

UNIVERSITY OF EDUCATION, WINNEBA

**SIGN LANGUAGE AS A MEDIUM OF INSTRUCTION IN KOFORIDUA
SCHOOL FOR THE DEAF**



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SCHOOL FOR THE DEAF**

OFORI ATTA ASARE



**A Thesis in the Department of Special Education, Faculty of Educational
Studies, submitted to the School of Graduate Studies, in partial fulfillment of
the requirements for the award of the degree of
Master of Philosophy
(Special Education)
in the University of Education, Winneba.**

SEPTEMBER, 2022

DECLARATION

Student's Declaration

I, **Ofori Atta Asare**, hereby declare that this thesis with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or in whole, for another degree elsewhere.

Signature:.....

Date:.....



Supervisor's Declaration

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of Thesis as laid down by the University of Education, Winneba.

Name of Supervisor: Prof. Grace Yawo Gadagbui

Signature:.....

Date:.....

DEDICATION

Dedicated to my wife Bertha and my wonderful children; Dede, Ana, Adutwumwaa and
Ofori Atta Asare Junior



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I owe an enormous debt of gratitude to my Supervisor Prof. Grace Yawo Gadagbui for her thoughtful and detailed contributions especially for her continued presence, support, encouragement and directions for this study. I sincerely thank her for her dynamism, motivation and for all the immeasurable sacrifices she made towards the successful completion of this research. It was a great privilege and honour to work and study under her guidance. I am extremely grateful for what she has offered me. Prof thank you, I appreciate you for your efforts in shaping this work to its conclusion. I am most appreciative to all my MPhil Top-Up lecturers namely; Dr. Daniel S. Dogbe, Dr. Yaw Nyadu Offei, Dr. Yao E. Yekple, Dr. Samuel K. Amoako-Gyimah and Dr. Anthony K. Mensah of blessed memory. I am deeply grateful to the Headmistress of Koforidua School for the Deaf, Ms. Diddy Ntim as a participant of this study and also for allowing me to collect data for the study in her school. My thanks also go to the participants of the study, thus, 2020 final year students and JHS teachers of Koforidua School for the Deaf. They willingly availed themselves for the interview sessions in course of collecting data for the study.

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Conceptual Framework

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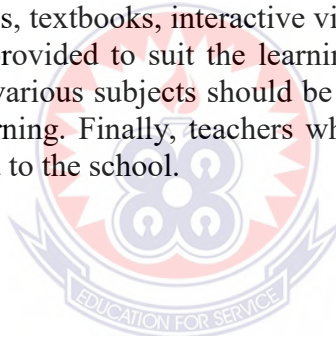
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ABSTRACT

Sign language is the main medium of instruction that the deaf seem to understand better. However, it appears some teachers at Koforidua School for the Deaf are not proficient in the use of Sign language for delivery classroom instructions. This study therefore, explored the use of Sign Language as a medium of instruction in Koforidua School for the Deaf. The Case Study Research Design was adopted for the study. Fifteen(15) respondents made up of six (6) hearing teachers, three (3) teachers who are deaf, and the head teacher were purposively sampled while (5) final year students were randomly sampled from a target population of sixty-three (63). Data were gathered through a semi-structured interview and observation guides. Data were coded and analysed thematically and verbatim expressions from the respondents were recorded. Core findings of the study were; either Sign language alone or Simultaneous Communication which are Sign language, speech, gestures and facial expressions were employed in the classroom. The teaching and learning materials for use are insufficient and those available are the traditional teaching and learning resources such as, textbooks and teacher-made learning materials. The study also revealed that majority of the teachers are not proficient in the use of Sign language as the medium of instruction; majority of the teacher and student respondents felt Sign language is inadequate in terms of expressing concepts in the subject matter. The study recommended that, workshops and seminars should be organised for teachers to sharpen their Sign language skills in order to communicate effectively during classroom instructions. Besides, textbooks, interactive video clips that have been modelled in Sign language should be provided to suit the learning needs of the students who are deaf, such textbooks, for the various subjects should be produced for use by teachers and students for teaching and learning. Finally, teachers who have interest in Sign language should be recruited and posted to the school.





CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Globally, Sign language is the medium of educating students who are deaf. Sign language is the official mode of teaching learners who are deaf in Basic Special Schools for the Deaf in Ghana (Oppong, Adu, Fobi & Acheampong, 2018). Sign language is a fully fledged language with its own vocabulary, syntax and grammar. It uses a system of manual and hand gestures, facial expression and other body movements as the means of communication. The use of Sign language enables individuals who are deaf to communicate (Barnes, 2010). Studies have shown that when and where Sign language is freely available, people with hearing impairment including students who are deaf are not disabled in any social and academic sense. Proponents of Sign language argue that Sign language is perfectly suited for those who can see but cannot hear. They also believe that learners who are deaf who are prevented from using Sign language become isolated in the deaf communities or in classroom settings (Moores, 2010; Oppong, 2003; Oppong, 2007; Vernon & Coley, 2011). According to Oppong, Adu, Fobi and Acheampong (2018) the official mode of communication and medium of instruction for students who are deaf in Ghana is signing which is in the form of Ghanaian Sign language (GhSL).

Sign Language is the official mode of educating the students in Koforidua School for the Deaf. Specifically, the students at the Junior High School are taught seven subjects namely; English Language, Mathematics, Integrated Science, Social Studies, Information and Communications Technology (ICT), Religious and Moral Education (RME) and Basic Design and Technology (Pre-technical and Home-Economics options)

There are two categories of teachers who teach the students; i.e. teachers who are deaf and hearing teachers. The observations the researcher had made over a period of 10 years in the school revealed that majority of the hearing teachers struggle to communicate effectively in the official mode of instruction which is Sign language, besides, majority of the hearing teachers virtually speak when they are delivery lessons as if they were teaching students who can hear and this classroom practice might have effects on students ability to understand lessons. There are no modern teaching and learning resources that could be used to facilitate the use of Sign language as a medium of instruction in the classroom.

The use of Sign language as a medium of instruction is applied in the various communication approaches to deaf education which include but not limited to ; the Oral method (oralism), the Total Communication(TC) approach, what others refer to as Simultaneous Communication (SimCom) and the Bilingual-Bicultural(Bi-Bi) approach (Moores,2010; Storbeck, 2005).

Proponents of the oral approach or oralism claim to build the literacy skills of learners who are deaf through the “phonological route” i.e. the pathway to literacy based on the analysis of sounds. This approach include auditory training, speech and lip-reading and prohibits signing or gesturing of any sort. The Oral approach also known as the listening and spoken language method emphasizes the use of amplification technology (hearing aids and cochlear implants) in order to develop spoken language skills. With the oral approach, the primary goal is the

‘normalisation’ of learners who are deaf to adapt into a hearing world by making them more oral (Alshahrani, 2014; Ladd, 2003; Storbeck, 2005; Garate, Batamula & Kite, 2017)

More so the oral method depends heavily on utilizing all residual hearing the student may have. Ladd (2003) posited that globally the oral method was the dominant method of instruction to deaf and hard-of-hearing students for the first half of the twentieth century. Moores (2010) revealed that proponents of oralism disapprove of the use of Sign as a medium of instruction and argued that the use of the Sign language or manual method i.e. the use of finger spelling may restrict the natural development of speech and language skills.

In reaction to the oral approach, there was a move towards the Total Communication (TC) approach in the 1970s. Proponents of the Total Communication approach advocate for the use of multiple means of communication, including signing that follow English word order, speaking, lip-reading, listening via amplification technology, and finger spelling to address the students' needs (Ross, Storbeck & Wemmer, 2004).

Total communication (TC) approach used for the education of learners with hearing impairment including students who are deaf incorporates all means of communication; Sign language, natural gestures, visual images, pictures, finger spelling, body language, listening, cued speech, reading, writing, drawing, lip reading, speech, speech reading and pantomime, all of which could be used by adults and students in educational settings. With the use of the TC approach, learners with residual hearing use hearing aids and cochlear implants to learn speech and language. Total Communication (TC) acknowledges that means of communication may need to be adjusted based on the situation. For example, a Deaf child who cannot communicate well orally gets the additional support of Sign language, and vice versa (Holcomb, 2010; Rendel et al., 2018; Woll, 2019; Moores, 2010; Storbeck, 2005).

The claims made on behalf of Total Communication (TC) suggest that the TC approach does offer a solution to the problem of Oral Approach failure. The aim of TC is to make use of the Deaf child's residual hearing through hearing aids but also to reinforce speech through the visual medium of signs and any other communication methods that work (Knoors & Hermans, 2010; Luckner, 2010; Moores, 2010; Skutnabb-Kangas, 2008; Woll, 2019).

