

**CONTRIBUTION OF SIGN LANGUAGE VARIATIONS TO ACADEMIC
PERFORMANCE OF LEARNERS WITH HEARING IMPAIRMENTS IN
SELECTED COPPERBELT AND LUSAKA PRIMARY SPECIAL SCHOOLS IN
ZAMBIA**

BY

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**A DISSERTATION SUBMITTED TO THE UNIVERSITY OF ZAMBIA IN PARTIAL
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DECLARATION

I Juliet Chibwe, declares that this research is my own work and that all the sources that I have used or quoted have been acknowledged by means of complete references and that it has not been submitted at any University for a Degree.

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CERTIFICATE OF APPROVAL

This dissertation by Juliet Chibwe is approved as a partial fulfillment of the requirements for the Award of the Degree of Master of Education in Special Education.

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DEDICATIONS

I dedicated this dissertation to my Heavenly Father the Almighty God for the strength, knowledge and wisdom He gave me during my study and research period, my child Isaiah Mwanke for his endless love despite my busy schedule during the research and my mother Lucia Chipasha for her continued moral and social support, encouragement and understanding during the course of my study, brothers Cornelius, Albert, Justine and Edrick, Sisters Felistus and Esther and friends and relatives whose names are too numerous to mention herein.

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LIST OF ACRONYMS

ASL:	American Sign Language.
ZSL:	Zambian Sign Language.
MOE:	Ministry of Education.
OFSL:	.....	Old French Sign Language.
BC:	.....	Before Christ born.
AD:	.....	After the death of Christ.
ZNAD:	.....	Zambia National Association for the Deaf.
FAD:	.....	Finish Association of the Deaf.
UTH:	.....	University Teaching Hospital.
AST:	.....	Austin Taxes.
HMH:	.....	Hand-shape, movement Hand-shape.
UNZA:	.....	University of Zambia.

ABSTRACT

The Study sought to determine the contribution of Sign Language Variation to academic performance of grade Primary School Learners with hearing impairments. Four objectives guided the study; namely: establish the contribution of Sign Language Variation to academic performance of Primary School learners with hearing impairments, examine the factors influencing Sign Language variation, assess challenges faced by Primary School learners with hearing impairments and identify measures that would help address the challenges if any of Sign Language Variation. The sample comprised 50 hearing impaired learners, 30 teachers, 30 parents and 10 senior teachers. Purposive and random sampling techniques were used to select the participants from the selected Primary Special schools of Lusaka and Copperbelt Provinces of Zambia. Data was collected using questionnaires; interview Schedules and the observation checklist. The data collected from the questionnaire was analysed qualitatively using the thematic approach. Descriptive statistics and verbal responses were used to determine the contribution of Sign Language variation to the academic performance. The important finding in the study was that the performance of learners with hearing impairments was affected negatively by the teachers' signs which were not the same with the signs used by learners. It revealed that most learners misunderstood the concepts in class that were put across to them in Sign Language. Furthermore, it indicated that most learners did not follow instructions due to communication barrier. In addition, the study revealed that the most important factors that lead to Sign Language variations in schools were: environment, culture, teachers' competencies, and the type of training institutions the teachers attended. Furthermore, the study revealed that most of these learners face a lot of challenges at school due to variation in Sign Language used. For instance, during examinations, education tours, and as they play games. Finally, the study revealed that provision of specialist teachers, Zambian Sign Language Dictionaries and the introduction of Sign Language Clubs in schools were very cardinal in addressing these challenges. Based on the findings, the study recommends that Special Schools should increase the number of specialist teachers instead of relying on seconded teachers to teach these learners. The schools should be encouraged to form Sign Language Clubs. Zambian Sign Language dictionaries should be revised and used intensively. More teachers need to undergo special education training in Sign Language. Learners should explicitly be guided in finger spelling, coding, and visual imaging. Parents and caregivers to work in collaboration with teachers to improve Sign Language development.

CHAPTER ONE - INTRODUCTION

1.0 Introduction

This chapter presents the background of the study, statement of the problem, purpose of the study, objectives of the study and research questions. It also covers the significance of the study, limitations of the study and definition of terms used in the Study.

1.1 Background

Sign Language variation refers to the difference in Sign Language used. According to Forshay (2009), there are about 200 to 300 thousand sign language variations. In Africa there are about 121 thousand sign language variations which include: American, British, Nigerian, Chadian and Zambian. Zambia has 6,000 sign language variations. Of these, 1006 are British, 2060 are American and 2934 are traditional (Mbewe 2009). The number of sign language variations in Zambia is so exorbitant that its contribution to the academic performance of primary school learners with hearing impairments deserves a study.

As learners with hearing impairments enter school from their homes, they do so with different sign languages. Learners from homes in which sign language is not the primary language are likely to encounter difficulty in using sign language in school as they meet various signs from others (Miles. 1998).

There are various challenges primary school learners with hearing impairments encounter in schools. Among these is that learners with hearing impairments experience sign variations in the classroom. Teachers either use American Sign Language or Zambian sign language. These sign variations contribute negatively during instructions in the lesson.

In addition, Fiddel and Jonson (2008), state that learners experience sign variations during examination. Invigilators who are to invigilate them have different signs. When a learner wants clarifications from them they have difficulties in understanding instructions. Due to lack of harmonisation of the Zambian Sign Language in the Zambia, (for example, Magwero School for the Deaf in Chipata District Eastern Province and St. Joseph School for the Deaf in Kalulushi District on the Copperbelt Province which have different signs) the academic performance of primary school

learners with hearing impairments has raised concern to the majority of Zambians. This lack of harmonisation of Sign Language has brought about many challenges such as poor academic performance in subjects like English where one can sign “mother town go” and another one signs “go town mother”, History, Mathematics and many other learning areas. Sign language variation can either occur in the vocabulary signs a person uses or in the grammar [how a signer combines these signs into sentences]. In vocabulary, sign language variation occurs through its parameters of signs consisting of the following; elements hand shape, hand location, hand orientation, hand movement, and non- manual markers. Each one of these elements is important when signing. The failure to correctly produce a sign is similar to the failure to correctly pronounce a word in a spoken language. The result is awkward and it may not be easily understood. For example, the location of the sign [is changed space or body where the sign is made]. If the movement of the sign is changed, it means the sign produced has a new meaning [Gordon, 2004]. Grammar is the rules of a language relating to the ways words are combined to form sentences. Each sign in signed language is composed of a specific and unique combination of a hand shape, a movement, hand orientation and location such changes in signing lead to sign language variations and this raise concern as to how Academic performance of primary school learners with hearing impairments is affected.

Education as a human right has been embraced by many countries, Zambia inclusive. This right has been affirmed by many global human rights Declarations. One such changes in such declaration is the Education for All of 1990 which calls for the need to meet the needs of all learners inclusive of those with disabilities. Among learners with disabilities are those with hearing impairments (MOE, 1996).

Hearing impairments is a disability in which a learner may have difficulty hearing in one or both ears or may not hear at all. Hearing impairment includes learner who are deaf and hard of hearing. In this context, deaf learners are those with a congenital or early-acquired hearing loss of 85 dB or greater in the better ear (Marschark and Spencer, 2006). A hearing loss is defined by the degree of loss, the type of loss, and the age at which the loss occurred. Kirk, (2009) defines deafness as “a hearing impairment that is severe enough that the child cannot process linguistic information through hearing even when using amplification or hearing aids” and “hard of hearing as

impairment in hearing that may be permanent or fluctuating and that adversely affect the child's education performance.”

Loss of hearing has an impact on the learner's education performance and how the learner relates to the environment because it affects the way he/ she communicates especially that each and every day a learner learns a new sign. Hearing loss comprises various types of hearing losses ranging from mild to profound. Learners with hearing impairments use sign language as a mode of communication in their education.

Sign language is a visual language in which information is coded with shapes and movements of hands, other parts of the body and facial expression (Kirk et.al 2006). It is upon this communication that education rest for learners with hearing impairments. This communication allows them to understand information during instructions and is in turn motivated to perform well academically. However, with a variety of sign language variations in Zambia, concern is raise on how the academic performance of primary school learners is affected.

This however also continues even when they begin schooling and hence contribute to problems in learning to sign various signs. With regard to learners with hearing impairments signing skills researcher postulate that some learners with hearing impairment may experience more difficulty than others, perceiving signing as a challenging (Meler, 2006). This impede their general sign language development, resulting in these learners with hearing impairment attaining lower levels of performance in all subjects (Hallan et al (2006).

The Ministry of Education has tried to put measures to address the contribution of sign language variation by coming up with the Zambia sign language dictionary to come up with similar signs. This Zambian dictionary has since been introduced on an intervention measure to improve the sign language standards in schools. The Zambian dictionary requires a grade 1 to learn Zambian sign language then later on others signs. The Ministry of Education found it important to use Zambian sign language dictionary to all learners with hearing impairments in schools. Despite the government's effort to

allow the Zambian sign language dictionary to be used in schools the learners with hearing impairments are still portraying variations in signing (Mbewe: 2009).

The literature on the education of learners with hearing impairments shows that the field of hearing impairment education suffers from a shortage of evidence based on signing, practices implemented to enhance learners with hearing impairment signing language skills (Marc et al.: 2011). Research on effect of teaching signing strategies for learners with hearing impairment is even more limited within the Zambian context than international. According to Mbewe (2009) most teachers who teach learners with hearing impairment in Zambia are not trained in sign language making it difficult for learners with hearing impairment to understand. At international level currently teachers at South African schools for learners with hearing impairment are not required to have formal training and or qualifications in the education of learners with hearing impairment. As a result, most hearing teachers at this school have little or no knowledge of the pedagogical implications of teaching sign language skills to learners with hearing impairment whether by means of oral or sign language instruction (Bell, 2005).

Historically, the education of learners with hearing impairment has not been viewed as successful. The oral approach, which prohibited the use of signing, was the traditional method for teaching academic subjects to learners with hearing impairments. During the 1970 oralism gave way to the total communication approach (Beattie, 2006). This method utilized the simultaneous manual and oral component. Educators believed that the communication barrier that learners with hearing impairment suffer from could be broken simply by teaching the learners with hearing impairment total communication.

However, linguistics does not consider the various forms of manually coded Zambian sign language as natural languages. For the learners with hearing impairment, but rather artificial codes meant to be accompanied by speech (Lucas et al.: 2001). The sign system by the learners with hearing impairment in the United States and Canada has been recognized as a bona fide language. While American sign language and Zambian sign language share the same lexicography, the syntactical structure of American Sign language differs considerably of that of standard Zambian sign language

and includes non-manual behaviors such as head, face and body movements. Neither the oral method nor the total communication approach has proven completely successful in teaching sign language skills to the learners with hearing impairments.

The academic of learners with hearing impairment still lags significantly behind that of their hearing peers. Even after exposure to Zambian sign language dictionary. In spite of its recognition by linguists as a tool of learners with hearing impairments, Zambian sign language remains excluded from the learners with hearing impairment education process while American Sign Language continues to be the language of instruction for learners with hearing impairments. The communicative competence of learners with hearing impairments is defectively associated with their acquisition of sign language. Young learners' proficiency in their sign language is critical for facilitating communication and academic success (Marc et al.: 2011).

Despite the inclusion of manual system in learners with hearing impairments instruction, the education of learners with hearing impairment is largely considered a failure in terms of all subjects. Researchers like Mbewe (2009) indicated that the best avenue for learners with hearing impairment to learn any Zambian sign language is through the acquisition of a natural sign language, which for the learners with hearing impairment meant American Sign Language (ASL). Minority languages, for the most part, have had only a marginal place in the educational system in spite of the fact that a learner's language is normally the best instrument for learning. Minority language teaching also promotes a positive self-image in a learner (Cummins, 1981).). So many learners with hearing impairments are illiterate in all subjects because the systematic denial of their primary manual sign language shouts out the most effective means for teaching them the second sign language. When existing teaching methods like the manual Zambian language communication is not producing acceptable results in all academic areas then it is time to consider another approach. Learner with hearing impairments still lag behind their hearing peers much to the same extent that they did eighty years ago.

Recently Akach and Okombo (1997) have advocated a bilingual and bicultural approach to the education of learners with hearing impairments in which ASL the first

or the native sign language. The purpose of a bilingual or bicultural approach is to provide learners with hearing impairments access to a natural sign language which can then become the sign language of instruction for teaching all subjects.

Therefore, the Ministry of Education, Science, Vocation and Early Childhood Education Policy on the education of learners with Special Education Needs, is to ensure that equality and particularly good quality of educational opportunity is provided to them by strengthening the supervision and management across the country (Educating Our Future:1996). This Policy includes the education of learners with hearing impairments where they learn through the mode of Sign Language. There are a number of Schools in Zambia that offer education for the hearing impaired learners which include but not limited to St. Joseph, Magwero School for the Deaf and St. Lawrence in Lusaka. However, there is no specific Policy in Zambia that has been put in place to address issues of Sign Language variation and harmonisation of Sign Language that could be followed in the education of these learners.

1.2 Problem Statement

A study by Mbewe (2009) found that Zambia has 6,000 sign language variations. Of these 1006 are British, 2060 American and 2934 were found to be Zambian Sign Language traditional. Despite Zambia having many of Sign Language variations, little is known about the contribution sign language variation has to the academic performance of primary school learners with hearing impairment. Therefore, this study sought to investigate the contribution of sign language variation to the academic performance of primary school learners with hearing impairment.

1.3 Purpose of the Study

The purpose of the study was to investigate the contribution of sign language variation to the academic performance of grade six (6) and seven (7) learners with hearing impairment in selected schools of Copperbelt and Lusaka Provinces

1.4 Objectives

1. To establish the contribution of Sign Language Variation to academic performance of Primary School learners with hearing impairment
2. To examine the factors influencing Sign Language variation

3. To assess the challenges faced by Primary School learners with hearing impairments as a result of Sign Language variation.
4. To identify measures that would help address the challenges if any of Sign Language Variation.

1.5 Research Questions

1. What is the contribution of sign language variation to the academic performance of primary school learners with hearing impairments?
2. What factors have influenced Sign Language variation in Primary Schools for learners with hearing impairments?
3. What challenges do primary school learners with hearing impairments face as a result of sign language variation?
4. What measures should be put in place to address the challenges if any of Sign Language Variation?

1.6 Significance of the study

The study has indicated that the most imperative factors that have contributed negatively towards the performance of learners with hearing impairments were the signs that were not the same with the teachers' signs and that most learners misunderstood concept in class put across to them in sign language. Furthermore, it has reviewed that most learners do not follow instructions due to communication barrier. It has also revealed that Sign Language acquisition was through friends, teachers, parents and guardians. It has been revealed that signing two or three different signs for one word is a challenge. For example, the word "Deaf" may be signed in two forms "ear to chin" or "chin to ear" a process governed solely by phonological constraints.

The study has indicated that acquiring Sign Language from friends, teachers and parents influence Sign Language variation. The other factors include culture, environment and training institutions. In addition the study has indicated that the provision of specialist teachers, Zambian Sign Language Dictionaries and introduction of Sign Language Clubs in schools would help address the challenges of Sign Language variation. The study has also revealed that the poor performance of learners with hearing impairments is as a result of poor marking that is done by incompetent markers

in Sign Language and that the examinations are not modified in the language that can be followed by the hearing impaired learners.

1.7 Limitations

The limitations of this study are related to the small sample size (120) of the respondents from a population of 950 consisting of primary school learners with hearing impairments, teachers, parents and senior teachers which limited the findings. Furthermore, the sample was restricted to Primary School learners from two geographical regions of the country and as such the study cannot be generalisable to all hearing impaired learners in the country. Therefore, there is need for future study that could involve a larger sample country wide.

1.8 Definitions of terms used in the study

- **Hearing impairment:** A disability in which a learner may have difficulty in hearing or may not hear at all.
- **Language:** An organized system of symbols that is used to express and receive meaning.
- **Variation:** Refers to the difference in Sign Language used.

CHAPTER TWO - LITERATURE REVIEW

2.0 Introduction

This chapter explores relevant literature on the contribution of Sign Language Variation to academic performance of learners with hearing impairments. The review of literature is presented according to the themes which were derived from the objectives. The objectives were; the contribution of Sign Language Variation to academic performance of primary school learners with hearing impairment, examine the factors influencing sign language variation, the challenges primary school learners with hearing impairment face as a result of Sign Language Variation and identifying the measures that could help address the challenges if any of Sign Language Variation.

According to Kombo and Tromp (2006), literature review is a “Systematic, critical, and summary of existing literature that is relevant to the research topic”. This however entails reading appropriate selection of available literature such as books, magazines, articles, dissertations and newspaper reports in which new events have been reported and opinions expressed on the matter under investigation.

2.1 Development of Sign Language in Learners with Hearing Impairment and the contribution of Sign Language variation to academic Performance

Historically, extensive vocabularies of signs appear to have existed in Spain as early as the 16th Century, but it was not until 200 years later that Signs were combined with rules for their combination, or grammars and Sign Language moved into the classroom. The shift, and accompanying changes within the Deaf Community, also moved signing from a gestural system to a full-fledged language (Marschark and Spencer: 2006).

