you train your students to enhance to enhance Braille Writing Skills?
5) What procedure of provision of Braille reading and writing readiness activities do you recommend? Briefly explain
6) What activities do you recommend to be done in reading readiness? Briefly explain
7) In which grade in are the contractions supposed to be introduced to the pupils? Briefly explain.
8) When do you recommend classrooms to be more Braille rich environments?
9) What tools do you use in teaching Braille Literacy? Briefly justify your answer.
10) Between special and inclusive education which system of education enhances teaching of Braille Literacy? Briefly justify your answer.

11) Is your institution funded running costs to support Braille Literacy education. If not briefly explain how you manage

12) What intervention measures do you put in place to enhance the teaching of Braille Literacy? Briefly explain.

SECTION B

13) Which methods do you favour when introducing new words to VI pupils? Briefly justify your answer.

14) What activities do you recommend to give visually impaired pupils for writing readiness? Briefly explain.

15) What strategies do you recommend in teaching spelling of words in Braille Literacy? Explain briefly.

16) How do you teach your student teachers to space the letters evenly in the slate? Briefly explain

17) What instructional strategies are favourable for teaching of Braille Literacy to VI pupils? Give a concise explanation.

18) Which order of teaching reading and writing Braille alphabet do you recommend? Explain briefly.

19) Identify the methods of teaching visually impaired pupils to identify letters of the Braille alphabet. If there are no methods briefly explain how you can modify one.

20) How do you prepare your teachers to teaching Braille Literacy in familiar local languages? Give a concise explanation.

SECTION C.

21) Do you face any challenges in teaching of Braille Literacy? If so, briefly explain.

22) Are Braille books or Supplementary Readers available? If not briefly share the experience.

23) How effective is the Braille Literacy curriculum/syllabus in teaching of Braille Literacy. Give a concise explanation.

24) What type of pupils give challenges in teaching Braille Literacy between the totally blind pupils and the low vision pupils? Concisely justify your answer.

25) Is the introduction of (ICT) being helpful in the teaching of Braille Literacy? Briefly explain.

26) Is it necessary to engage the parents or guardian of visually impaired pupils who were learning Braille Literacy? Whichever your answer is, justify it briefly.

27) Arising from your observations during Teaching Practice of your students do schools have enough teaching resources for the teaching of Braille Literacy? Briefly explain.

28) Do you give out assignments, exercises and/or homework and if you do, how regular do you do it? Give a concise explanation.

29) Are Lecturers to train specialist teachers in Braille Literacy available and enough?

APPENDIX E

OBSERVATIONAL SCHEDULE

1. Look at the lesson plan and check for the following:

- **(a)** Preparation of lessons
- **(b)** The method, techniques of teaching of Braille Literacy
- **(c)** Pupils' participation
- **(d)** Braille Literacy reading components
- **(e)** Braille Literacy writing components

2. Check the availability of the teaching aids

- **(a)** How relevant the teaching resources are to the topic at hand.
- **(b)** Do the pupils have devices such as Braille paper, slate and stylus
- **(c)** Supplementary books, readers, magazines, etc.

3. In the absence of teaching:

- **(a)** What strategy is the teacher using to ensure continuity of learning?
- **(b)** Is/Are the strategy/ies being used facilitating the pupils to learn?