The use of the Total Communication (TC) approach was on the premise to use all possible ways of communication with the Deaf child and that no particular method or system should be omitted or emphasized. In order to do so, natural gestures, alphabet and facial expressions should be used. Proponents of TC believe that all of these communication ways should be used along with speech that would be heard through an individual device for sound amplification.

Those advocating for TC argue that Deaf children should have the supplement of Sign and any non-verbal communication to accompany speech. With Signs representing the symbols of verbal language, proponents of Total Communication believe that Deaf children can have access to "Total" linguistic information, in contrast to speech, which gives only "partial" linguistic information (Bedoin, 2011; Domagała– Zy'sk & Kontra, 2016). Total Communication is thus believed to avoid failures experienced by some Deaf children in acquiring verbal language (Allen, 1994).

The third Communication approach to Deaf education is the Bilingual-Bicultural approach which has been described as an approach to the education of learners who are deaf which uses both the Sign language of the deaf community as the language of instruction and the written/spoken language of the hearing community (Alshahrani, 2014). Singleton and

Morgan (2006) indicated that the Bilingual-Bicultural approach is the most recent approach to instructing deaf and hard-of-hearing students. This approach adheres to the principle of additive bilingualism and aims to develop proficiency in a Signed and a Spoken language.

Stein (2013) and Mandyata (2018) contended that Sign language by design is a language of the deaf which uses manual communication to convey meaning and information as opposed to acoustically conveyed sound patterns. In addition, Sign language, in linguistic terms, is as rich and complex as any oral language. This form of communication is used in the day to day communication among the deaf as well as a medium of instruction in educational cycles

In spite of the importance of Sign language in the education of the Deaf , in classroom practice, students who are deaf are still not educated in the medium of instruction of the Ghanaian Sign language (GhSL) because teachers have not mastered the use of Sign language and therefore struggle to effectively communicate to the students during teaching and learning. Some teachers of the Deaf virtually use voice language during the teaching and learning process as though they are teaching hearing students. The phenomena is in contrast with Rowh (2006) who argued that deafness affects an individual's ability to perceive and use spoken language for academic purpose and ordinary purpose of life. Similarly, Vieira and Molina (2018) postulated that Signs are totally accessible to the Deaf child but speech is always heard imperfectly, even with the help of a hearing aid. Teachers' lack of proficiency in Sign language would make their communication to learners who are Deaf ineffective. It is therefore imperative that students are instructed in the language they are familiar with. When students who are deaf are taught in their most familiar language i.e. Sign language, it will facilitate their understanding of lessons and

will in effect improve on their learning outcomes. In support of this assertion Cummins (2000) submitted that learners who understand the language they are instructed in are more likely to engage meaningfully with content, question what they do not understand and even enjoy the challenge of new things during the teaching and learning process.

Mandyata (2018) citing Wakumelo (2009) reported that while the school system preferred the use of Total Communication(TC) for teaching students who are deaf, students who are deaf themselves felt more comfortable and understand lesson better when they are taught in Sign language alone during teaching and learning. In addition, Killian (2001) argued that decision made on the communication medium and language of instruction directly affects the learner's ability to acquire language and influences the selection of strategies used to teach learners who are deaf.

Effective use of Sign language as a medium of instruction will require teaching and learning resources as a vehicle to facilitate lesson delivery in the classroom. The quality of teaching provided to students who are deaf in Basic Schools for the Deaf in Ghana is an issue that deserves attention. He noted that most Basic Schools for the Deaf in Ghana have classrooms with no projectors and the needed teaching and learning resources to aid classroom instruction. At Koforidua School for the Deaf, there are inadequate teaching and learning resources which affects the effective use of Sign language as the medium of instruction in the school.

Acton (2012) elaborated that Sign language is the first language, that is, the mother tongue for learners who are deaf and blames the use of oral language in teaching the deaf for poor academic school performance. Rajagopal (2003) contended that learners who are deaf learn better when they are taught using their mother tongue in which case is Sign language and which they acquire naturally. Furthermore, there is a high possibility that a teacher of

the deaf who is proficient in learner's first language (L1) will facilitate more effective learning among the deaf learners. The single most important contributing factor to poor academic performance of the learners who are deaf is the use of the wrong medium or language of instruction.