Armstrong (1999) in Washington conducted a study on Sign Language Variation. The study found that the existence and survival of every society depends on education. Generations and generations had depended on this tool to prepare their children for adult life, modify behavior to fit societal expectations, train children for future responsibilities, and to provide direction and develop children in accordance with the ideals of life.

The concept of Education of learners with hearing impairment depicts history, already telling us that there was little or no broader understanding of hearing impairments. It

already shows us (Negative perceptions and attitudes towards educational opportunities for the learners with hearing impaired). For the sake of easy understanding, it is the historical development of the education of learners with hearing impairment into three phases namely the pre-renaissance period, the renaissance and the age of reason (post renaissance) taking a world perspective

2.1.1 The Pre-Renaissance Period

In a study conducted by Forshay (2009) in America on contribution of Sign Language Variation among primary school learners, it was found that the education of learners with hearing impairments in the history has faced a gamut of perceptions and attitudes that have influenced the quality of educational opportunities.

Though information on the history of education of learners with hearing impairment may be scanty, a few perceptions and attitudes towards learners with hearing impairment were picked from early philosophers.

Among primary schools, it was found at about 5th Century BC Herodotus wrote the history of the Greco-Persian wars and in his work which earned him the father of history title, he mentions of seeking guidance with regard to his hearing impairment son.

In Plato's Cratylus writing around 360 BC, Socrates questioned rhetorically the use of signs, implying that such a communication system was used by the learners with hearing impairments in this period. Socrates describes the learners with hearing impairment as people who express themselves in gestures movement, depicting that which is light or higher sphere by raising the hands or describing a galloping horse by imitating its motion.

In a study conducted by Forshay (2009) in Washington, the first century A D, in Pliny the "Pliny of Elders Natural History", it revealed an influential report of seeking educational opportunities for the learners with hearing impairments. Quintus Pedius was the first account recorded about the education of a hearing impairment child. It was though unusual.

In addition Forshay (2009:8) found that the Greeks and Romans encouraged infanticides to remove the children who were mentally or physically unable to

contribute to a strong citizen state. During this period, there were serious attempts to preclude educational effort for the disabled. Aristotle, one of the earliest educational philosophers wrote; “as to the exposure and reading of children, let there be a law that no deformed child lives” quoted from (Winzer 1993: 13). Aristotle also between (384 BC – 322 BC) said that hearing impairment learners are born incapable to reason

Theological literature is as well helpful to our understanding of attitudes towards learners with hearing impairment persons and the barriers to education in the pre renaissance times. The Hebrews were positive about the learners with hearing impairment and their writings depicted that people with disabilities were children of God that were also capable of reasoning despite their handicaps. Thus the Jewish oral law which began in 5th Century AD raised the possibility of instructing deaf children.

Christianity equally had a positive standing against the injustices of neglecting learners with hearing impairment. Saint Jerome’s translation of the vulgate in the 4th Century AD discussed deafness and the possibility of salvation through signed as well as written communication. He viewed the speaking gesture of the whole body as serving to communicate the word of God as well as speech and hearing. Signs were viewed as an alternative to spoken language in communication of ideas and in learning the gospel.

2.1.2 The Renaissance Period

Akamat et al (2000) in America conducted a study on contribution of Sign Language Variation. The study found that the renaissance period created major changes in creative thinking. There is more information about hearing impairment education in this period. The works of Dutch Humanist Rudolphus Agricola and Italian Mathematician and Physician Girolamo Cardano were influential during this period.

In 1400s, Agricola describes a hearing impairment person’s achievements to read and write as follows: “With signs, or other visual pedagogical means, learners with hearing impairment could sufficiently express themselves and understand the world.” (Radutzky 1993) quoted in Marschark and Spencer (2003). Cardano took over Gricola’s works after his hearing impairment 43 years latter elaborated that learners with hearing impairment were unique by being able to communicate through reading

and writing than through hearing and speaking. Cardano had a son with hearing loss but it was not clear how he could have helped his son.

With the widespread illiteracy at this time, it was unusual to find a learner with hearing impairment being able to read and write, though artistic abilities were notable among the learners with hearing impairment i.e. drawing important figures.

2. 1.3 The Age of Reason

In a study conducted by Bell (2006) in Washington on contribution of Sign Language Variation, it was found that the methods of instructing the learners with hearing impairment students spread through the writings of Juan Pablo Bonet during the age of reason. Gordon (2008) in Europe conducted a research where a book entitled was published, “The Reduction of letters and the Art of Teaching the Mute to speak” in 1620. His assumption was that thought precedes language. He stressed the importance of activity and what some would now call multi-sensory learning. For example, feeling can be used for learning some things instead of sight. To Bonet, learning is an active construction of meaning. Reading, writing and finger spelling are precursors to speech. He and his colleague Pedro Ponce de Leon both Spanish between 1520-1584 used hand signs to teach the learners with hearing impairment.

Hinton, (2011) in America he reported that in 1670, William Holder, a priest and John Wallis, a Mathematician publicly argued in the philosophical translations of the royal society their respective claims of being the first to teach the learners with hearing impairment students in Great Britain

There was a myth perpetuated even today that abstractions could not be conveyed through sign language. However, research has shown that signs used by the learners with hearing impairment are highly abstractive.

The 17th Century people saw the growth of scientific societies which helped bring legitimacy in the instruction of the students. As societies grew, awareness equally grew among people and governments. Scientific societies were center’s for experimentation and they grew throughout Europe e.g. in Naples, Rome, Leipzig and Florence. These were academies that brought out the truth about hearing disability and the possibilities

for improving the hearing of those learners with hearing impairment through use of tubes and trumpets.

Antia et al (2002) in New York conducted a study on effect of Sign Language Variation among primary learners. The study found that John Wallis, the Mathematician in 1857 recognized that learners with hearing impairment are capable of developing the ability to use language, questioning why it should not be possible for the eye to receive signs or other characters in representing concepts as well as the ear with sounds.

Dalgarno in 1680 expressed similar sentiments saying the learners with hearing impairment have an equal in the faculties apprehension, and memory to those who have all other senses and equally capable of instruction.

The growth of scientific societies in Europe meant growth of interest in philosophers and scientists. Jean-Jacques Rousseau, a French philosopher among others examined the potential of learners with hearing impairment youths to learn. He was influential on the philosophy of learning by doing; he redirected the attention to learning through senses and the importance of the child's interaction with the environment. Rote learning was condemned. Rousseau was a member of the French academy for sciences, examined the learners with hearing impairment ability to learn through a teacher (Jacobo Pereire) who used pronunciation, signs, finger spellings and speech reading. As a result, instructions of the deaf gained respect as a profession (Kirk et al.: 2009).

Marschark (2005) in Washington conducted a study on contribution of Sign Language Variation. The study found that John Locke's writings on empiricism and education through senses inspired the French philosophers to examine communication of learners with hearing impairment though their work primarily focused on speech and language origins as a means of communicating and understanding thought.

There were still many views that were expressed during this period about the abilities of the learners with hearing impairment to learn. In 1751, Button observed that the learners with hearing impairment can have knowledge of abstract and general ideas.

By 1760s, France had established the first government sponsored school for the learners with hearing impairment to communicate. He viewed language as artificial and arbitrary. He viewed language as more than a verbal system of sounds and orthography.

He believed it was possible to teach the learners with hearing impairment through a combination of signs and written characters. Sign language was the method of communication in the first school, an approach that gained much recognition for several hundreds of countries in Europe.

Marschark and Spencer (2006) in New York conducted a study on contribution of Sign Language Variation. The study found that Epee's methods were used by others like Samuel Heinicke who established a school in Leipzig in 1778 based on the practice of teaching the learners with hearing impairment to speak. He was the first to try to link speech to higher mental processes arguing that articulation and vocal language were necessary for abstract thought. Oralism was a method of teaching the learners with hearing impairment spoken language through speech and lip-reading exclusively without the use of sign language.

This leads us to understanding that I'Eppe was a Manualism founder and Heinicke was an Oralism founder differing on how best learners with hearing impairment students could be educated terming this difference as the war of methods. The antagonism in the proponents takes one view that sign language if systematically used can help the learners with hearing impairment while the other view stresses that the use of speech, speech reading and residual hearing without signs is an all-encompassing solution to teaching the learners with hearing impairment. Epee combined the signs of learners with hearing impairment with his own inverted system of grammatical features and departed significantly from the natural language, Heinicke emphasized on speech, also an unnatural to many learners with hearing impairment Smith and Tyler (2010).

In a study conducted by Padden (2006) in New York on contribution of Sign Language Variation, it was found that Thomas Gallaudet saw the need for education of learners with hearing impairment, brought Laurent Clerc a second hearing impairment French teacher who was very intelligent and fluent in sign language and written French from Europe to America to start a school for the learners with hearing impairment with him in 1817. Laurent Clerc learned the old American Sign Language (ASL) used by the learners with hearing impairment in America and combined it with French Sign Language (FSL) which he eventually standardized into modern American Sign Language (ASL). The year between 1817 and 1880 there was mass spread of schools of

learners with hearing impairment in America, an age considered the gold age of learners with hearing impairment.

In 1817 American School for the learners with hearing impairment was established. In 1818 New York Institution for the instruction of the learners with hearing impairment and dumb was established. In 1820 Pennsylvania School for the learners with hearing impairment was established. In 1823 Kentucky School for the learners with hearing impairment was established. In 1839 Virginia school for the learners with hearing impairment and blind, first integration was established. In 1964 first National learners with hearing impairment College now Gallaudet University in Washington DC, Chartered by Abraham Lincoln was established.

Beattle (2006) conducted a study in New York on contribution of Sign Language Variation among primary learners. The study found that almost every state in America developed a school for the learners with hearing impairment later on. What was infamous about the whole American transformation was Alexander Graham Bell and Oralism spread in America and all over the world. In 1880, the World Congress of the educators met in Milan, Italy and passed a resolution to promote Oralism in the deaf education all over the world and dismiss all teachers for learners with hearing impairment out of learners with hearing impairment school. In the same year, the National Association for learners with hearing impairment was founded and they fought long and hard for the rights to use sign language in hearing impaired community and education. By 1910, most schools in America had turned to Oralism.

In the study conducted by Padden and Ramsey (2000) in New York on contribution of Sign Language Variation it was found that however, between 1900–1960s, Oralism proved a failure of learners with hearing impairment education. There was poor performance among hearing impaired students in third grade English. This period was called the Dark Age period of learners with hearing impairment education. Sign language was only preserved in hearing impaired clubs, churches and among hearing impaired families during this period.

Marschark (2000) in New York conducted a study on contribution of Sign Language Variation among primary school learners. The study revealed that American Sign languages had linguistic characters and eventually proved that American Sign

Language was a language. From these studies, it was seen that emergence of Sign Language studies, classes, training and book materials learners with hearing impairment culture was defined and recognized. By 1988, American Gallaudet University had a president with hearing impairment and by 1990, American Sign Language was accepted as a foreign language course in learning institutions and many states legalized it as a foreign language course. The Americans with disability act was passed into law in 1993. As it is understood now, total communication is a new ideology in the teaching of the person with hearing impairments, perhaps a harmonious way of ending the Oralism-Manualism war of methods. This is quite a long world history of education of learners with hearing impairment. Many learners with hearing impairment young people have therefore suffered a long period of poor education as influential figures made sweeping generalizations about communication and language.

2.1.4 Education of the Deaf in Zambia

In a study conducted by Mbewe (2009) in Zambia on contribution of Sign Language Variation among primary learners, it was found that the development of special education in Zambia provides a background where around 1905, missionaries taught the first blind people at Magwero in Eastern Province of Zambia). Miss Anna Bote, a missionary started an orphanage which later led to the opening of the first school for the deaf at Madzimoyo. The missionary curriculum focused on the evangelization of the gospel and apprenticeship skills.

The first learners with hearing impairment to be taught became a teacher for the learners with hearing impairment. Government took over the responsibility of running special education alongside philanthropic organizations in 1971 after the first college for the handicapped was established at Kamwala in Lusaka. Still the education of learners with hearing impairment depended on the Ministry of Health to provide diagnostic information about the disability that would enable appropriate placement. By 1971, there were two primary schools for the learners with hearing impairment and four units in primary schools.

Mbewe (2009) conducted a study in Zambia on contribution of Sign Language Variation. The study found that nowadays, the medium of instruction for the deaf in Zambia is to a large extent what is known as "total communication", i.e. a system

whereby any means of communication (signing, gesturing, writing, pictures, etc.) is used, but American Sign Language (ASL) has undoubtedly become the most important medium of instruction and means of communication in deaf communities in Zambia. Despite the adoption of the American Sign Language in Zambian schools, most of the learners have modified the signs and use them according to the environment, culture and training institutions where the teachers were trained. This is so because of lack of Sign Language harmonisation by the policy makers and other stakeholders.

2. 2 Types of Sign Language

In a study conducted by Mayberry (2007) in New York on contribution of Sign Language Variation among Primary School learners with hearing impairment, it was found that the French had a natural sign language, which is often referred to as Old French Sign Language (OFSL). OFSL was the language of a large community of people with hearing impaired living in Paris. This language was passed down from learners with hearing impairment to learners with hearing impairment, and may be the oldest sign language of Europe. The Abbe' Charles Michel de l' Epee was the first to acknowledge that signed language could be used to educate the learners with hearing impairment.

Hill and Lucas (2009) in New York conducted a study on contribution of Sign Language Variation among Primary School learners. The study found that an OFSL repeated hearing impaired folk tale explains Epee's role in the origin of LSF (and later, ASL). While visiting a parishioner, Epee met two hearing impaired daughters conversing with each other using OFSL. The mother explained that her daughters were being educated privately by means of pictures. Epee was inspired by these learners with hearing impairment and in 1771 established the first educational institution for the learners with hearing impairment. He created a series of grammatical signs to represent French grammatical markers called methodical signs and taught those to easy students so that they might learn grammatical French at Epees' a school a large group of learners with hearing impairment lived together for the first time in France and it is this generation of native speakers which most likely developed all OFSL into a full language. The combination of all OFSL methodical signs and possibly other influences came together and evolved into French sign language LSF or Language Designers Francaise.

2.2.1 United States Sign Language

In a study conducted by Marschark (2009) in America on contribution of sign language variation among Primary School learners, it was found that little is known of sign languages in the United States before 1817. It is said that since there was little contact between communities in early America, home sign language was likely used most widely. However, a deaf community on Martha's Vineyard in the late 17th Century used a natural sign language. From 1690 to the mid-20th Century there was a high rate of genetic deafness on Martha's Vineyard caused by the founder effect. It afforded almost everyone frequent contact with sign language. It was said that 1 out of 155 people on the island was hearing impaired, compared with 1 out of 5700 people in the rest of America during the time. The ancestry of the Martha's Vineyard deaf community could be linked to the weald, a small area in England, by way of Scithate, Massachusetts.

Mulrooney (2002) in America conducted a study on contribution of Sign Language Variation among Primary School Learners with hearing impairment. The study found that in the United States, as elsewhere in the world, hearing families with learners with hearing impairment have historically employed ad-hoc home sign.

Idiosyncratic system of hand-gestures did not amount to full language for rudimentary communication. There were however exceptions such as the community of Martha's vineyard, where a large percentage of the population was deaf and the entire hearing population was able to sign a true Sign Language. Elsewhere the development of Sign language required the emergency of school for the learners with hearing impairments which brought large numbers of learners with hearing impairment together.

The story of American Sign language begins with education of learners with hearing impairment, Martha's Vineyard and a Minister, Thomas Hopkins Gallaudet, who was enlisted by a educate his hearing impaired daughter, Alice Cogswell in 1814.

2.2.2 Plains Indians

Mulrooney (ibid) in New York conducted a study on contribution of Sign Language Variation among Primary School learners. The study found that in 1541, 1688, 1740, 1805 and 1828, there were reports that the Plains Indians developed a sign language to communicate between tribes of different languages. This sign language is believed to

have developed in the lower Rio Grande prior to the Europeans setting and to have spread northward and become what is known as Plains Indian Sign Language (PISL). There is no evidence to show that it influenced the development of American Sign Language. By 1885, PISL had an estimated 1,110,000 users of various tribal dialects, but today it has only a small fraction of that number. It was not a language strictly for deaf people but an integral part of the language along with spoken components. It was also a common language between tribes who had different spoken elements.

2.2.3 Black American Sign Language

In a Study conducted by Stokoe (2009) in America on contribution of Sign Language Variation, it was found that Black American Sign Language evolved out of racial segregation in the United States, especially in the south. While white and black children were both instructed in American Sign Language, only Black Sign Language was born out of this isolation. This isolation, as well as minimal adult input, contributed to the fact that Black Sign Language displays traditional sign language elements as well as the adoption of words used by younger hearing black people.

2. 2.4 Adamorebe Sign Language (Ghana)

In the study conducted by Gordon (2009) in Ghana on contribution of sign language variation among primary school learners, it was found that 3400 learners with hearing impairment had their deafness caused by genetic recessive chromosome. The village has been settled for 200 years. It is an indigenous deaf sign language known as Adamorobe Sign Language, also used by many hearing people most users have no contact with Ghananian sign language. All ages were evenly distributed.