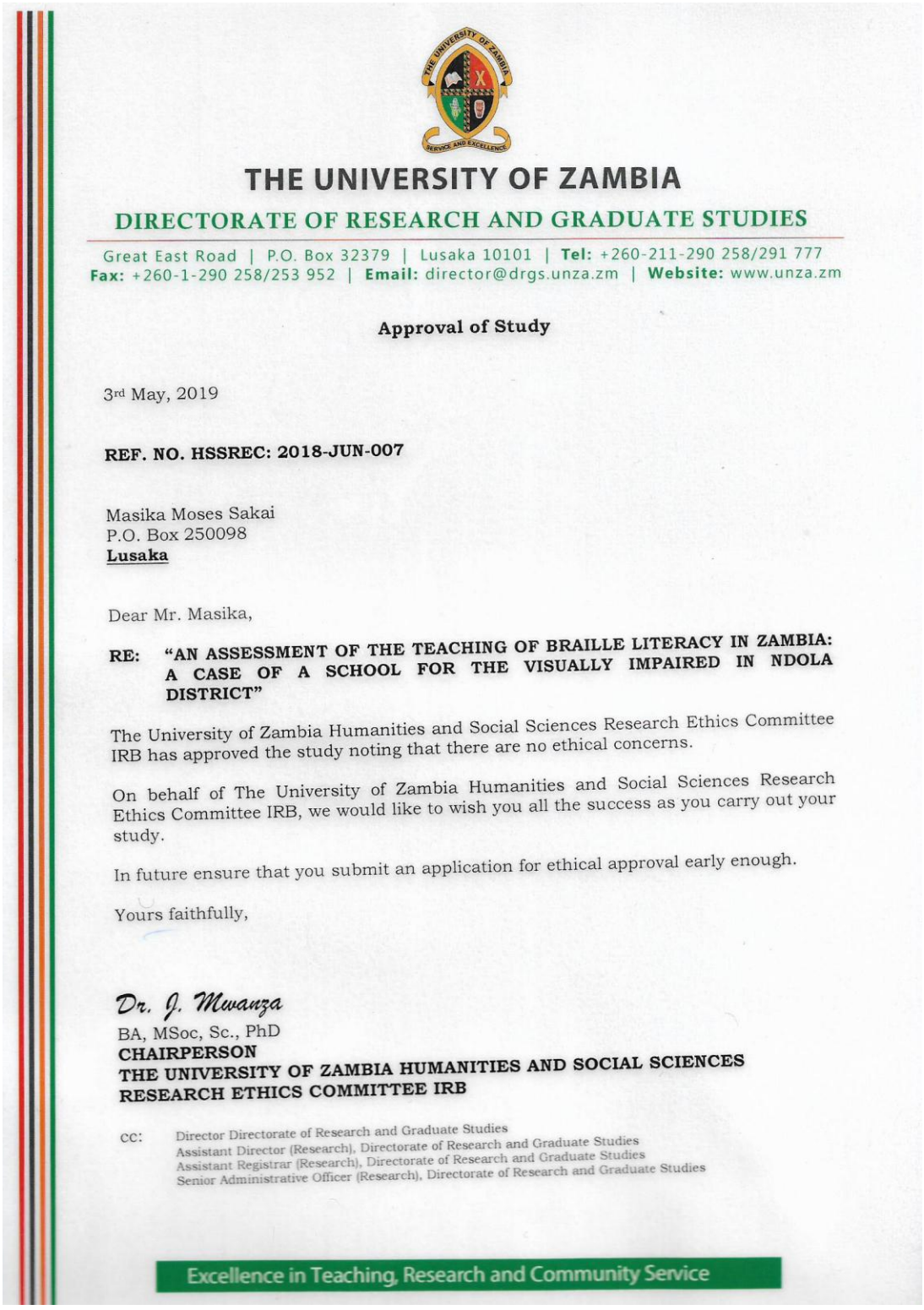
APPENDIX F

FOCUS GROUP DISCUSSION FOR VISUALLY IMPAIRED PUPILS.

1. Do you learn Braille Literacy?
2. Do you learn Braille Literacy as a subject?
3. What basic Braille Literacy skills are you taught?
4. What are some of the strategies do you use to enhance Braille Writing Skills?
5. What activities do you do in reading readiness in Braille Literacy?
6. In which grade are the contraction supposed to be introduced?
7. How are your classrooms made Braille rich environments?
8. What tools do you use to learn Braille?
9. Which one is better between special education and inclusive education?
10. How is Braille Literacy equipment maintained?
11. What intervention measures do you put in place to enhance learning of Braille Literacy?
12. What activities do you do in Writing Readiness in Braille Literacy?
13. How do you learn spelling of words in Braille Literacy?
14. What is the order of learning to read and write Braille alphabet?
15. How effective is learning Braille Literacy in *icibemba*?
16. What challenges do you face in learning Braille Literacy?
17. How have you benefited from ICT in learning Braille Literacy?
18. Are your parents/guardians involved in learning progression?
19. How often are you given assignments, class exercises and/or homework?

Thank you

APPENDIX G: APPROVAL LETTER



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Approval of Study

3rd May, 2019

REF. NO. HSSREC: 2018-JUN-007

Masika Moses Sakai
P.O. Box 250098
Lusaka

Dear Mr. Masika,

RE: "AN ASSESSMENT OF THE TEACHING OF BRAILLE LITERACY IN ZAMBIA: A CASE OF A SCHOOL FOR THE VISUALLY IMPAIRED IN NDOLA DISTRICT"

The University of Zambia Humanities and Social Sciences Research Ethics Committee IRB has approved the study noting that there are no ethical concerns.

On behalf of The University of Zambia Humanities and Social Sciences Research Ethics Committee IRB, we would like to wish you all the success as you carry out your study.

In future ensure that you submit an application for ethical approval early enough.

Yours faithfully,

Dr. J. Mwanza
BA, MSoc, Sc., PhD
CHAIRPERSON
THE UNIVERSITY OF ZAMBIA HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE IRB

cc: Director Directorate of Research and Graduate Studies
Assistant Director (Research), Directorate of Research and Graduate Studies
Assistant Registrar (Research), Directorate of Research and Graduate Studies
Senior Administrative Officer (Research), Directorate of Research and Graduate Studies

Excellence in Teaching, Research and Community Service