People usually have an attitude either positive or negative about languages. Language attitudes are complex psychological entities that can influence language use and the choices of a person in different domains. Language attitudes can have a significant influence on education, for example, teachers can play a great role in using certain languages in the educational settings.

It is therefore important that attitudes teachers and students have towards the use of the language of instruction is investigated. Research findings show that many teachers of the deaf have unconstructive attitudes towards Sign Language. Consequently, they exhibit inappropriate language use in schools. On the other hand, the majority of learners who are deaf enter school with no language. If they cannot find effective and efficient teachers who have positive attitudes towards the Sign language to train them with the language, they usually build up poor Sign language proficiency. Incapability to express their ideas properly usually leads the students to develop a negative attitudes towards Sign language (Burns, Matthew & NolanConroy, 2001; Demissie, 2011; Glaser & Lorenazo, 2006). In addition, Tameru (2014), Burns, Matthews and Nolan-Conroy(2001), Demissie (2011) and Mweri (2014) in a study found out that if the attitude of teachers towards the language of instruction is positive, the attitude of the learners is most likely to be positive, on the other hand , if the attitude of teachers is negative, it is more likely that learners will develop negative attitudes towards the whole education system in general and the language of instruction in particular.

1.2 Statement of the Problem

Education of the Deaf began in Ghana in 1957 but was started in Koforidua School for the Deaf in 1975. Observations the researcher had made in the school over the past 10 years revealed that majority of the teachers face challenges in using Sign language to express ideas, thoughts and therefore it appears they are not able to effectively deliver classroom instructions, it also seems that majority of the teachers resort to the use of other modes of communication such as speech in delivery lessons even though they teach students who are deaf, i.e. it seems teachers have a challenge using the official language of instruction which is Sign language. In contrast to this classroom practice, Kontra (2020) and Stokoe (2000) posited that interacting with a learner in a language that they have full access to, a language that they can see, such as Sign language, promotes not only their linguistic competence but also their mental growth.

It also appears that teaching and learning resources for the effective use of Sign language as a medium of instruction in the classroom are inadequate and those available are the traditional teaching and learning resources. The opinions of teachers and students on the use of sign language as a medium of instruction in the classrooms should be explored.

1.3 Purpose of the Study

The intent of the study was to explore the use of Sign Language as a medium of instruction in Koforidua School for the Deaf in the Eastern Region of Ghana.

1.4 Objectives of the Study

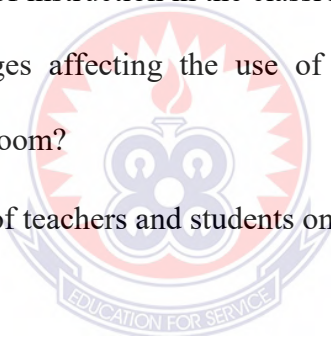
The objectives of the study were to:

1. Determine the Communication approach (es) to deaf education used in the classroom.

2. Find out what teaching and learning resources are available for effective use of sign language as a medium of instruction in the classroom.
3. Explore the challenges affecting the use of sign language as a medium of instruction in the classroom.
4. Find out the opinions of teachers and students on the use of sign language as a medium of instruction in the classroom.

1.5 Research Questions

1. Which Communication approach (es) to deaf education is used in the classroom?
2. What teaching and learning resources are available for effective use of sign language as a medium of instruction in the classroom?
3. What are the challenges affecting the use of sign language as a medium of instruction in the classroom?
4. What are the opinions of teachers and students on the use of sign language as the medium of instruction?



1.6 Significance of the Study

The results of the study would help to reveal how sign language is used as a medium of instruction in Koforidua School for the Deaf. Specifically, the results would reveal the Communication approach (es) to Deaf education used in the classroom. This would enable government and other stakeholders to come out with a clear cut language policy on Deaf education in Ghana.

The findings of the study would also show whether or not there are adequate teaching and learning resources for effective use of sign language as a medium of instruction in the classroom. This will enable school authorities to address any inherent challenges by

providing adequate and appropriate teaching learning resources for teaching students to facilitate their understanding of lessons and in effect help improve their learning outcomes. The results of the study would further throw more light on the challenges affecting the use of sign language as a medium of instruction. This would enable school authorities to find means of addressing any inherent challenges by sharpening teachers Sign language skills to enable them communicate effectively to students for students to fully benefit from classroom instructions.