2. 2.5 South African and Zimbabwean Sign Languages

Andrew and Aaron, (1998).) In South Africa conducted a study on contribution of Sign Language Variation. The Study found that North British Sign System used for deaf whites in English-speaking families. 1881 School established for Afrikaans – speakers using British Sign Language. In addition to that elementary schools for the learners with hearing impairments started since the 1940s, manual alphabet used to spell English related to that in South Africa.

2.3 Birth of American Sign Language and American School for the Deaf

In a study conducted by Stokoe (2009) in America on contribution of Sign Language Variation, it was found that in 1815, a Protestant Minister, Thomas Hopkins Gallaudet, left his home in Hartford, Connecticut to visit Europe. Dr. Mson Cogswell had asked Gallaudet, to investigate methods of teaching his deaf daughter, Alice Cogswell. While in England, Gallaudet hit a road block when Directors of the Braidwood schools who taught the oral method, refused to share their methods of teaching. Nevertheless, while in London, Gallaudet met with Abbe' Sicard, Director of the Royal Institution for the Deaf in Paris, and two of his students, one of whom was Laurent Clerc. Sicard invited Gallaudet to visit the school in Paris. He did not go immediately, but instead travelled to Edinburgh, Scotland where he again met the Directors of Braidwood. They again refused to teach him their methods. Gaullaudet then travelled to Paris and learned the Educational methods of the Royal Institution for the Deaf with Sign Language, a combination of old French Sign Language and the Signs developed by Abbe de l'Epe'e'.

Gallaudet and Clerc opened the Connecticut Asylum for the Education and Instruction of Deaf and Dumb persons (now called American School) for the Deaf) in April 1817. Deaf students were taught French Signs and brought in signs of their own, such as those from Martha's Vineyard. Thus, it was at this school that all these influences would intermingle and become what is now known as American Sign Language.

2.4 Growth and Standardisation of Sign Language

Gordon (2008) in America conducted a study on contribution of Sign Language variation. The Study focus that American Sign Language convention of March 2008 in Austin, Texas interestingly, because of the early influence of the Sign Language of France upon the school, the vocabularies of AST and Modern Sign Language are approximately 60% shared, whereas ASL and British Sign Language, for example, are almost completely dissimilar.

From its synthesis at this first public school for the deaf in the North America, the language went onto grow. Many of the graduates of this school went to found schools of their own in many other states, thus spreading the methods of Gallaudet and Clerc

and serving to expand and standardize the language, as with most languages, though there are regional variations.

2.5 Variation in Sign Language

In a study conducted by Labov (2001) in America on contribution of Sign Language Variation, it was found that if structure is at the heart of language, then Variation defines its soul. As Labov put it everyone knows that language is variable. Furthermore, Variation allows us to differentiate Individuals, Groups, Communities, States and Nations.

Variability is everywhere in Language, from the unique details in each production of a sound or sign to the auditory or visual processing of the Linguistic Signal. In fact, one of the amazing facts about human communication is the demonstrated ability to normalize the inherent variation within every spoken or signal message in processing the linguistic signal.

Generally speaking, interest in Language Variation focuses on differences that have some social significance in terms of group behaviour rather than Personal idiosyncrasies, though socially meaningful aspects of individual speaker performance are of interest to those interested in Language Variation.

Lucas et al (2009) in America conducted a study on Sign Language Variation among primary learners with hearing impairments. The Study found that when looking at Variations it needs to be kept in mind that different groups of people do not always sign one way and not the other rather they prefer and use a particular form of a sign more often.

Furthermore, each individual signs his or her own style of signing depending on various factors, such as where one went to school, if he or she was mainstreamed or not, who taught him or her Sign Language and how one active is in the Deaf Community.

Sign Language used in different regions across the world reflects the spoken language around a learner with hearing impairment. This may include the speed of one's signing and names for local places.

2.5.1 Regional Variations

Mulrooney (2002) in Washington conducted a Study on contribution of Sign Language Variation among primary school learners with hearing impairments. The Study found that Sign Language has many regional and sub cultural varieties and accounts. Just as there are accents in speech, there are regional accents in Sign Language. People from the south part of the United States of America sign slower than people in the north. Even people from Northern and Southern Indian have different styles of signing. For example others sign “man” by touching the chin where beards grow from while others sign the word “man” by trying to put on a “pair of trousers”.

In a Study conducted by Bailey (2002) in America on contribution of Signing Language Variations, it was found that there are five broad regions of American Sign Language Variation in Canadian Pacific, Prairies, Ontario, Quebec and Atlantic Regions.

2.5.2 Regional Lexical Variation

Carnoy et al (2008) in America conducted a study on contribution of Sign Language Variation. The Study found that throughout Pacific, Prairies, Ontario, Quebec and Atlantic Regions only Lexical Variations have been explored. For example the word “Learn” can be signed two different ways. There is the standard way to sign the word ‘learn’ that seems to be used by most Signers of ASL in Canada, and there is also an Atlantic Regional Variation.

Another example is “about” which has three different ways of signing it, these are the standard ways and two Regional Variations (Atlantic and Ontario). The most obvious regional difference is in Local Signs. For example, there are more than six signs for birthday in American Sign Language just as in English one can say couch and sofa or soda and pop, to mean the same thing.

In a Study conducted by Mayberry (2007) in Canada on contribution of Sign Language Variation among Primary Learners with hearing impairments, it was found that the sign for rabbit provides a good example of Variation between black and white signers while both communities use the forehead location and neutral space location with ‘H’ hand-shape, black signers also have a separate sign for “rabbit” with a bent ‘V’ hand-shape and different hand movement.

2.5.3 Phonological Variation

Lucas et al (2003) in New York conducted a Study on contribution of Sign Language Variation. The Study found that each Sign has a hand-shape and these hand-shapes can resemble signs of numbers or letters. Some Signs that are created with an ‘I’ hand-shape, can also be made using an ‘L’ or a ‘5’ hand-shape (open hand-shape). There is a variation among regions in the United States when it comes to which hand-shape signers prefer to use Signers from California Missouri, Masschusetts and Louisiana favour the ‘1’ hand-shape over ‘L’ hand-shape and open hand-shape over the ‘I’ hand-shape.

In addition to that Black Sign Language speakers prefer to use two hands opposed to one for example “remember”. Black Sign Languages are also likely to sign higher on the body. A sign that may be lowered to the chest level by an ASL speaker is more likely to be produced by a Black Sign Language speaker on the forehead, for example “teacher”.

In a Study conducted by Carnoy (2008) in Ghana on contribution of Sign Language Variation, it was found that phonological Variation in ASL and other Signed Languages has generally been accounted for by positioning phonological constraints alone (that is features of preceding and following signs), without reference to the role of grammatical and functional factors.

Furthermore, it was found that ASL and by analogy other Sign Languages are true languages. This work has proceeded by demonstrating that the structure of ASL parallels that of spoken languages and that its phonology and syntax are subject to the same kinds of processes that operate in spoken languages. In the process, this work has not investigated the possibility that factors other than phonological ones may be operating in thumb extension in Signs such as funny, black, boring and cute. Of the six factors that they claim conditioned the variation, five concern formational (phonological) features of the signs themselves.

In a Study conducted by Andrew and Aaron (2007) in South Africa on contribution of Sign Language Variation, it was found that dynamic phonology in two Sign Language examined two handed signs that can become one handed, such as cat, Chinese, cow and famous. It has also been proposed that the Variation which has been observed was

conditional by phonological features of the signs themselves (for example the movement and location of the Sign).

Akach and Okombo (1997) in Ghana conducted a study on Sign Language Variation. The Study found that Variation has been explained in two forms of the Sign ‘Deaf’ (ear to chin and chin to ear) as a process governed solely by phonological constraints. A number of signs exchange an initial sequence of segments with a sequence of final segments in certain contexts that appear to be purely phonological. The sign “Deaf” is typical of such metathesizing signs.

Furthermore, Akach and Okombo (2003) have continued to uphold the explanation that variation in the form of “Deaf, which found that the only grammatical function, not the features of the preceding and following signs had a significant effect on signers’ choice between Citation (ear-to-chin) and non-citation (chin-to-ear or contact-cheek) forms of “deaf”. In addition to that, they described two tokens of Deaf used in the same sentence to illustrate the role of the preceding and following signs in conditioning variation.

Schirmer (2001) in Washington conducted a study on contribution of Sign Language Variation. It was found that on the variable of lowering of signs (for example know) that are produced at the level of the forehead in Citation form, standard form that appears in dictionaries and is taught in ASL classes. (The phonological processes that originally must have moved them are still active in contemporary ASL. The rules which account for (these signs) appear to be variably selected in casual signing and like vowel reduction rules spoken language, have the effect of neutralizing contrasts of location. It also attributes variation in signs produced with an ‘I’ hand-shape (index finger extended, all the fingers and thumb closed) to phonological processes, without consideration of factors at other linguistic levels. There are numerous instances of assimilation in ASL, for example, the hand configuration of the Sign “Me” (= Pro I) typically assimilates to that of a contiguous predicate in the same clause. The extent to which signs other than “Me” assimilate to the hand configuration of another sign, although not yet thoroughly investigated, appeared to be considerably limited. For most Signers it appears to be variable, probably controlled by formality and fast signing constraints. Therefore, it has been claimed that Phonological Variation in Sign

Language may be accounted for primarily by the influence of the surrounding Phonological Environment.

2.5.4 The Sign “Deaf”

In a Study conducted by Mulrooney (2002) in America on contribution of Sign Language Variation among primary schools graders, it was found that ‘Deaf’ has three variants, in Citation form ‘Deaf’ is signed from ear to cheek. ‘Deaf’ may also be signed from cheek to ear or reduced to a contact on the cheek.

2.5.4.1 Signs with Downward Movement

Lucas et al (2001) in Washington conducted a Study on contribution of Sign Language Variation. The Study found that the Verb ‘Know’ which shares features of location and placement. Signs of this class are produced at the forehead or temple. In addition to ‘Know’, other signs include verbs of thinking and perception (for example Believe, Decide, Forget, Remember, Suppose, Suspect, See, Think) as well as variety of adjectives (for example Dizzy, Federal, Weird), nouns (for example Deer, Father, Horse), prepositions (for example for), and Interrogatives (for example why). In Signs such as believe, decide, and remember, the focus here is on the initial location of the hand shape.

The forehead in Citation Form and lower in Variable Forms e.g. ‘know’ and ‘for’, variants of these signs are produced at location below the forehead or temple while ‘know’ and ‘for’ as they are sometimes produced just above or below the jaw.

2.5.4.2 Signs with an ‘I’ hand-shape

A study conducted by Padden (2006) in America on Sign Language Variation was found that many signs of all grammatical classes were produced with a I hand-shape. The Citation Form of ‘One’ with the thumb and all of the fingers except the index finger closed. Signs produced with an ‘I’ hand-shape, however exhibit a wide range of Variation) for examples thumb open, all fingers open). Here it has been considered the two most common non-citation forms. The first one, the L hand-shape Variant, differs from the Citation Form in that the thumb is open. In the second non-citation form, the open-hand variant, both the thumb and the fingers are open.

2.5.4.3 Sign Language Segmental Phonology

Akach and Okombo (1997) in Kenya conducted a study on Sign Language Variation. The Study found that the fundamental perspective on the structure of signs has changed dramatically since the early studies of variation in Sign Language. This perspective, which shaped Sign Language Studies from 1960 until the 1980s, holds that Signs are composed of three basic parts or parameters (the location at which the Sign is produced, the hand-shape and the movement of the Sign) and that, unlike the sequentially produced segments of spoken languages, these components are produced simultaneously.

Although Stokoe and others recognized that sequential events occur within signs, they regarded these events as phonologically unimportant. As Liddell and Johnson observe, the claim that the signs are simultaneous bundles of primes is not a claim that there are sequential events within Signs. It is a claim that within Signs sequential organization is phonologically unimportant. Therefore, while Stokoe and more recent workers recognize sequence within signs, they typically hold it to be phonologically unimportant. More recent models, however, do attribute phonological significance to sequential events. These appear more suitable for the study of variation than earlier simultaneous models because they render more explicit aspects of the sign that are subject to variation.

In Akach and Okombo (ibid) model, which has been adopted here, Signs are viewed as composed of sequentially produced hold and movement segments somewhat analogous to the consonants and vowels of spoken languages. Each segment is an articulator bundle that includes the features of hand-shape, location, palm orientation, and non-manual signals (facial expressions). For example, the Citation form of 'DEAF' consists of a sequence of hold segments (HMH) is a simplified representation of DEAF in this framework.

While it has been recognized that there is considerable debate regarding the nature of these segments, it has been regarded that Liddell and Johnson Framework as the most suitable for the Study of Variation. As Akach and Okombo have demonstrated, it allows not only for the efficient descriptions of any individual sign but also for an accurate account of phonological processes such as assimilation, metathesis, epenthesis, and segment deletion – processes that are central to variation in Sign Languages.

In a Study conducted by Mbewe (2009) in Zambia on Sign Language, it was found that culture and technology also creates Sign Variation in the sense that Sign Variation are made by different communities of people with hearing impairments, for example, in Eastern Province of Zambia people drink beer from a calabash. In turn, learners from Eastern Province perform the sign of beer by mimicking container in a circular motion with two hands and bringing it to the mouth as if to a sip. However, in the Northern Province of Zambia people drink beer by sucking it from a container with a copper rod or holed reed. In turn learners with hearing impairments from Northern Province make the sign of beer by imitating the action of lips sucking from the rod or reed.

2.6 Challenges faced by learners with hearing impairments as a result of sign language variation

In a Study conducted by Fiddel (2008) in America on Sign Language Variation, it was found that learners from Puerto Rico could not understand the dialect of Spanish because it lacked the intonation pattern of Puerto Rican Spanish. These Sign Variation raise concern as to how Sign Language variation has contributed to academic performance.

Carnoy and Chisholm (2008) conducted a Study in South Africa on Sign Language Variation among Primary School Learners with hearing impairments. The Study found that the learners with hearing impairments experience Sign Variation in the classroom. Sometimes a teacher can ask learners questions but learners do not understand some Signs in the question. These Sign Variations become a barrier in communication. This results into learners not to coordinate well. These Sign Language Variations raise concern as to they contribute to academic performance on Primary School Learners with hearing impairments.

In a Study conducted by Mbewe (2012) in Zambia on contribution of Sign Language Variation among Primary School Learners with hearing impairments, it was found that homework policy has been introduced and is being implemented in schools world-wide. Learners with hearing impairments face Sign Variations from the parents or guardians when they are being assisted to do their homework. This contributed to learners with hearing impairments not doing their homework. These Sign Variations raise concern as to how they contribute to academic performance of Primary School Learners with hearing impairments.

Mbewe (2009) conducted a Study in Zambia on how Sign Language variation contributes to the academic performance of Primary School Graders with hearing impairments. The Study found that learners with hearing impairments experience Sign Variations during examination. Invigilators who are to invigilate them have different Signs. When a learner wants clarifications from them, they have difficulties in understanding instructions. Such variations raise concern as to how academic performance of Primary School Learners with hearing impairments is affected.

In a Study conducted by Stokoe (2001) in America on contribution of Sign Language Variation among Primary School Learners with hearing impairments, it was found that learners face challenges during education tours. This is in the sense that learners and tour guide have different signs during education tours. The Sign Variation is making learners to collect wrong information from people in the field. These Sign Variations raise concern as to the performance of Primary School Learners with hearing impairments.

A study conducted by Corson (2010) in Ghana on Sign Language Variation, found that learners faced a lot of challenges when teachers dictate work to them. These Sign Variations among primary learners faced during dictation lead them to write wrong words or sentences. These Sign Variations raise concern as to how they contribute to academic performance of Primary School Learners with hearing impairments.

In a study conducted by Gordon (2005) in America on Sign Language Variation, it was found that learners with hearing impairment faced challenges in Sign Language because they meet different friends with different Signs. This makes communication break down due to Sign Language Variation hence affecting academic performance as they cannot keep each other in their academic work.

Hills and Lucas (2009) in South Africa conducted a Study on Sign Language Variation. The Study found that learners faced challenges in class as teachers used different signs which they had learnt from their Training Institutions while learners use Signs they learnt from their friends around them. Communication from the two parties was a challenge therefore it affected their academic performance.

In a Study conducted by Mbewe (2009) in Zambia on Sign Language Variation, it was found that learners with hearing impairment when they go home to deliver a message from school it was a challenge to learners to communicate with parents because of different signs they have learnt at school which parents do not know. This affected their academic work when it comes to assist them in their homework given.

Another study on Sign Language variation was conducted in America by Rosenberg (2002). The Study revealed that some teachers were incompetent in Sign Language particularly teachers who were seconded to teach the learners with hearing impairment. Some qualified specialist teachers have also little knowledge about Sign Language. Only few teachers have knowledge about Sign Language. This affected learners' academic performance.

In the Study conducted by Miles (2006) in Ghana on Sign Language Variation, it was found that learners experience challenges in signing especially when they move from one school to another, on transfer. Learners found new signs when they go to another school, hence contributed negatively to their academic performance.

Mbewe (2010) in Zambia conducted a Study on Sign Language Variation. The Study found that learners faced a challenge as a result of Sign Language Variation because signs are made according to one's culture. Those learners from Western Province they have their own Signs according to their culture.