In addition, the findings of the study would reveal the opinions of teachers and students on the use of Sign language as a medium of instruction. This would enable school authorities to inform stakeholders of the views of teachers and students as far as the use of Sign language as a language of instruction is concerned.

It is envisaged that all these revelations would assist stakeholders and school authorities to put measures in place that would help in the effective use of Sign language as a medium of instruction especially in Basic Special Schools for the Deaf in Ghana. Findings of the study would add valuable information to the body of literature available in Ghana concerning the use of Sign language as a medium of instruction in Ghana. Finally, the results of the study would serve as a source of reference to other researchers who may be interested in similar studies elsewhere or may want to replicate this study.

1.7 Delimitation of the Study

The study was delimited to Koforidua School for the Deaf in the New Juaben South Municipality in the Eastern Region of Ghana. The participants of the study was also delimited to Junior High School teachers, students and the head teacher of the school. The exploration focus was delimited the use of Sign language as a medium of instruction at the Junior High School (JHS).

1.8 Operational definitions of Terms

Practices: It refers to the use of the suitable or appropriate Communication approach (es) to Deaf education for teaching and learning purposes in the classroom.

Challenges: It refers to the conditions that teachers and students are confronted with during the process of using “Sign language” for teaching and learning in the classroom.

Sign language: It is a systematic visual-gestural mode of communication used by groups of individuals who belong to Deaf cultural groups. Sign language is the official language for teaching students who are Deaf at Basic Special Schools for the Deaf in Ghana. It is a language that employs the hands and body in speaking/talking. Sign language is ‘heard’ with the eyes and not the ears.

Medium of instruction: The language that is used by teachers and students in the school and classroom for teaching and learning.

Koforidua School for the Deaf: It is a public boarding Basic Special School for the Deaf starting from Kindergarten to Junior High School and it is located in the New Juaben South Municipality in the Eastern Region of Ghana which was established in 1975.

Deafness: A hearing disability which precludes successful processing of linguistic information through audition with or without a hearing aid.

Hearing impairment: A generic term indicating a hearing disability which may range in severity from mild to profound: it includes the subsets of deafness and hard of hearing.

Hard of hearing : A hearing disability which, generally, with the use of a hearing aid, has residual hearing sufficient to enable successful processing of linguistic information through audition.

1.9 Organization of the rest of the Study

The study is organized and presented in six chapters. Chapter one is the introduction that looks at the background to the study, statement of the problem, purpose of the study and objectives of the study. Other aspects of the chapter one include; research questions, significance of the study, delimitations of the study, operational definition of terms and organization of the rest of the study. Chapter two deals with the review of literature related to the study. It covers the theoretical framework and review of the key themes raised in the research questions and conceptual framework. Chapter three focuses on the methods and procedures that were used to gather data for the study. It covers the methodology, philosophical underpinnings or worldview or beliefs upon which the research was based , the other areas under chapter three covered ; the research approach, research design, population, sample size, sampling techniques, instrumentation, validity and reliability of instruments, positionality, methods of verification of trustworthiness , ethical consideration, procedure for data collection and data analysis procedures. Chapter four contains the presentation and analysis of the data collected using the interview and observation guides and also the limitations of the study followed. Chapter five deals with the discussion of the findings. Finally, chapter six covers the presentation of summary of findings, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

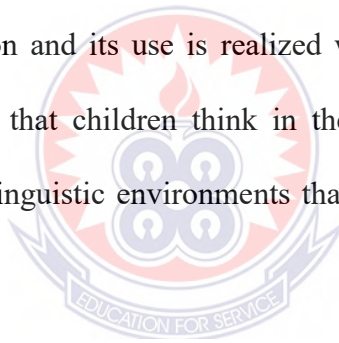
This chapter presents the literature reviewed for the study. The review first covered the theoretical framework, followed by the review of the key themes raised in the research questions and the conceptual framework. These are:

- a. Theoretical Framework
- b. Sign language as medium of instruction
- c. Communication approach (es) to Deaf education used in the classroom.
- d. Teaching and Learning resources for effective use of Sign language as a medium of instruction in the classroom.
- e. Challenges affecting the use of Sign language as a medium of instruction in the classroom.
- f. Opinions of teachers and students on the use of sign language as a medium of instruction
- g. Conceptual Framework

2.1 Theoretical Framework

This study was guided by Chomsky's (1977) innateness theory. The innateness theory asserts that language is an innate capacity and that a child's brain contains special language-learning mechanism at birth, that is, everyone is born with the capacity to develop and learn any language as the brain matures, language is inborn originating in the mind. To Chomsky, language is uniquely human, biologically based cognitive capacity. According to Crain and Lillo-Martin (1999), the innate knowledge, known as the Language Acquisition Device (LAD), includes principle common to all human language.