2.7 Measures to help address the Challenges of Sign Language Variation

In a Study conducted by Hinton (2011) in Washington on contribution of Sign Language Variation among Primary School Learners with hearing impairment, it was found that in order to address the challenges of variation in school, various measures across the world have been taken at both government and private organization levels.

2.7.1 Sign Language Clubs in Nigeria

Mayberry (2007) in Nigeria conducted a Study on contribution of Sign Language Variation among Primary School Learners with hearing impairments. The Study found that in order to support disadvantaged learners' academic success, school communities around the world have adopted a variety of creative and effective interventions. A profile of a few such interventions includes forming Sign Language Clubs. These Sign

Language Clubs are informal initiatives that support Standard Sign Language of instruction in schools by making relevant and interesting Sign Language materials accessible to community members who offer a valuable resource that supplements the formal Educational System. One example is a Sign Language Club, a Nigerian grass-root initiation where Sign Language Clubs by a local are organized. It is based on learners and community acquiring Standard Sign Language. Its goal is to provide opportunities for critical thinking, questioning and building self-esteem through group-based Sign Language activities.

In a Study conducted by Hill and Lucas (2009) in Kenya on Sign Language Variation, it was found that Sign Language Clubs have been formed in schools. The focus was on allowing learners to have common signs. This would help learners communicate easily in Sign Language among themselves and also between the teachers.

Mbewe (2009) in Zambia conducted a Study on contribution of Sign Language among Primary School learners with hearing impairments. The Study found that Sign Language Clubs have been introduced throughout schools for learners with hearing impairments. In addition to that Zambian dictionary also has been supplied throughout schools. The aim is to have the standard Zambian Sign Language to all learners with hearing impairments.

2.7.2 Parental Involvement in Sign Language

In a study conducted by Hornberger, (2008) on Sign Language Variation, it was found that the local community was characterized by a low level of Sign Language participation. A Supportive Sign Language Intervention Programme in America is a sign to a learner. The goal was to engage and assist parents in their children's Sign Language and was implemented in three stages. In one stage, parents who were interested in interacting more effectively in their children's Sign Language acquisition process were identified and trained. In stage two, parents were trained to be Sign Language tutors in the school and then in stage three they became community tutors who would introduce other parents to a "Sign to the Learner Programme".

In a Study conducted Stokoe (2001) in America on Sign Language Variation, it was found that parental involvement in Sign Language could be further improved by going beyond the kind of initiative described by Hornberger. Stokoe recommends recognizing

parental insights about Sign Language that may be very different from those proposed within schools and recognizing the need to learn from families who may see home-based Sign Language practices as being distinct from school based Sign Language. He suggests that rather than developing Sign Language Support Programmes that use a common script both in the school and home, home-based relationships can be initially supported and harmonious if they build on the different elements of Sign Language practiced in the home and the school. This was supported by Mithun (2011) in America, who conducted a Study on Sign Language. He found that parents were meeting every Friday at school. The aim was to interact with every learner and to learn about Standard Sign Language.

In addition to this, in a month parents and learners were either holding a Seminar or Workshop about Sign Language Variation. This would enhance learners to have standard Sign Language.

2.8 Summary

A review of literature however, still leaves knowledge gap about the contribution of Sign Language variation to academic performance of learners with hearing impairments in selected schools of the Copperbelt and Lusaka.

CHAPTER THREE- METHODOLOGY

3.0 Introduction

This section describes the methods which were used in collecting the research data and how the data were analyzed in coming up with this report. It also describes the research design targeted, the sample size and method used in sampling the population.

3.1 Research Design

According to Kombo and Tromp (2010), a research design is an overarching strategy for unearthing useful answers to research problems. This study used a descriptive research design.

3.1.1 Descriptive Research Design

The major purpose of the descriptive research design is to help in the description of the study findings. Orodho and Kombo, (2002) points out that descriptive research design helps to collect information about people's attitudes, opinions and habits. Similarly, this study sought to collect data on the contribution of Sign Language variation to the academic performance of learners with hearing impairments from various participants. In addition, the descriptive survey design helped to collect both qualitative and quantitative data.

3.2 Population

A research population is generally a large collection of individuals or objects that are the main focus of scientific inquiry. It is for the benefit of the population that researches are done. However, due to large sizes of population, researchers often cannot test every individual in the population because it is too expensive and time consuming. This is the reason why researchers rely on sampling (Miles and Huberman: 1994).

3.3 Target Population

The target population comprised learners with hearing impairments, teachers, senior teachers and parents of the selected schools of the Copperbelt and Lusaka Provinces. The senior teachers from the schools were included in the sample because they directly supervised the teachers in the departments. The teachers were included because they were the ones directly teaching and overseeing learners with hearing impairments. The parents were included in the sample because they have some influence on their children and would therefore be seen to have useful input on the information sort for the

research because they have understood their children well since birth or conception. The learners with hearing impairments were part of the sample because they were the central focus of the research study.

3.4 Sample size

The sample consisted of one hundred twenty (120) respondents. This comprised fifty (50) Learners with hearing impairments, thirty (30) specialist teachers for learners with hearing impairment, ten (10) senior teachers and thirty (30) parents of learners with hearing impairments.

3.5 Study Sites

The Study took place in three (3) primary units in Lusaka namely: University Teaching Hospital Special Unit, St. Lawrence, and Disai and five (5) on the Copperbelt particularly St. Joseph in Kalulushi, Mano in Mufulira, Lubambe in Chingola, Chingola Special Unit in Chingola, Valley View and Chibote in Kitwe. These schools were purposively selected because they were the only schools which had learners with hearing impairments on the Copperbelt.

3.6 Gender Distribution of the Total Sample

Figure 1: Gender Distribution of the Sample

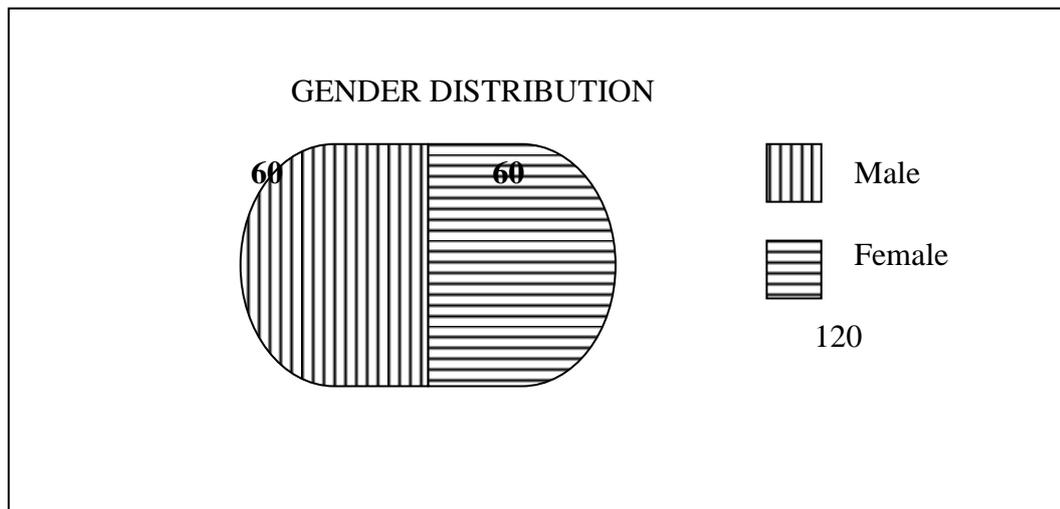


Figure 1 above shows that there were 60 or (50%) male and 60 or (50%) female who participated in the Study. Altogether there were 120 respondents. Out of the total number, fifty (50) were learners (29 males and 21 females), thirty (30) teachers (15 males and 15 females), thirty (30) parents (14 males and 16 females) and ten (10) senior

teachers (5 males and 5 females). The learners who were interviewed in the study were 15 Boys and 10 girls from grade 6, and 14 Boys and 11 girls from grade 7.

3.7 Sampling Procedure

Purposive and random sampling techniques were employed to select participants in the Study. Purposive sampling technique was used because there were limited schools in Lusaka and Copperbelt Provinces with learners of hearing impairments and the number of learners in grade six and seven was also limited. Purposive sampling was also used to select senior teachers in special school because were the only ones supervising teachers while Learners, teachers, and parents were randomly selected because the researcher wanted all the people in the target population to have an equal chance of participating in the study. The researcher prepared small pieces of paper where she wrote 'yes' and 'no' depending on the number of respondents she wanted. The papers were folded and shuffled in a tin to let the respondents have a chance of picking any of the papers. Those who picked the 'yes' paper were included in the study while those who picked the 'no' paper were excluded from the study. Senior teachers were purposive selected because were the only one found in the special units.

3.8 Instruments for Data Collection

The instruments used for data collection were structured self-administered questionnaires, structured interview schedule and participant observation Checklist. The questionnaire was used because it allowed respondents respond to the same question items, saved on time and it avoided opportunities of biasness. The structured interview schedule was used because it allowed the researcher to subject each informant to similar questions with the others and that it was time serving since the respondents simply answered what was asked by the researcher. The participant observation checklist was used because it helped the researcher to observe certain behaviour of the participants and the way signs were used. Moreover, it helped the researcher collect data that might not have been collected in the other stated instruments. In addition, the respondents became more comfortable with the researcher as they interacted.

3.9 Procedure for Data Collection

The Questionnaires were distributed to participants and collected back after one week. As other groups were answering the questionnaires the researcher was also interviewing the other participants. The Researcher used the checklist to observe what was both going on in classes during lessons and outside the classroom during co-curricular activities such as sports and other games.

3.10 Data Analysis

Data collected from the questionnaires was analysed qualitatively using the thematic approach.

3.11 Ethical Consideration

Permission was obtained from the Head teacher before administration of questionnaires and interviews. Participants were advised not to write their names on the questionnaires . Teachers and senior teachers signed the concert forms while the parents signed for the learners because most of the time learners do not make their own decisions due to age limit. Participation was voluntary and that any participant who wanted to withdraw was free to do so without any condition attached. The researcher explained that the results would only be used for academic purposes.

3.12 Summary

To sum it up, the Chapter discussed descriptive research design which helped to describe the research findings and the population, where the target population included learners with hearing impairments, teachers, senior teachers and parents. Research sites were also indicated which included the selected primary units of Lusaka and Copperbelt Provinces. The sample size consisted of 120 participants. Gender was well balanced as it involved 60 males and 60 females. Purposive and Random sampling were used as sampling techniques in the study. Questionnaires, interview schedules and participant observation checklist were instruments for data collection. The data collected was analysed qualitatively using thematic approach. Ethical issues were also considered.

CHAPTER FOUR - PRESENTATION OF RESEARCH FINDINGS

4.0 Introduction

This Chapter presents the findings of the study aimed at determining contribution of Sign Language Variation to the academic performance of Primary School Learners with hearing impairment.

The findings are presented according to the research questions of the study starting with findings from learners, teachers, senior teachers and their parents. The questions of the study were: What is the contribution of sign language variation to the academic performance of primary school learners with hearing impairments?, what factors have influenced Sign Language variation in Primary Schools for learners with hearing impairments?, what challenges do primary school learners with hearing impairments face as a result of sign language variation?, and what measures should be put in place to address the challenges if any of Sign Language Variation?

4.1 Contribution of sign language variation to academic performance of primary school learners with hearing impairments

4.1.1 Views of Learners on contribution of sign language variation to academic performance

This task assessed how Sign Language Variation contributed to learner's academic performance. Learners were asked whether Sign Language Variation contributed to their academic performance. The results in table 1 below indicate that twenty eight (56%) of the learners said that signs of the learners and teachers were not the same. Seven (7) represented by 14% indicated that learners misunderstood concepts put across to them by teachers in sign language. Five of the participants (10%) stated that the instructions given to them by teachers were not clear while the other 5 (10%) said that sign language variation improved their sign language. Three (3) learners represented by 6% indicated that teachers wrongly observed signs made by the learners. There were only 2 respondents (4%) who indicated that they did not know anything. When asked further, the learners indicated that subjects like Integrated Science, Mathematics, Social and Developmental Studies were very difficult to understand as most of the concepts do not have signs which make the learners and teachers create the signs which cannot be understood by others. The findings clearly indicate that sign language variation negatively contribute to their academic performance as they differ

from place to place. However, a few of the learners still believe that these Sign Language variations improve the academic performance.

Table 1 Views of Learners on contribution of sign language variation to academic performance

Learners response	Frequency	Percent
Signs of the learners and teachers were not the same	28	56.0
Learners misunderstood concept in class put across to them	7	14.0
Instructions given to them by teachers were not clear	5	10.0
sign language variation improves their sign language	5	10.0
Teachers wrongly observed signs made by the learners	3	6.0
Did not know	2	4.0
TOTAL	50	100.0

4.1.2 Views of Teachers on the contribution of sign language variation to academic performance

Teachers were asked whether variation in Sign Language contributed to academic performance of learners. Findings were that 26 out of the 30 teachers who participated in the study indicated that variations in Sign Language negatively contributed to academic performance of learners. Teachers were further asked to provide reasons how variations in Sign Language negatively contributed to academic performance. Several reasons were given such as signs of the learners and the teachers were not the same, instructions given to them in Sign Language were not clear, teachers wrongly observed signs made by the learners. However, few of the participants observed that Sign Language variation contributed positively in the academic performance as show in Table 2 below. Teachers also pointed out that information subjects such as Social and Developmental Studies (SDS), Integrated Science were difficult to explain in Sign Language. This resulted into introduction to various signs that could not be understood by others. On the other hand, a few teachers still had the views that Sign Language variation had no serious implications on the academic performance but improves the learners' academic performance.

Table 2: Views of Teachers on the contribution of sign language variation to academic performance

Teachers' views	Frequency	Percent
Signs of the learners and teachers were not the same	12	40.0
Learners misunderstood concept in class put across to them	5	17.0
Instructions given to them by teachers were not clear	6	20.0
sign language variation improves their sign language	4	13.0
Teachers wrongly observed signs made by the learners	2	07.0
Did not know	1	03.0
Total	30	100.0

4.1.3 Views of senior teachers on contribution of sign language variation to academic performance

As a way of verifying the views of learners and their teachers about the contribution of variation of Sign Language to learners' academic performance, senior teachers were also asked to provide their views. It was found that out of the ten senior teachers, four (4) of them indicated that variation in Sign Language negatively contributed to academic performance of learners. To this effect, one of the senior teachers said *"How do you expect learners to perform well in class and outside class when the signs made by them are different from those by their teachers. The variation brings communication breakdown."* An example given by senior teachers of the areas of concern where signs varied were information subjects like Social and Developmental Studies. Subjects such as Creative and Technology Studies were easier to teach as signs were not very different from the other groups. Table 3 below presents the summary of the views of senior teachers on how variations of Sign Language negatively contributed to academic performance of learners.

Table 3: Views of senior teachers on the contribution of sign language variation to academic performance

Contribution of Sign Language variations performance	Frequency	Percent
Signs of the learners and teachers were not the same	4	40.0
Learners misunderstood concept in class put across to them	3	30.0
Instructions given to them by teachers were not clear	2	20.0
Teachers wrongly observed signs made by the learners	1	10.0
Total	10	100.0

4.1.4 Views of Parents on the contribution of sign language variation to academic performance

Parents of learners with hearing impairments were also asked to provide their views on the contribution of variation in Sign Language to the academic performance of their children. There were thirty (30) participants in the study. Ten of them had the education

level ranging between seven (7) and nine (9) years of schooling, while fifteen (15) participants were between ten (10) and twelve (12) years of education. Only five (5) of the parents were between thirteen (13) and seventeen (17) years of education. Their level of education enabled them to read and write which made them even easier to understand the Sign Language variation especially when it came to helping them with homework. They were able to notice the differences in their Sign Language which they used before their children went to school.

Apparently, all of them felt Sign Language variation negatively contributed to their children performance. One of them said, *“It is not good to see differences in signs used by teachers later on differences between teachers and children. If teachers use different signs among themselves and different signs between themselves and their learners, it brings chaos. Surely, children end up not understanding what their teachers communicate to them and end up poorly performing in class activities especially in subjects like English, Social and Developmental Studies, and mathematics.”* However two of the respondents mentioned that sign Language variation improved the learners’ academic performance. The summary of the views of parents on how variations of Sign Language negatively contributed to academic performance of learners is presented in table 4 below.

Table 4: Views of Parents on the contribution of sign language variation to academic performance

Views of Parents	Frequency	Percent
Signs of the learners and teachers were not the same	2	6.7
Learners misunderstood concept in class put across to them	8	26.7
Instructions given to them by teachers were not clear	15	50.0
Sign language variation improves their sign language	2	6.7
Teachers wrongly observed signs made by the learners	3	10.0
Total	30	100.0

4.2 Factors influencing Sign Language variation

4.2.1 Views of Learners on factors influencing Sign Language variation

To examine the factors influencing Sign Language variation, thirty (30) out of fifty (50) learners indicated that Sign Language variation was as a result of acquiring Sign Language through friends while eighteen (18) out of 50 learners said it was through teachers. There were only two (2) learners who said that it was through parents. For example, one of the learners interviewed mentioned that learners were able to sign, after learning signs from the teacher or friends. Another learner said *that “Some learners are able to sign some signs after teach them from parents who were deaf hence Sign Language Variation.”* Based on the findings from the learners, it can be said that friends and teachers are the prominent factors that influence Sign Language variation.