Chomsky innateness theory posits that children have innate ideas to learn language and that this language acquisition is learned and developed by social interaction with environments such as adults, parents and teachers (Clark, 2009, Chomsky, 2009; Alijoundi, 2016). The language Acquisition Device (LAD) is a postulated organ of the brain that is supposed to function as a congenital device for learning symbolic language (Chomsky, 1977; 2009; Alijoundi, 2016). To Chomsky (1977) all children share the same innateness, all children share the same internal constraints which characterize narrowly the grammar they construct. Language is embedded in and supplemented by gesture, gaze, stance, facial expression, voice quality in the full array of options people can use for communicating (Clark, 2009; Alijoundi, 2016). Chomsky believes that if a child is nurtured well, first language acquisition and its use is realized within the shortest time possible. This theory also emphasized that children think in their first language, therefore they should be exposed to a rich linguistic environments that enhance their language early in life.



Similarly, Fobi and Oppong (2018) commenting on Whorf (1956) linguistic relativity theory (1956) cited in Infante et al. (1993) postulated that the language children use influence and determines their thinking i.e. there is a connection between language and thinking (Infante, Rancer, & Womack, 1993; Sperling, 1990).

Fobi and Oppong (2018) further commented on the Whorf (1956) theory “linguistic relativity” and indicated that there is a connection between one’s language and one’s behaviour. Language may be a major factor that can strongly influence one’s thinking and academic achievement. Fobi and Oppong (2018) again submitted that deaf and hard of hearing students who have strong language base are able to advance their thoughts for others to understand them in communication.

The implication of Chomsky (1977) innateness theory to this study is that language is natural, inborn and intuitive to the individual and in this context students who are deaf. This implies that students who are deaf should be taught in the language that is natural to them or the language they are familiar with i.e. Sign language, because language has effect on thinking and thinking also has effect on academic achievements of learners who are Deaf.

Chomsky's theory again implies that learners think in their first language and therefore when Sign language is effectively used as a medium of instruction in the classroom, it will facilitate students' understanding of lessons and in effect improve their learning outcomes. Similarly, Cummins (2000) contended that learners who understand the language they are instructed in are more likely to engage meaningfully with content, question what they do not understand and even enjoy the challenge of new things during the teaching and learning process.

2.2 Sign language as Medium of Instruction

Sign language used as a medium of instruction is an approach that uses visual-spatial modalities which include simultaneously employing hand gestures, movement, orientation of the hands, arms or body, and facial expressions to convey a speaker's ideas. Sign language is expressed with the hands and body and received visually. In Ghana, Sign language is expressed through either Ghanaian Sign language (GhSL), Adamorobe Sign language or Nanabin Sign language, however, in the basic special schools for the Deaf in Ghana, GhSL is the medium through which classroom instructions are delivered (Oppong, 2003; Oppong, 2007). Sign language has been described as the natural method of communication for profoundly deaf and hard of Hearing (DHH) individuals and it

prepares majority of deaf children for academic growth and social access (Johnson et al., 1989; Marschark & Spencer, 2006; Powers, 1997; Slike, 1997).

Sign language has the same purpose for the deaf child as spoken language has to a hearing child (Skutnabb-Kangas, 2008). As spoken language native speakers, native signers can develop personal and cultural identity, express thoughts and feelings, develop metalinguistic and communication skills, and enjoy good self-esteem and social skills through their group language or Sign language (Jokinen, 2000; Demissie, 2011). However, for several years, Deaf children have been discouraged from learning through sign language. This has been done because of parents' and Deaf educators' beliefs that avoiding Sign language will encourage spoken language acquisition of Deaf children (Yule, 1996; Jokinen, 2000). This idea has been highly advocated, especially following the 1980 Milan conference on Deaf education. After more than 80 years of promoting oralism, it was recognized as a failure and the use of manual communication in education regained approval in many Deaf education institutes. However, there are schools that continue to advocate oralism today (Yule, 1996).