4.2.2 Views of teachers on factors influencing Sign Language variation

Teachers were also asked whether Sign Language variation was influenced by acquiring signs from friends, teachers or parents. Findings were that 29 (67%) out of the 30 teachers who participated in the study indicated that variation in Sign Language was influenced by acquiring signs from friends and teachers. One of the teachers interviewed said *“Learners are able to sign, signs after learning from the teacher.”* Table 5 below shows the summery of the factors.

Table 5: views of teachers on the factors influencing Sign Language variation

Views of teachers	Frequency	Percent
Through friends	20	67.0
Through teachers	09	30.0
Through parents	01	3.0
Total	30	100.0

4.2.3 Views of senior teachers on factors influencing Sign Language variation

To verify the views of learners and their teachers about the factors influencing Sign Language variation senior teachers were also asked to provide their views. It was found that out of the ten senior teachers, eight (8) of them indicated that variation in Sign Language was influenced through the acquisition of Signs through friends and teachers.

To this effect, one of the senior teachers said *“Learners learn Sign Language through friends while others learn through teachers. How do we expect a learner to learn well in class when his/her signs are different from the friends and teachers?”* The other senior teacher said that *some learners were able to sign some signs after learning them from friends.* The findings indicate that friend, teachers and parents are the major factors that influence Sign Language variation.

4.2.4 Views of parents on factors influencing Sign Language variation

The parents of learners with hearing impairments were also asked to provide their views on the factors that influence Sign Language variation. Thirty (30) participated in the study. Apparently, the majority of them felt friends, teachers and parents were the factors that influenced sign Language variation. One of them said, *“Some learners are able to sign some signs after learning from friends, teachers or parents. In fact, these children come into our homes with different signs they learn from friends and teachers, which brings communication barrier.”* Based on the study findings, it indicates that teachers, friends are the major factors that influence Sign Language variation as summarized in table 6 below.

Table 6: Views of Parents on factors influencing Sign Language variation

Way of acquiring Sign Language?	Frequency	Percent
Through friends	10	33.3
Through teachers	18	60.0
Through parents	2	6.7
Total	30	100.0

4.3 Views on how culture, environment and training institutions influence Sign Language variation

In addition to the above mentioned factors, other reasons were also outlined as factors that caused Sign Language variation. These reasons include environment, culture and training institutions.

4.3.1 Learners' views on how culture, environment and training institutions influence Sign Language variation

When learners were asked to give their views on the other factors, twenty two (22) out of 50 learners said that Sign Language variation was caused by environment, eighteen (18) said it was because of culture while ten (10) said it was caused by the type of training institution one attended. One learner said, *“Some learners are able to sign signs according to the environment they live in while others sign signs according to their teacher’s training institutions.”* The study findings from the learners imply that environment, culture and training institutions are some of the factors that influence the variation of Sign Language.

4.3.2 Teachers' views on how culture, environment and training institutions influence Sign Language variation

The teachers were also asked whether variation of Sign Language was influenced by environment, culture and training institutions. Findings from the study were that fifteen (15) out of thirty (30) teachers said that environment influenced Sign Language

Variation, ten (10) out of thirty (30) represented by 33.3% said that it was influenced by culture. Five participants out of the 30 were those who said that variation of Sign Language was influenced by the institutions where teachers were trained. One of the teachers interviewed said *“Learners are not able to communicate when they come from different environments.”* The findings were that all the 30 teachers who participated in the study indicated that variation in Sign Language was influenced by environment, culture and the training institution one came from.

4.3.3 Senior teachers' views on how culture, environment and training institutions influence Sign Language variation

To make a follow up of the views of learners and their teachers about how environment, culture and training institutions influence the variation of Sign Language, senior teachers were also asked to give out their views. It was found that all the ten (10) senior teachers indicated that variation in Sign Language was influenced by environment, culture and institutions. To this effect, the other senior teacher said that some learners were able to sign according to their culture while some teachers signed according to how they learnt during their training time that in turn used different signs from learners'. Based on the study findings, culture, environment and training

institutions contributed to the variation of Sign Language. The results are indicated in table 7 below.

Senior teachers views	Frequency	Percent
Environment	03	30.0
Culture	01	10.0
Institutions	06	60.0
Total	10	100.0

Table 7: Senior teachers’ views on how culture, environment and training institutions influence Sign Language variation

4.3.4 Parents views on how culture, environment and training institutions influence Sign Language variation

Parents of learners with hearing impairments were also asked to provide their views on the other factors that influence Sign Language variation. Thirty (30) participated in the study. Apparently, all of them felt environment, culture and training institutions were the other factors that influenced sign Language variation. One of the parents said, “Some learners are able to sign some signs according to their culture.” The other parent said “Our children learn Sign Language from their teachers at school while others go out in different environment to play. Based on the study findings, it can be concluded that environment, culture and training institutions are some factors that influence Sign Language variation as summarized in table 8 below.

Table 8: Parents views on how culture, environment and training institutions influence Sign Language variation

Views of Parents	Frequency	Percent
Environment	15	50.0
Culture	5	17.0
Training institutions	10	33.0
Total	30	100.0

4.4 Teachers' Competency in Sign Language

4.4.1 How Learners Ranked Teachers' Competency in Sign Language

A midst variation in signs by teachers and learners, it was found that some teachers did not have fluency in Sign Language. Table 9 below shows how learners ranked their teachers.

Table 9: How Learners Ranked Teachers' Competency in Sign Language

Learners' responses on teachers' competence	Frequency	Percent
Had a lot of difficulties in Sign Language	35	70.0
Able to sign with minimal difficulties	10	20.0
Able to Sign	5	10.0
Total	50	100.0

4.4.2 How Senior Teachers Ranked Teachers' Competency in Sign Language

When senior teachers were asked to give out their views on how teachers' competencies could be ranked, It was found that six (6) out of the ten (10) senior teachers said that teachers had a lot of difficulties in Sign Language, three (3) senior teachers indicated that teachers were able to sign with minimal difficulties. Only one (1) senior teacher out of ten senior teachers, who participated in the study, indicated that teachers were able to sign with no difficulties. According to the findings, most of

the teachers were not fluent in Sign Language, hence challenges in communication between teachers and learners.

4.4.3 How Parents Ranked Teachers' Competency in Sign Language

Parents of learners with hearing impairments were also asked to provide their views on the teachers' competencies in Sign Language. Twenty one (21) out of thirty (30) parents who participated in the study mentioned that teachers had a lot of difficulties in Sign Language. Seven (7) said that teachers had minimal difficulties in Sign Language while three (3) said that teachers were very fluent in Sign Language. Based on the study findings, it can be concluded parents said that teachers were not fluent in Sign Language due to Sign Language variation.

4.5 Challenges caused by Sign Language variation

4.5.1 Views of learners on the challenges caused by Sign Language variations

The learners were asked to give their views on the problems caused by Sign Language variation. The findings were that most of the challenges were, poor performance during examinations, poor understanding of concepts during lessons, lack of participation in co-curricular activities such as sports, communication barrier during educational tours. Furthermore, some challenges could be experienced during home works as most parents fail to communicate with their hearing impaired children. Table 10 below indicates the challenges.

Table: 10: Views of learners on the challenges caused by Sign Language variation.

Learners' response on teachers' competence	Frequency	Percent
Poor performance in examinations	10	20.0
Difficult to grasp concepts during lessons	12	24.0
Low participation in co-curricular activities	8	16.0
communication barrier during educational tours	7	14.0
Poor performance in home work	7	14.0
Poor adaptation to new environments	6	12.0
Total	50	100.0

4.5.2 Views of Teachers on the challenges caused by Sign Language variations

Teachers were also asked whether there were any challenges that were caused by Sign Language variation. The findings from the study were that ten (10) out of thirty (30) teachers said that learners with hearing impairments found it difficult to grasp concepts in class during lessons. Six (6) teachers said that learners were performing poorer during examination while five said that these learners did not do their homework due to communication break down with their parents. It was pointed out by four (4) teachers that in most cases these learners did not have an opportunity to participate in co-curricular activities such as sports. Three (3) of the teachers indicated that communication barrier during educational tours was another challenge. Furthermore, some challenges could be experienced when it came to a learner adapting to the new environment especially during transfers. Based on the findings, it shows that Sign Language variation has resulted into a number of challenges as stated above.

4.5.3 Views of senior teachers on the challenges caused by Sign Language variations

In the same vein, senior teachers were asked to give out their views as to whether there were any challenges that resulted from the variation of Sign Language. It was found that three (3) out of ten senior teachers said that learners found it difficult to grasp the concept during lessons, two (2) indicated that the results were poor during examinations while the other two indicated that such learners were not performing the tasks of homework due to the communication barrier that existed between learners and parents or caregivers. . Low participation in co-curricular activities, lack of educational tours and poor adaptation to new environments were each said by one (1) senior teacher as a problem that resulted from Sign Language variation.

4.5.4 Views of parents on the challenges caused by Sign Language variations

The Parents of learners with hearing impairments were also asked to provide their views on the challenges that result from the variation of Sign Language. All the thirty (30) parents who participated in the study indicated that Sign Language variation had brought many challenges. These challenges have been indicated in table 11 below.

Table: 11: Views of parents on the challenges caused by Sign Language variations

Parents' response on teachers' competence	Frequency	Percent
Poor performance in examinations	6	20.0
Difficult to grasp concepts during lessons	8	27.0
Low participation in co-curricular activities	6	20.0
Lack of educational tours	3	10.0
Poor performance in home work	5	16.0
Poor adaptation to new environments	2	07.0
Total	30	100.0

4.6 Measures to overcome the challenges caused by Sign Language variation

4.6.1 Views of learners on how to overcome the challenges caused by Sign Language variations

The learners were asked to select from the given options on the measure that could be employed to overcome the challenges caused by the variation in Sign Language. The findings were that all learners in the study said that there were a lot of measures that could be put in place to overcome these challenges. One learner said “The hearing impaired learners are not given enough time during examination and that our scripts are marked by ordinary teachers.” Table 12 below summarizes the measures on how to overcome the challenges.

Table: 12: Views of learners on how to overcome the challenges caused by Sign Language variations

Learners' response on the measures	Frequency	Percent
Provide specialist teachers in Special Units	15	30.0
Allocate more time during examinations	12	24.0
Orient the so called normal on the importance of Sign Language	10	20.0
To Provide Zambian Sign Language Dictionaries	6	12.0
Encourage the formation of Sign Language Clubs in schools	7	14.0
Total	50	100.0

During the focus group questions, learners were further asked to suggest other measures that could help alleviate the challenges of Sign Language variation. A suggestion from one learner was that each sign introduced to learners with hearing impairment from various subjects should go with a picture for easier understanding.

Another learner stated that more teachers should be encouraged to use Signs when teaching all subjects to learners with hearing impairment. "It is just fair that Sign Language is used to the learners with hearing impairment because their mode of communication is through Signs. This will also alleviate Sign Language Variation in learners." In addition one learner said that there was need to harmonize the signs so that all learners use the same signs.

4.6.2 Views of Teachers on how to overcome the challenges caused by Sign Language variation

Teachers were also asked to select from the given list of measures that could be employed to curb the problems caused by variation in Sign Language. The responses were, nine (9) out of thirty (30) teachers said that learners with hearing impairments should be taught by specialist teachers in sign language. Seven (7) teachers who were represented by 23% said that the time allocated to the learners during examinations was

not enough. Six (6) of the respondents represented by 20% indicated that there was need to orient the hearing individuals on the basics of Sign language so that they could easily interact with the hearing impaired learners in all areas of life. Five (5) of the teachers mentioned that the provision of Sign Language Dictionaries in schools would aid the learning of Sign Language while the remaining three (3) teachers plainly indicated that there was need to encourage the formation of Sign Language Clubs in all schools so as to help the learners to use the same signs.

Teachers were also asked during focus group questions to give their suggestions on what could be done to alleviate Sign Language Variation challenges in Learners. One of the views was that there was need for the Government to provide materials suitable for the Learners with Hearing Impairment. This response was from 10 teachers without qualifications, 12 teachers with Diploma qualifications and 2 teachers with Degree qualifications. These made a total of 24 (80%) out of 30.

One teacher without qualifications in special education said that in order to alleviate Sign Language Variation in Learners with hearing impairment, the Government should provide teaching and learning materials that are suitable for the hearing impaired. Thus, books should be designed only to suit the learners with hearing impairments. Another teacher observed that exposure to meaningful syllabus designed in Sign Language for all subject at Grade Seven levels can be very helpful.

Ten (10) teachers represented by (33%) from the population mentioned that there was need for qualified teachers to teach Sign Language in all subjects. These were 2 teachers without qualifications, 4 teachers with Certificates and 4 Diploma holders. One teacher with a Certificate noted that the school should place qualified teachers in Grade Seven Classrooms which have learners with hearing impairment so that they can teach Sign Language in all subjects using Signs. Another teacher noted that teachers should be taught how to use Zambian Sign Language dictionaries in schools.

The other suggestion was that the other means of teaching learners with hearing impairment should be introduced other than using Zambian Sign Language dictionaries. Such methods could be group work, total communication, class discussions and pupil to pupil tutoring and field trips through educational tours. This response was from 4

teachers with no specialized training in special education and 4 Diploma holder teachers.

A teacher with Diploma qualification mentioned that the Government should introduce other means of alleviating sign language problems such as making Sign Language an examinable subject at grade seven levels which might encourage learners to improve their vocabulary for Sign Language.

4.6.3 Views of senior teachers on how to overcome the challenges caused by Sign Language variation

To find out whether the selected responses by learners and teachers on the measures to the problems resulting from the Sign Language variation could hold water, senior teachers were also asked to provide their views from the list of responses. It was found that four (4) out of ten senior teachers said that it was very significant to equip Special Schools with Specialist teachers who could handle such learners with care. Two (2) senior teachers indicated that the examination results of learners with hearing impairments were not pleasing at all while the other two (2) indicated that it was imperative to sensitise and orient the society on the importance of using Sign Language so that the learners with such problems could be embraced in all areas of needy. Meanwhile, one senior teacher stated that there was need to provide Sign Language Dictionaries in all schools so that Sign Language could be harmonized. One other senior teacher claimed that the formation of Sign Language clubs in schools needed to be encouraged at all costs so that learners could mingle and share the signs.

When asked further during focus group questions, one senior teacher said, *“The Government through the Ministry of Education should come up with the curriculum that should suit the learners with hearing impairments. Exposure to learning materials designed in Sign Language can be the other solution to alleviate Sign Language Variation challenges in Learners with hearing impairment.”* *“Parents and other stakeholders should be oriented in sign languages,”* the other senior teacher claimed.

4.6.4 Views of parents on how to overcome the challenges caused by Sign Language variation

To verify the views of learners, their teachers and senior teachers about the measures that could help alleviate the challenges caused by Sign Language parents of learners with hearing impairments were also asked to provide their views. It was found that out of the thirty (30) parents who participated in the study, eight (8) of them indicated that it would be helpful if the so called normal individuals to be oriented on Sign language for easy communication with the hearing impaired learners. Seven of the parents said that there was need to encourage the formation of Sign Language Clubs in schools which would help them interact. Six of the parents indicated that for the learners to perform well there was need to provide teachers who were trained in special education.

To support this view, one parent said, *“Very few teachers that are trained in special education are found in the special schools, those that are trained have been deployed in ordinary schools.”* Five of the parents mentioned that time for examinations ought to be increased so that learners read and understand the instructions and questions that are not in sign language. To this effect, one of the parents said *“Learners with hearing impairments need to be given enough time during examinations. There is no way where they can be given the same time with the so called normal learners. It is unfair to our children.”* Only four of the parents said that there was need to provide Zambian Sign Language Dictionaries in these schools. The findings indicate that there is need to provide solutions to the challenges that result from the variation in Sign Language.

During the focus group questions, a parent observed that the only way to solve the problems of Sign Language challenges is by increasing the number of training institutions that will train more teachers in Special Education. He added, *“All education training institutions should include specials education courses with one of the emphasis on Sign Language.”*

4.7 Results from the observation checklist on the contribution of Sign Language variation to academic performance

During the observations the researcher noticed that there were a lot of signs varied from learner to learner, from class to class, from teacher to teacher and from school to school. For example, learners signed the word ‘water’ by placing the letter ‘W’ on the mouth while others signed the word ‘water’ by mimicking the action of drinking water.

Learners also signed the word 'sleep' by drawing the five fingers outward from the face while others sign 'sleep' by placing the right hand on the right hand side of the face mimicking the action of sleeping.

In addition, some teachers could sign the word 'goat' by using letter "V" from 'chin to forehead' while learners signed it from 'forehead to chin'.

As a participant, I signed the word 'mother' by squeezing the breast while the learners and some teachers signed it by placing the right thumb on the 'chin' while the palm faces the left hand side. In the same vein, a teacher of one of the classes together with his learners signed the word 'orange' by squeezing the right five fingers on the mouth while others signed it by the way it appeared and then pill it.