One important point to mention here is that research does not suggest that the avoidance of sign languages improves speech abilities of the deaf child (Haualand & Allen, 2009). For that matter, much evidence illustrates that deaf child with better signing ability show better speech, lip reading, and reading abilities (Kosonen, 2009; Jokinen, 2000). Thus, recently it has begun to be more common practice to encourage deaf children to learn sign language in their early life. Using learners' first rather than their second language as the language of teaching and learning is very sound educational practice. As Glaser and Lorenzo (2006) describe, there are many institutions that have employed natural Sign language as a medium of instruction for the deaf by understanding its benefits. However, Glaser and

Lorenazo (2006) stated there are also schools that resist the use of Sign language as medium of instruction. The resistance comes out of misconceptions about the language.

The primary misconception is perceiving sign language as an imitation of spoken languages (Adoyo, 2002). Many with such perceptions consider that sign language is not a natural language and is inferior to spoken languages. Despite the misunderstandings, the pedagogical advantages of using Sign language in deaf education, and linguistic human rights of Sign language users, have been getting attention (Kosonen, 2009; Jokinen, 2000).

Cokely (2013) cited a study conducted in 1990 titled “The effectiveness of three means of communication in the college classroom. Cokely reviewed research done previously that supported the use of Total Communication (TC) in the classroom. However, the study pointed out several restrictive factors based on the research test that was conducted. One of the tests administered only compared Simultaneous Communication (SimCom), the Rochester Method and Speech reading with voice (lip reading), omitting the option of American Sign Language (ASL) as a means of communication.

The 1990 study addressed this issue by comparing SimCom and Sign alone as medium of instruction to see which one was the most effective for classroom instruction to students who are deaf. The results from the comparison showed that signing alone as a way for students to understand information given by teachers was considered as the most effective and SimCom medium of instruction was the least effective means of delivery lessons to students. The study concluded that, overall, sign alone and interpretation was most effective in all areas of the test proving that SimCom was a struggle for teachers and students alike. The study further concluded that when professionals such as teachers are working with two separate modes of communication, the one that comes naturally for

signing and speaking at the same time results in a slower approach to instruction than if just one modality like signing alone was used to express language.

Teaching students who are deaf through sign language has several benefits. Strengthening the identity of the deaf student as a sign language user and as a member of a signing community are among these benefits (Kosonen, 2009; Jokinen, 2000). Through learning Sign language as a mother tongue, they can develop good bi- and multilingual skills, as well as the ability to meet the cultures of other communities. In addition, as research shows, by having good skills in Sign language the student can learn spoken languages and develop good communication and academic skills (Kosonen, 2009). With regard to developing cultural identity, Deaf children can gain valuable lessons from Sign language literature and folklore. This also provides important support for linguistic skills acquisition (Jokinen, 2000).

Jameel and Bibi (2016) conducted a study to investigate benefits of Sign language for deaf students. The study was a descriptive in nature and teachers of the deaf were the sample of the study using simple random sampling technique. A total number of 40 teachers of the deaf from four schools were the participants of the study. For the purpose of collecting specific information, a structured questionnaire was developed on the basis of a 5-Item Likert scale. Collected data were tabulated and analysed using descriptive and inferential statistics. The study revealed that sign language is beneficial for deaf students in classroom setting. Furthermore, the results of the study showed that sign language is an important and a beneficial tool that improves classroom learning of deaf students. The study concluded that many teachers believe, using sign language in classroom not only affects the communications but also overall development of students who are deaf. Sign

language is considered an important way of communication in the schools of learners who are deaf. The gap in this study is that their study failed to include students as respondents even though the study concerns them as far as their classroom learning is concerned. This study therefore sought to fill the gap by including students who are deaf as respondents of the study to give them the opportunity to express their views about the challenges affecting the use of sign language as the medium of instruction.

Jameel and Bibi (2016) maintained that imparting or teaching pre-lingual deaf students in spoken language does not help in getting ideal outcomes. The researchers strongly contended that Deaf students should be taught in their first language (i.e. sign language) by combining spoken languages, other instructional methods and services. The researcher's over ten years of teaching students who are deaf the experience gained confirms the findings of Jameel and Bibi that indeed Deaf students become confused and frustrated when they are taught in a language other than their mother tongue or sign language.