It was also observed that other teachers signed the word 'ten' by putting two fist together while learners twisted a thumb inwards. Other learners and teachers signed the 'word' father by touching the 'chin' but the learners placed the right thumb on the forehead while the palm facing the left hand.

Furthermore, other learners and teachers signed the word 'dance' by performing or mimicking the action of dance while others signed it by placing the index finger and middle finger on the left open palm and then twist inward and outward.

It was also observed that learners were not given enough time to write the examinations. In addition, learners from the special units could not be involved in sports when all the other learners were busy preparing for the inter-schools and inter districts sports festivals. When the sports teachers were asked why these learners were left behind, one of them said, "*We cannot waste time with learners who cannot be heard by the majority. How can they play when they cannot hear the whistle?*" This finding was a clear indication that learners with hearing impairments were not involved in outdoor activities because of the language barrier that exists between the two groups of learners.

When books for home work were check, it was discovered that most of the work was not done. One learner said that parents were not willing to help in the home work

because they could not communicate with them. Parents indicated that Sign Language was just too difficult a language to start using it.

It was also discovered that very few special units had few Sign Language Dictionaries. Most of the teachers complained of having no dictionaries that could help to find a sign of a difficult word. Furthermore, no special unit visited had a Sign Language Club. A situation that was not fair.

4.8 Summary of Research Findings

This Chapter has indicated that Sign Language variation contributed negatively to the academic performance of learners with hearing impairments because most of the signs used by learners, teachers, senior teachers and parents were not the same. A few participants indicated that Sign Language variation contributed positively to the academic performance of these learners. Factors that influenced Sign Language variation such as friends, parents, culture, environment and training institution a teacher was trained were also outlined. It came out that challenges such as educational tours, examinations and co- curricular activities were the areas that were affected due to Sign language variation. Learners on transfers were also victims of the challenges resulting from Sign Language variation. Subjects that suffered more included: information subjects such as Social and Development Studies, Science and Mathematics. It also came out that by provision of specialist teachers, Sign Language Dictionaries and encouraging the formation of Sign Language Clubs would help to address the challenges of Sign Language variation.

CHAPTER FIVE - DISCUSSION OF RESEARCH FINDINGS

5.0 Introduction

This chapter discusses the findings presented in chapter four. The findings are organised on the basis of themes and research objectives.

5.1 The contribution of sign language variation to academic performance of learners with hearing impairments

Regarding research objective number one: contribution of Sign Language variation to academic performance of primary school learners with hearing impairment; the study findings were that sign language variation negatively contributed to learners' academic performance. Several reasons were outlined.

One of the indicators of the contribution of Sign Language Variation to the academic performance of learners with hearing impairments was that the signs of the teachers and that of learners were not the same. This makes a learner not to capture the concept during lessons presentation. For example, information subjects such as Social and Development Studies and English are difficult to teach the concepts that have no signs. Most of these subjects such as mathematics and Science have formulae and equations including technical words in Science such as "phosphorus", "Ions". "Limestone", Sulphuric acid", "photosynthesis" that have no equivalence in Sign Language. Similarly, Hill and Lucas (2009) in their findings mentioned that Sign Language Variation decreases ones academic performance especially in subjects that have terminologies with no equivalence in Sign Language.

Similarly, Corson (2010) in his findings mentioned that most learners with hearing impairments had Sign Language Variation even at the appropriate grade level. This simply shows that the signs the learners use and that of a teacher are different. When giving them instructions, Sign Language Variation does not make learners achieve good academic performance.

It was observed that as teachers present lessons to the learners, it was usually difficult for learners to understand and grasp the concepts taught to them. As teaching and learning was done, it was also difficult for learners to ask questions to teachers and vice versa. Participants also indicated that the instructions that were given to learners in Sign

Language by teachers were not clear. It was also mentioned that as both teachers and learners were trying to communicate, they wrongly observed signs made by each other.

When participants were asked to elaborate further on the variations, they stated that signs were not the same in different individuals. For example, the sign for the word “Deaf” in variant one, individuals sign from “ear - to - chin” while in variant two others sign from “chin - to - ear”. In variant three, “Index finger contact - cheek - to - open palm.” Variant four point index finger ear, then press index finger of double B shapes together palms down.” In variant five, “On - hand performance. Position the backward dominant flat hand, fingers pointing up-ward dominant flat hand fingers pointing up-wards beside the right side of the head, bent on the wrist joint and move the hand down/up across the ear in a bi-directional movement.” This finding is in consistence with the findings of Mulrone (2002) on the effect of Sign Language variation on Primary School Grades. He found that the word “Deaf” had three variants in citation form “Deaf” is signed from “ear - to - cheek,” from “cheek - to - ear” or “reduced contact on the cheek.” (See appendix 7).

In addition, signs may be wrongly observed due to their features of location and placement. For example, Signs with Downward Movement. Participants indicated that signs of this nature are produced at the forehead or temple which resulted into a wrongly observed sign. The findings are in line with Lucas et al (2001) who found that the verb “know” which shares location features with “for” were very confusing. In addition to “Know” there were other verbs of thinking and perception such as “Forget”, “Remember”, a variety of adjectives such as “Dizzy” and nouns for instance, “Father”, Prepositions such as “For” and interrogatives like “Why”. They concluded that such words had the similar initial location of the hand shape that could lead to not understanding what one is trying to communicate.

Furthermore, Signs vary because of the hand movements as one signs. For example, when one signs the word “Father” it must move to the front of the forehead only once. If it moves twice, it then changes the meaning to “Grandfather.”

The position of a sign also matters. For example, when signing, any word, it is also very important to put the sign where it is visible and always should be above the waist.

Any sign below the waist may not be seen to a person one is trying to communicate with.

These above and many other reasons contributed negatively to the academic performance of learners with hearing impairments in many areas. In fact at one point learners argued that when Signs of the teacher are different, it would be difficult for learners to understand the concepts in all subjects. Similar to this finding, Lucas et al (2003) noted that when learners with hearing impairments do not follow ones signs, it is difficult for them to perform better in their academic circles.

From the observations made by learners, teachers, senior teachers and parents, to some extent this could be true because most of the learners with hearing impairments do not perform well in academics. It is therefore, inevitable that these learners are exposed to Sign Language Variations. Teachers, who have knowledge of Sign Language, should give clear instructions to learners and ensure that the concept is clearly presented to the learners. However, it is evident that only a few learners with hearing impairments are able to sign and their ability to sign is not grade level appropriate and this continues even in high grades to have contributed not to have good academic performance in all subjects. Similarly Mayberry (2007) in his findings mentioned that most learners with hearing impairment experience Sign Language Variation even at the appropriate grade level.

Having looked at the views of all participants in the study on how Sign Language contributes to the academic performance of learners with hearing impairments, we would say that all of them felt that variation in Sign Language negatively contributes to the learners' performance. The worry is that if teachers use different signs among themselves and different signs between themselves and their learners, it brings chaos and total confusion. Indeed, learners with hearing impairments end up not understanding what their teachers communicate to them and end up poorly performing in all learning areas. However, there were a few respondents who argued that Sign Language variation contributed to the academic performance of the learners with hearing impairments positively.

5.2 Factors influencing Sign Language variation

Regarding research objective number two: Factors that influenced Sign Language variation in Primary Schools for learners with hearing impairments; the findings in the study indicated that Sign Language variation was caused by the methods in which Sign Language was acquired which included friends, teachers, parents, culture, environment and Training Institutions where teachers were trained.

Learners, who learn Sign Language from friends, have different signs from those who learn from teachers and parents. Each individual learner uses the language the way he/she learns it. Evidence is usually seen through few learners who are able to use signs that they have learned from friends, teachers and parents.

Sign language variation also results from culture, environment and training institutions. One of the factors indicated by all respondents was culture. It is believed that each culture has its own Sign Language. Therefore, as learners come to school, the Sign Language also varies, hence, academic performance is affected. Thus, different cultures with different environments have different sign languages. For example, in the Northern Province, the Bemba people are not cattle keepers therefore; the sign for milk is made by mimicking a woman squeezing the breast. In this case, the culture of the Bemba creates a sign variation in Zambian sign language that is only seen in the Northern Province or by those who are Bemba. In other provinces such as Eastern and Southern, the sign for milk is produced by mimicking the action of squeezing milk from a cow's udder Mbewe (2010).

Another example still comes from the Eastern Province of Zambia where people drink beer from a calabash. In turn, learners from the Eastern Province perform the sign of beer by mimicking the action of shaking the beer container in a circular motion with two hands and bringing it to the mouth as if to sip. In the Northern Province of Zambia people drink beer by sucking it from a container with a copper rod or holed reed. In turn learners with hearing impairments from Northern Province make the sign of beer by imitating the action of lips sucking from the rod or reed Mbewe (2009). This finding is also in consistence with Miles (2006) who pointed out that sign Language variation contributed negatively to the academic performance of primary school learners with hearing impairments.

The other reason for Sign Language Variation was the Training Institutions. Learners are exposed to different teachers from different Training Institutions. Some teachers are familiar with Zambian Sign Language, while others are familiar with American Sign Language or Traditional Sign Language. This simply shows that teachers use sign language to teach learners according to the Sign Language of their Training Institutions. Mbewe (2009) in his findings mentioned that each teacher signs according to where one was trained.

Among the reasons also included, learners are unable to know certain signs when they move from one school to another. Thus, they face a lot of challenges in coping up with different signs of that new place. Some teachers noticed that learners face challenges in helping each other because they have different signs on certain words. The teachers argued that when learners do not know some of the signs signed by the teacher, learners cannot grasp concepts in a lesson. These factors influence Sign Language Variation contributes the learner's academic performance negatively.

5.3 Challenges faced by learners with hearing impairments

Regarding research objective number three: Challenges faced by Primary school learners with hearing impairments face as a result of sign language variation. The findings in the study indicated that both interview schedule and questionnaires were used. Most of the respondents mentioned that a lot of challenges faced by these learners were as a result of Sign Language variation.

In most cases teachers use signs that are different from learners when teaching. Signs differ because learners learn different signs from friends, parents and guardians. Similarly Fiddel and Jonson (2008) in their findings mentioned that learners with hearing impairments face challenges during education tour as a result of Sign Language variations. This is simply because learners and tour guides have different signs.

Furthermore, Sign Language variation was a barrier to communication because learners meet different signs from friends, teachers or parents. When learners learn how to sign a new sign from a friend, parent or guardian, there is usually a communication

breakdown between teachers and learners. It takes a lot of time for them to agree on the same sign. It is for this reason that their academic performance is usually affected.

In addition, signing two or three different signs for one word is a challenge. For example, the word “Deaf” may be signed in two forms “ear to chin” or “chin to ear” a process governed solely by phonological constraints. Similarly Lucaus et al (2003) in their findings mentioned that there are more than six signs for ‘birthday’ in American Sign Language. It is therefore inevitable that these learners are exposed to Sign Language Variation despite a word having two or more signs.

When learners move from one school to another creates another challenge. For instance, pupils who go on transfer find it hard to grasp concepts in a lesson. Examples were drawn from learners who were transferred from Magwero School for the Deaf to St. Joseph School for the Deaf and those that were transferred from St. Joseph to Munali Special Unit for the Deaf. These learners had different Signs in most cases. Some respondents noticed that learners faced challenges in helping each other because they have different signs on certain words. They argued that when learners do not know some of the signs that are signed by the teacher and their friends, learners find it difficult to capture a concept in a lesson. This is because the signs of a teacher and that of learners differ. Some senior teachers had noticed that learners face challenges when they receive new teachers from other schools or places with new signs. The senior teachers argued that when learners do not know some of the signs signed by the teacher, they lag behind in their academic performance.

Moreover, parents and guardians also use different signs at home hence Sign Language Variation. These differences contribute to academic performance of learners negatively. However, it is evident that only few learners are able to sign and their ability to sign is not grade level appropriate and this continues in a high grade and hence learners face challenges in all subjects.

Another challenge faced by learners with hearing impairments has been attributed by the teachers’ incompetence in sign Language. It is believed that teachers who have no training in Sign Language are incompetent in it. It was reported that most of the teachers who teach these learners are those that have been seconded from the main stream. It is in these teachers where Sign Language is used incompetently as they have

no knowledge of it. It is nonsensical for teachers to use signs which are not familiar to learners because learners use signs in order to learn. Sign language is made perfect in terms of teachers' signing correctly and familiar signs to learners. It is in consistence with Hornberg (2008) who stated that correct signs in teaching help learners with hearing impairment increase their knowledge in sign language thereby improve their academic performance.

Most of the time teachers fail to sign words in many subjects, instead they teach orally. It was stated by some learners that teachers that were incompetent in the skill of sign language could not help learners in their academic circles because learners learn through sign language.

It was also stated that poor performance in examinations was also another challenge. Learners were performing poorly because the examinations are not set in Sign Language but in Signed English. The same examination that is written by the hearing learners is also given to the learners with hearing impairments. It means that the language that is used during the examinations may have different signs. To make the situation worse, the examination scripts for learners with hearing impairments are marked by teachers who are incompetent or have completely no knowledge of how these learners write and speak. Sign Language is actually telegraphic and they write from any direction so long it conveys the meaning in their own language. For example, the English sentence, "My mother has gone to the market" the same sentence can be written in Sign Language as follows: "Mother go market" or "Market mother go" or "Market go mother" or "go mother market". When an examination script with such a language is given to a marker who is incompetent with this language, the candidate will be given zero percent because it will seem as if nothing was written by the learner! A situation that is serious.

Furthermore, learners are not helped in home work by their parents and caregivers because of the language barrier that exists between them and their children. If parents used the same language that is used by their children at school or if they had an interest of learning the Sign Language used by their children, home work was going to be the thing of the past.

The learners with hearing problems are also learners just like any other learners. They need to go on educational tours and participate in co-curricular activities such as sports. Due to Sign language handicap of the hearing individuals, it has been very difficult for these learners to be included in such events.

From the reasons stated above we conclude that Sign Language variation has brought a lot of harm than good to learners with hearing impairments especially in their academic circles.

5.4 The Measures to overcome the challenges caused by Sign Language Variation

Regarding research objective number four: Measures that should be put in place to overcome the challenges caused by Sign Language Variation; most of the respondents (learners, teachers, Senior teachers and Parents) interviewed indicated that provision of specialist teachers, Zambian Sign Language Dictionaries and introduction of Sign Language Clubs were very cardinal in addressing these challenges of Sign Language variation.

Respondents viewed the formation of Sign Language clubs as one of the interventions to be considered. These Sign Language Clubs are informal initiatives that support Standard Sign Language of instruction in schools by making relevant and interesting Sign Language materials accessible to community members who offer a valuable resource that supplements the formal Educational System. The goal of such clubs is to provide opportunities for critical thinking, questioning and building self-esteem through group-based Sign Language activities.

It is in consistent with Mayberry (2007) who conducted a study in Nigeria on the effect of Sign Language Variation among Primary School Learners with hearing impairments. The Study found that in order to support disadvantaged learners' academic success, school communities around the world have adopted a variety of creative and effective interventions.

It was observed that schools should be provided with teachers who have undergone special education training. These teachers will help teach the learners with hearing impairment better than the ordinary teachers. For example, one teacher stated that some learners were able to sign words well after being taught by specialist teachers.

The specialist teachers should also be given the responsibilities of marking the examination scripts for the learners with hearing impairments as they understand and follow these learners' writing with less difficulties.

Among the reasons also included teachers being able to use *Zambian Sign Language Dictionary*. When doing all academic activities, some teachers had noticed that the provision of *Zambian Sign Language Dictionaries* would help them break the barrier that hindered educational breakthrough. One of the teachers interviewed mentioned that learners were able to sign some words well after going through *Zambian Sign Language Dictionaries*. Teachers argued that when learners learn how to sign, it was easy for them to learn all subjects because all subjects require signing in order for learners to understand. It is in line with the findings of Solomon (2010) research where it was noted that when learners with hearing impairment learn to sign it is easy for them to understand all subjects as well.

In general, it was stated that the use of *Zambian Sign Language Dictionary*, deploying of specialist teachers and formation of *Sign Language Clubs* in schools would help learners to break the barrier of communication.

5.5 Researcher's own observations during lessons, co-curricular activities and during general interaction with teachers, parents and learners

From the researcher's observations during lessons, co-curricular activities and general interaction with respondents, it was found that signs differed from school to school. Each school had its own *Sign language system*. However, there were instances where signs could be similar. For example, words like, "Father, Mother, Grandfather and Grandmother." These words had similar signs because they were found in the *Zambian Sign Language Dictionary*.

Furthermore, teachers' signs were also found to be different from those of the learners within the same school. The factors that lead to such variations were that teachers had come from different training institutions where the language varied. Learners were also coming from different cultures and environments where signs were different.

It was very clear from the homework books that parents and caregivers did not help their children. Learners explained that their parents did not help them because of the

communication breakdown that was there between them. Hence, need to orient these parents/caregivers and the community at large on the importance of Sign Language.

From the researchers' own observations, it can be concluded that Sign Language variation negatively contributes to poor academic performance of learners with hearing impairments.

5.6 Summary of the discussion of findings

It has been discussed that most participants observed that signs of learners and that of the teachers were not the same. This contributed negatively to the learners' academic performance while a few respondents were in favour of Sign Language variation that it improves their academic performance. Furthermore, teachers, friend, parents, culture, environment and training institutions were some of the factors that influenced Sign Language variation. It has been discussed that during lesson presentations by the teachers, during examination, and during education tour by tour guides were the areas that faced a great deal challenges which result from Sign Language variation. However, these challenges could be addressed by the provision of specialist teachers, by introducing Sign Language Dictionaries and Sign Language Clubs in Schools.

CHAPTER SIX – CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

This chapter concludes the Study and also makes recommendations based on the findings of the Study.

6.1 Conclusion

The study revealed that Sign Language Variation has contributed towards the academic performance of learners with hearing impairments negatively. These effects could be seen in several areas: such as where signs between learners and teachers were not the same, learners misunderstood concepts in class that were put across to them in Sign Language. Learners were also not following instructions in some activity. However, a few respondents stated that sign language variations improve learners' academic performance.

It also emerged from the Study that Sign Language variations were caused by a lot of factors such as Sign Language acquisition, environment, culture; and training institutions. It could also be concluded that the challenges that the learners with hearing impairments face are as a result of sign Language variations which are caused by Sign Language acquisition, environment, culture; and training institutions and teachers' in competencies. Such challenges have caused poor academic performance.

It was further revealed that in order to alleviate Sign Language Variation in learners, the schools have to provide specialist teachers to teach learners with hearing impairment, to form Sign Language Clubs in schools and to provide Zambian Sign Language dictionaries in all the special schools and units where the learners are found.

6.2 Recommendations

Arising from the findings of the Study, the following recommendations are made:

1. There is need to train more teachers in Sign Language who will teach learners with hearing impairments Sign Language perfectly.

2. There is need to revise the Zambian Sign Language Dictionary which has been in schools for some time.
3. There is need for parents/caregivers and teachers to work in collaboration so that know the Sign Language used in schools and in homes. This will bring consistency in the Sign Language learnt at school as learners and their parents/caregivers will be able to practice together.
4. There is need for the government to make Sign Language an examinable subject to grade seven (7).
5. Examination script should be marked by the specialist teachers if we are to help these learners qualify with better marks
6. The government should make an effort to harmonise the Sign Language in the country to avoid the variations that have adversely affected the academic performance of the learners with hearing impairments.
7. Standard Sign Language should be made a compulsory subject in Teachers' Training Institutions
8. Further Research countrywide should be done on the variation of Sign Language as this study was only restricted to two Geographical regions only.

REFERENCES

- Aarons, D. (1996). Signed Languages and Professional Responsibility. *In Stellenbosch Papers in Linguistics, 30*: University of Stellenbosch, South Africa.
- Akach, P & O. Okombo (1997). Language Convergence and Wave Phenomena in the growth of a National Sign Language in Kenya: *In International Journal of the Sociology of Language*.
- Akach, P and Okombo, O (1997). Language Convergence and Wave Phenomena in the growth of a National Sign Language in Kenya: *In International Journal of the Sociology of Language*.
- Akamatsu, C. T., Musselman, C and Zweibel, A. (2000). Nature Vs Nurture in the Development of cognition in Deaf People: In P. Spencer, C., Erting and M. Marchark (Eds) *Development in Context: The deaf child in the family and at school Mahwah, NJ: Erlbaum*.
- Andrew, P and Aaron, D (1998). South African Sign Language: One language or many? *Stellenbosch Papers in Linguistics, 31*, pp. 1 - 28.
- Antia, S.D., Stinson, M.S and Gaustand, M.G. (2002). Developing membership in the Education of deaf and hard of hearing students in inclusive settings: *Journal of Deaf Studies and Deaf Education, 7, 2*, 14 – 229.
- Armstrong, D. F (1999). *Original Signs: Gesture, Sign and the sources of language*. Washington, D. C.: Gallaudet University Press.
- Ball, D. L., Hill, H.C, & Bass, H. (2005). Knowing mathematics for teaching: Who knows mathematics well enough to teach third grade, and how can we decide? *American Educator*.
- Beattie, R. (2006). *The oral methods and spoken language acquisition*. In P.E. Spencer and M. Marschark (Eds.) *and hard-of-hearing children*, New York: Oxford University Press.
- Bell, A. G. (2005). *The question of Sign Language and the utility of signs in the instruction of the deaf*. Washington, DC: Sanders Printing Office.

- Braden, J. P. (1994). *Deafness, deprivation, and IQ*. New York: Plenum Press.
- Brennan, W.K. (1985). *Curriculum for Special Needs*. Philadelphia: Open Press.
- Butterworth, R. R., & Flodin, M. (1995). *The Perigee Visual Dictionary of Signing*. New York: The Berkley Publishing Group.
- Carnoy, M and Chisholm, L (2008). *Towards Understanding Student Academic Performance in South Africa: A Pilot Study of Grade 6 Mathematics Lessons in South Africa*. Pretoria: HSRC
- Carnoy, M.T.S., Luschei, J., Marshall, B., Naranjo and Sorto, A (2007). *Comparing education in Panama and Costa Rica: What lessons for educational improvement?* University of Pennsylvania: Graduate School of Education (mimeo).
- Corson, H. (1999). *Comparing deaf children of oral parents and deaf parents using manual communication with deaf children of hearing parents on academic, social, and communication functioning*. University of Cincinnati, Ohio.
- Corson, H. (2010). *Comparing deaf children of oral parents and Deaf parents use manual communication with deaf children of hearing parents on academic, social, and communication functioning*. University of Cincinnati, Ohio.
- Creswell, J.W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 3rd Edition. Los Angeles: Sage Publications, Inc.
- Cummins, S. (1981). *The role of primary language development in promoting educational success for language minority students: In Schooling and language minority students: A theoretical frame work*. Los Angeles: California State University, Evaluation, Dissemination, and Assessment Centre.
- Education of Deaf and Hard of hearing students in inclusive settings: *Journal of Deaf Studies and Deaf Education*, 7, 2, 14 – 229.
- Fiddell, S. K., and R. E. Johnson. (2008). American Sign Language: The phonological Base. *Sign Language Studies* 64: 195-278.

- Forshay, I. (2009). *Deaf History, American Sign Language 305. Introduction to Deaf studies*. USA: University of Washington.
- Gordon, R.G.JR (ed) (2004). *Ethnologue: Languages of the World*, 15th Edition, Dallas, Texas: Sil International. Online Version: The Ethnologue.
- Gordon, R.G.JR (ed) (2008). *Ethnologue: Languages of the World*, 15th Edition, Dallas, Texas: Sil International. Online Version: *The Ethnologue*.
- Gordon, R.G.JR (ed.) (2009). *Ethnologue: Languages of the World*, 15th Edition, Dallas, Texas: Sil International. Online Version: *The Ethnologue*.
- Hallan, H., Daniel, P and Kaffman, J.M. (2006). *Exceptional Learners: Introduction to Special Education* 8th Ed. Boston, Allyn & Bacon.
- Hills, J. and Lucas, C. (2009). A Presence Ignored. The Case of the Black Deaf Community in the USA: Retrieved from <http://www.blackasprojectgaullude:ed.pdf>.
- Hinton, L. (2011). Language revitalization and language pedagogy: New teaching and learning strategies', *Language and Education* 25 (4): 307–18.
- Hornberger, N. H. (ed.) (2008). *Can schools save indigenous languages? Policy and practice on four continents*. Basingstoke/New York: Palgrave Macmillan.
- <http://www.blackasprojectgallaudetuniversity:ed.pdf>
- Kirk, S .A (2007). *Educating the Exceptional Children*. New York: Houghton Mifflin. Harcourt Publishing Company.
- Kirk, S .A (2009). *Educating the Exceptional Children*. (12thEd.) USA Houghton Mifflin: Harcourt Publishing Company
- Kombo, D.K. and Tromp, D.L.A (2006). *Proposal and Thesis Writing*: Nairobi. Paulines Publications: Africa.
- Labov, W. (2001). *Principles of linguistic change Vol. II: Social factors*. Malden: Oxford.

- Lucas, C and Valli, C. (1992). *Language Contact in American Deaf Community*: San Diego: Academic University Press.
- Lucas, C., Barley, B. and Vall, C. (2003). *What is Your Sign for Pizza? An Introduction to Variation in American Sign Language*. Washington DC: Gallaudet.
- Lucas, C., Barley, B. R., Bayley and Vall, C (2001). *Social Linguistic variation in American Sign Language: Social Linguistics in Deaf Communities Vol. 7*: Washington, DC: Gallaudet University Press.
- Lucas, C., Barley, B. R., Bayley and Vall, C. (2009). *Social Linguistic variation in American Sign Language: Social Linguistics in Deaf Communities Vol. 7*: Washington, DC: Gallaudet University Press.
- Marc, M., Thomastine, S., Carol, M., C., Georgianna, B., Carolyn, M and Sarah, R. (2011). *Print Exposure, Reading Habits and Reading Achievement among Deaf and Hearing College Students: National Technical Institute for the Deaf*, Rochester Institute of Technology University of Edinburgh, UK.
- Marschark, M and Spencer, P. E (2003). *Understanding spoken language development of deaf and hard-of-hearing children*: New York: Oxford University Press.
- Marschark, M and Spencer, P. E (2006). *Understanding spoken language development of deaf and hard-of-hearing children*: New York: Oxford University Press.
- Marschark, M and Spencer, P. E. (2005). *Understanding spoken language development of deaf and hard-of-hearing children*: New York: Oxford University Press.
- Marschark, M and Spencer, P. E. (2009). *Understanding spoken language development of deaf and hard-of-hearing children*: New York: Oxford University Press.
- Marshall, J. H. and Sorto, A. (2008). *Making a difference in difficult conditions: Teachers and mathematics learning in rural Guatemala*.
- Maxwell, J. A. (2005). *Qualitative Research Design: An Interactive Approach. Applied social research methods series: v. 41*. Thousand Oaks, CA: Sage Publications.

- Mayberry, R.I. (2007). When Timing is everything: Age of First Language Acquisition, Effects on Second Language Acquisition. *Applied Psycholinguistics*, 28 pp 537-54
- Mbewe, M. (2009). *Development of Sign Language in Zambia*: Government Printers, Lusaka: Zambia.
- Mbewe, M. (2010). *Development of Sign Language in Zambia*: Government Printers, Lusaka: Zambia.
- Meler, R. (2006). Determining the Diversity of Signed Languages: *Science*, 288 (54-73). Retrieved on 1st December, 2008, from Academic Search Premier Database.
- Mertler, C. A., & Vannatta, R. A. (2001). *Advanced and multivariate statistical methods: Practical application and interpretation*. Los Angeles, CA: Pyrczak, Publishing.
- Miles, D. (1998). *British Sign Language: A Beginner's Guide*. London: BC Books.
- Miles, D. (2006). *British Sign Language: A Beginner's Guide*. London: BC Books.
- Miles, M. (2000). Signing in the Seraglio: Mutes, dwarfs and gestures at the Ottoman court 1500–1700', *Disability and Society* 15(1): 115–34.
- Miles, M. B and Huberman, M. A. (1994). *Qualitative data analysis: An Expanded Sourcebook* (second Edition.) Beverly Hills: Sage
- Ministry of Education (1996). *Educating Our Future*: Lusaka, Government Printers: Zambia.
- Mithun, M. (2011). 'Being special'. In M. Haboud and N. Ostler (eds.) Endangered languages: Voices and images. *Proceedings of the conference FEL XV – PUCE I. Quito, Ecuador*, pp. 3–11.
- Mugenda, O. M and Mugenda A. G. (1999). *Research Methods, Quantitative and qualitative Approaches*. Nairobi: Acts Press

Mulrooney, K. (2002). *Variation in ASL finger spelling. In turn-taking, Finger spelling, and contact in signed languages, ed. C. Lucas, 3 – 23. Sociolinguistics in Deaf Communities*, Vol. and Washington D.C. Gallaudet University Press.

Padden, C. A and Ramsey, C (2000). *American Sign Language and reading ability in Deaf Children: In C. Chamberlain, I. P. Morford and R. I. Mayberry (Ed): Language acquisition by eye. (Mahwah N. J Eribaum).*

Padden, C. A. and Ramsey, C. (2000). *American Sign Language and reading ability in deaf children. In C. Chamberlain, I. P. Morford and R. I. Mayberry (Eds). Language acquisition by eye. (Mahwah N. J.: Eribaum).* Shulman, L.S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15, 4-14.

Padden. C (2006). *Learning to fingerspell twice: Young signing children's acquisition of finger spelling: In B. Schick, M, Marchark and P. E. Spencer (Eds.). Advances in the sign language development of deaf children: New York: Oxford University Press.*

Rosenberg, M. S. (2002). *Special Education for today's teachers: An Introduction.* USA: Pearson Education Inc.

Schirmer, B.R. (2001). *Psychological, Social and Educational Dimensions of Deafness.* Boston: Allyn & Bacon. Padden. C. (2006). *Learning to fingerspell twice: Young Signing children's acquisition of finger spelling. In B. Schick, M, Marchark and P. E. Spencer (Eds.). Advances in the sign language development of deaf children. New York: Oxford University Press.*

Smith, D.D and Tyler, N. C (2010). *Introduction to Special Education: Making a Difference.* U.S.A: Pearson Education Inc.

Stokoe, W.C (2009). *Languages in Hand: Why sign came before speech?* Washington DC: Gallaudet University Press. Retrieved on 1st December 2008 <http://www.librarykcc.hawaii.com>

Stokoe, W.C. (2001). *Languages in Hand: Why Sign came before Speech.* Washington DC: Gallaudet University Press. Retrieved 1 December 2008 from <http://www.librarykcc.hawaii.com>

APENDICES

APPENDIX 1 - QUESTIONNAIRE FOR LEARNERS

1. What is your sex?

A. Female

B. Male.

2. In which age range are you found?

A. 10-14

B. 15-18

C. 19-22

3. In Which grade level are you?

A. Grade 6

B. Grade 7

4. For how long have you been at this school?

A. 1-7 years

B. 8-10 years

C. 11-12 years

D. 13 years and above

5. How is Sign Language acquired?

A. Parents

B. Friends

C. Teachers

6. What causes Sign Language variation?

A. Environment

B. Culture

C. Training institution

7. Do you think variation in sign language has contributed to academic performance?

A. Yes

B. No

8. If the answer in question 9 above is “Yes”, how does Sign Language variation contribute to academic performance?

A. Signs of the learners and teachers are not the same

- B. Learners misunderstand questions put across to them
- C. Instructions given to them by teachers were not clear
- D. Sign language variation improves their sign language
- E. Teachers wrongly observed signs made by the learners"
- F. Do not know

9. How do you rank teachers competencies in Sign Language?

- A. 1-5 points
- B. 5-7 points
- C. 11-15 points
- D. 16-20 points

10. What challenges do learners with hearing impairments face in schools?

11. What do you think should be done to alleviate the challenges faced by the schools?
- A. The specialist teachers to be deployed in special units
 - B. Schools should be encouraged to introduction Sign Language Clubs
 - C. Intensify the use of Sign Language Dictionaries

12 If there are any challenges faced by the learners in special schools, suggest other measures that could be put in place to help solve.

APPENDIX 2 - QUESTIONNAIRE FOR TEACHERS

1. What is your sex?

A. Female

B. Male.

2. In which age range are you found?

A. 20-29

B. 30-39

C. 40-49

D. 50 and above

3. Professional qualification in Special Education

A. Certificate

B. Diploma

C. Degree

D. Masters

E. None

4. Experience in teaching learners with hearing impairments

A. 0-5years

B. 6-10years

C. 11-15years

D. Above 15years

5. How is Sign Language acquired?

D. Parents

E. Friends

F. Teachers

6. What causes Sign Language variation?

D. Environment

E. Culture

F. Training institution

7. Do you think variation in sign language has contributed to academic performance?

A. Yes

B. No

C. Intensify the use of Sign Language Dictionaries

11. If there are any challenges faced by the learners in special schools, suggest other measures that could be put in place to help solve.

APPENDIX 3 - QUESTIONNAIRE FOR SENIOR TEACHERS

1. What is your sex?

A. Female

B. Male.

2. In which age range are you found?

A. 20-29

B. 30-39

C. 40-49

D. 50 and above

3. Professional qualification in Special Education

A. Certificate

B. Diploma

C. Degree

D. Masters

E. None

E. None

4. Marital status

A. Single

B. Married

C. Divorced

D. Widowed

E. Separation

5. Experience in teaching learners with hearing impairments

A. 0-5years

B. 6-10years

C. 11-15years

D. Above 15years

6. How is Sign Language acquired?

A. Parents

B. Friends

C. Teachers

7. What causes Sign Language variation?

A. Environment

B. Culture

C. Training institution

8. Do you think variation in sign language has contributed to academic performance?

A. Yes

B. No

9. If the answer in question 9 above is “Yes”, how does Sign Language variation contribute to academic performance?

A. Signs of the learners and teachers are not the same

B. Learners misunderstand questions put across to them

C. Instructions given to them by teachers were not clear

D. Sign language variation improves their sign language

E. Teachers wrongly observed signs made by the learners

F. Do not know

APPENDIX -4 - QUESTIONNAIRE FOR PARENTS

1. What is your sex?

A. Female

B. Male.

2. In which age range are you found?

A. 20-29

B. 30-39

C. 40-49

D. 50 and above

3. What is your occupation?

A. Teacher

B. Health

C. Driver

D. Business

E. Accountant

F. Miner

G. Electrician

H. Engineer

I. Security Officer

4. Marital status

A. Single

B. Married

C. Divorced

D. Widowed

E. Separation

5. Experience in being with a child of hearing impairment.

A. 0-5years

B. 6-10years

C. 11-15years

D. Above 15years

6. How is Sign Language acquired?

A. Parents

B. Friends

C. Teachers

7. What causes Sign Language variation?

A. Environment

B. Culture

C. Training institution

8. Do you think variation in sign language has contributed to academic performance?

A. Yes

B. No

9. If the answer in question 9 above is “Yes”, how does Sign Language variation contribute to academic performance?

A. Signs of the learners and teachers are not the same

B. Learners misunderstand questions put across to them

C. Instructions given to them by teachers were not clear

D. Sign language variation improves their sign language

E. Teachers wrongly observed signs made by the learners"

F. Do not know

10. What challenges do learners with hearing impairments face in schools?

11. What do you think should be done to alleviate the challenges faced by the schools?

A. The specialist teachers to be deployed in special units

B. Schools should be encouraged to introduction Sign Language Clubs

C. Intensify the use of Sign Language Dictionaries

12. If there are any challenges faced by the learners in special schools, suggest other measures that could be put in place to help solve.

**APENDIX 5 - INTERVIEW SCHEDULE FOR LEARNERS, TEACHERS,
SENIOR TEACHERS AND PARENTS**

1. How is Sign Language acquired?
2. What causes Sign Language variation?
3. Do you think variation in sign language has contributed to academic performance?
4. How does Sign Language variation contribute on academic performance?
5. Do you think that teachers who teach the learners with hearing problems are competent enough on Sign Language?
6. What challenges do learners with hearing impairments face in schools?
7. What do you think should be done to alleviate the challenges faced by the schools?
8. If there are any challenges faced by the learners in special schools, suggest other measures that could be put in place to help solve the problems.

APPENDIX 6- OBSERVATION CHECKLIST

The researcher used the following:

1. During lessons
 - A. Signs used by teachers
 - B. Signs used by learners
 - C. Signs used by the researcher during interaction
 - D. Teachers' competencies when teaching
 - E. Methodologies used by teachers when teaching
 - F. Availability of Sign Language Dictionaries
 - G. Sign Language clubs
 - H. During sports and other games
 - I. Administration of exams
 - J. Behaviour of new learners
 - K. Teachers that were not trained in Special Education

**APENDIX 7 – LINGUISTIC CONSTRAINTS ON PHONOLOGICAL
VARIATION IN SIGN LANGUAGE**

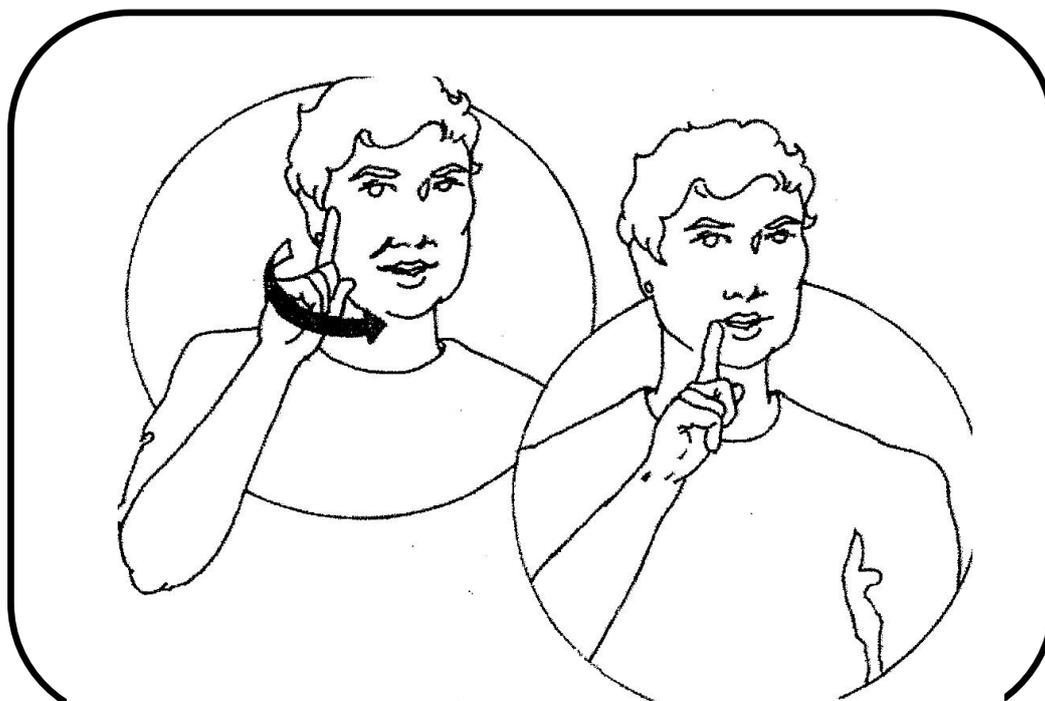


Figure 1a. DEAF, Variant 1: ear-to-chin

BRITISH SIGN LANGUAGE

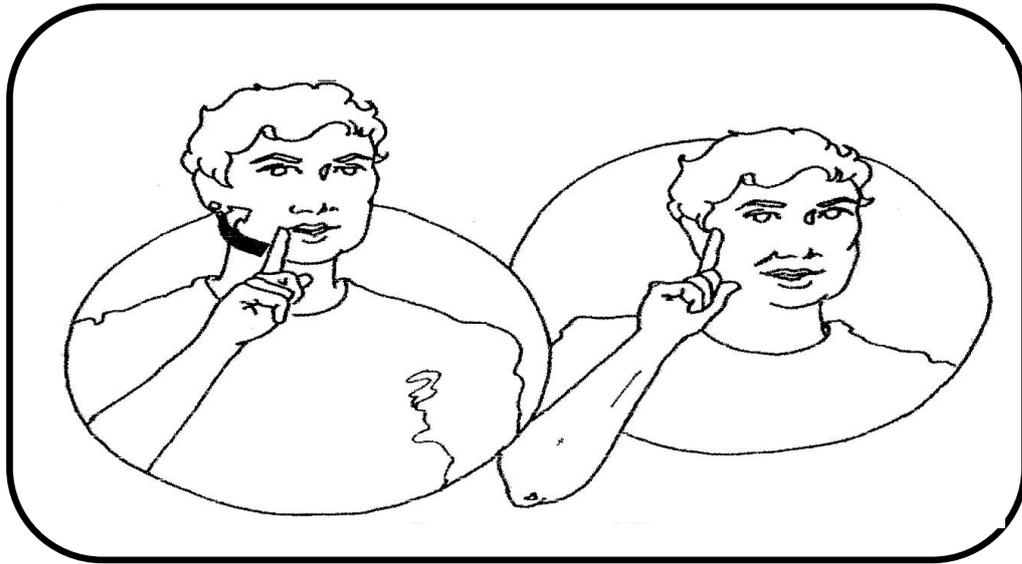


Figure 1b. DEAF, Variant 2: chin -to- ear

FRENCH SIGN LANGUAGE

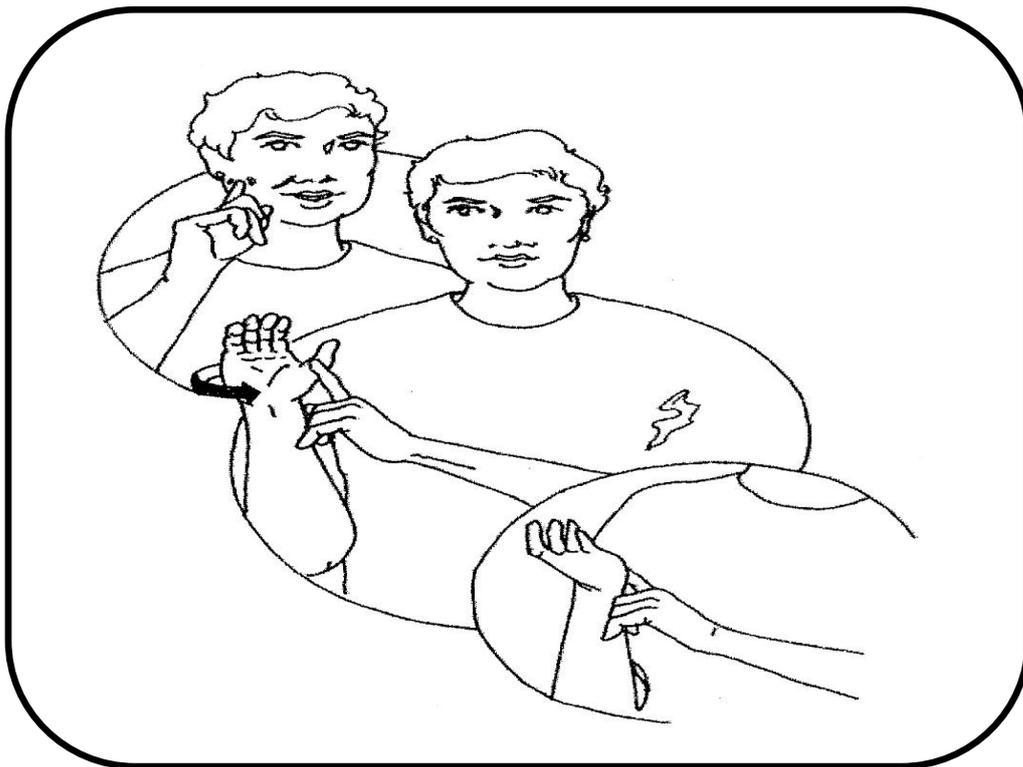


Figure 1c. DEAF, Variant 3: contact-cheek in the compound DEAF CULTURE

GHANANIAN SIGN LANGUAGE

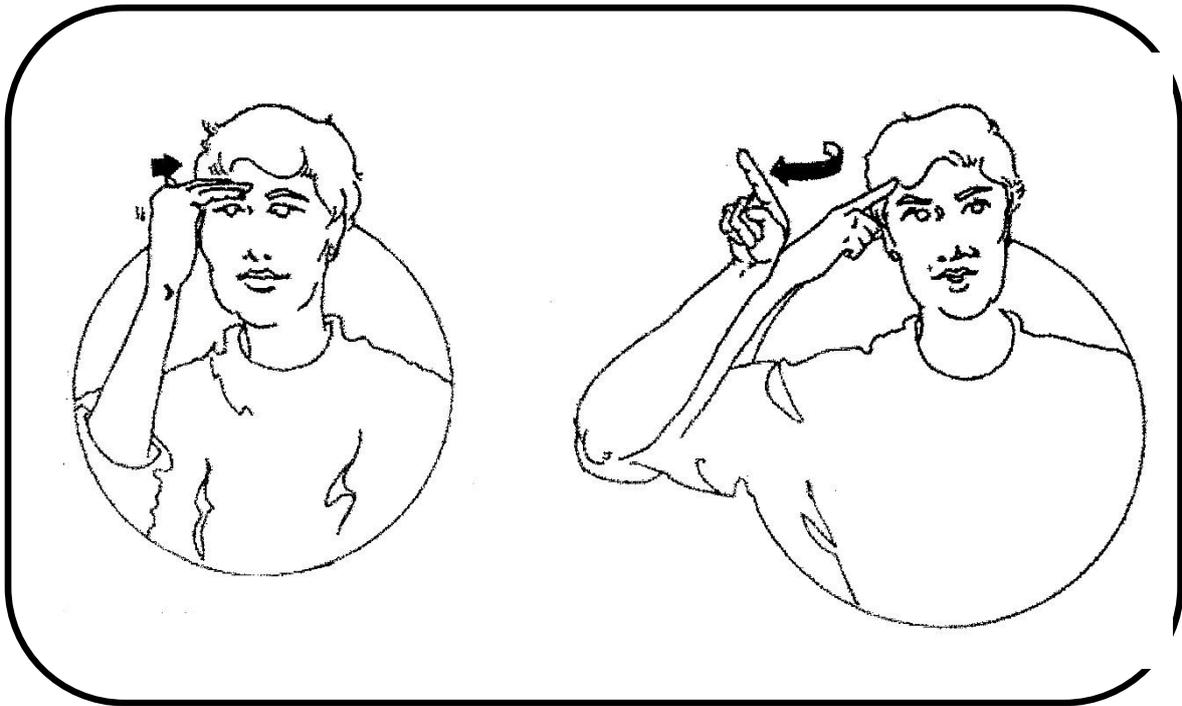


Figure 2a. KNOW and FOR, citation form
SOUTH AFRICAN SIGN LANGUAGE

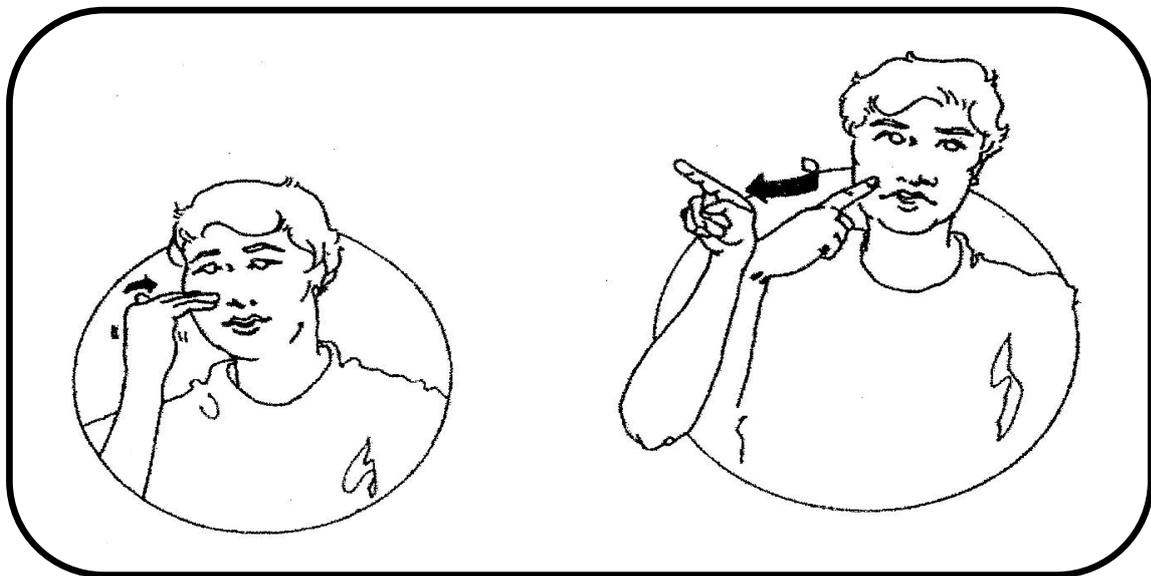
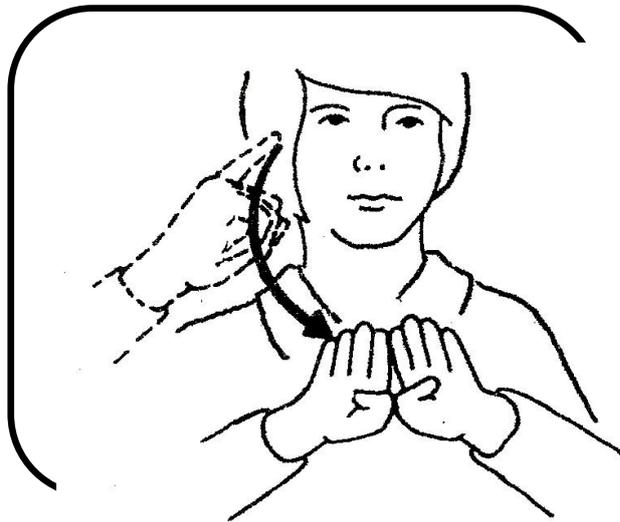


Figure 2b. KNOW and FOR, noncitation form
RUSSIAN SIGN LANGUAGE



Deaf

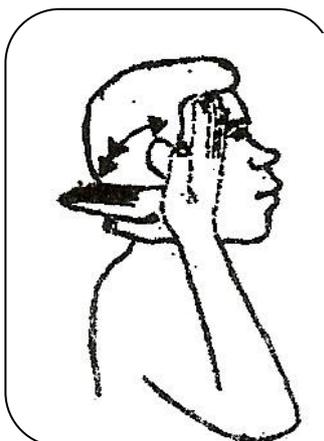
Point index finger to ear, then
place index fingers of double B shapes
together, palms down

AMERICAN SIGN LANGUAGE



Flathand – Handshape

DEAF (ad, n)
DEAFNESS (n)



ZAMBIAN SIGN LANGUAGE

Articulation: one-hand performance. Position the backward dominant flat hand, fingers pointing upward dominant flat hand, fingers pointing upwards beside the right side of the head; bent on the wrist joint and move the hand down/up across the ear in a bi- directional movement.