Pflepsen and Pallangyo (2019) argued that to be able to read and understand the language used in the classroom tends to facilitate the learning of academic content. A comprehensive review of research and reports on language and literacy concluded that becoming literate and fluent in a familiar or first language is key to children's overall language and cognitive development, as well as their academic achievement (Ball, 2011).

Evidence from numerous countries attests to the improved learning outcomes that accompany instruction and assessment conducted in familiar languages. For example, an analysis of results from the large-scale international assessment Trends in International Mathematics and Science Study (TIMSS), conducted in 36 countries in grade 4 and 48 countries in grade 8, found that children who reported "always" or "almost always"

speaking the language of the test at home performed better in maths and science than those who reported “sometimes” or “never” spoke the language in which they were tested. Some of the countries where the study was conducted were Australia, France, Japan, Egypt, Germany etc. (Pflepsen & Pallangyo, 2019).

Pflepsen and Pallangyo (2019) and Mweri (2014) maintained that teachers in educational institutions are supposed to impart knowledge to students through the various subjects they teach. However, in the institutions for the deaf, the teachers are handicapped linguistically and therefore little or no learning takes place. This is because while the deaf use a visual mode of communication, the teachers, most of whom are hearing, use the oral mode of communication. If education is responsible for the transmission of a people’s culture or accumulated knowledge from one generation to the next, this function of education for the Deaf is non –existent.

In a study conducted by Pflepsen and Pallangyo (2019) on the benefits of instruction in languages children speak, use and understand, an analysis of data from 26 countries and 160 language groups showed that children who had access to instruction in their L1/mother tongue, for example, in Sign language were significantly more likely to be enrolled and attending school, and participate well in academic discourse while a lack of education in the first language was a significant reason for children dropping out and or perform poorly academically.

Humphries et al. (2017) noted that ample studies have shown that fluency in a natural sign language leads to better print literacy skills in the text of the ambient spoken language. Such studies counter prejudicial perceptions that there is no positive relationship between a sign language and print literacy. Pflepsen and Pallangyo (2019) found out that the use of familiar first languages also confers benefits to teachers, who themselves face significant

difficulties when asked to present academic concepts in a language they do not speak or do not communicate in well. Classroom observations conducted in several countries (Benin, Botswana, Burkina Faso, Ethiopia, Ghana, Guinea-Bissau, Mali, Mozambique, Niger, South Africa, Tanzania, and Togo) showed that when teachers used a language that was unfamiliar to learners (and likely to themselves as well), they-teachers relied on teacher-centered teaching methods such as chorus teaching, repetition, memorization, recall, and code-switching that are largely ineffective (Alidou & Brock-Utne, 2011). On the other hand, when teachers and learners speak or sign a common, familiar language, such as sign language, teachers use more varied and effective teaching practices. For example, a study in Tanzania and Ghana found that teachers used a wider range of teaching and learner involvement strategies when they taught lessons in African languages or in L1 than when they taught in English (EdQual, 2010; Matthew, Hall & Caselli, 2019). Similarly, a study of a bilingual education program in Niger showed that more teachers used more effective teaching practices, and there was more dynamic interaction between teachers and pupils, as well as among pupils themselves (Hovens, 2002) than teachers in a singlelanguage comparison group. Additionally, teaching was more learner centered, teachers used more open-ended questions, and teachers allowed pupils to find solutions to problems (Hovens, 2002).

Pflepsen and Pallangyo (2019) argued that inappropriate and ineffective approaches to language use for teaching and learning imperil the achievement of Sustainable Development Goal 4, “ensure inclusive and quality education for all and promote lifelong learning”. This is because lack of access to quality education in a familiar language disproportionately affects children who speak and use minority languages, children who are affected by conflict and crisis, and girls, who in some contexts are less likely than boys to

use and understand a second or foreign language used for instruction. For the deaf community, the issue of language use in schools - and specifically the use of sign language-is also critical to equity in education, and a right codified in disability policy, legislation and international instruments. Bragiel and Kaniok (2016) proposed that the hearing impaired need to be taught using Sign language as a medium of instruction right from their on-set of academic life and beginning with localized signs for them to perform well academically.

It is extremely important that learners who are deaf build capacity and skills in sign language to understand concepts necessary for their academic advancement. Wakumelo (2009) reported that in Zambia while the school system preferred the use of total communication in the learning of students with hearing impairment, learners who deaf themselves felt more conformable with the use of sign language alone in during classroom practice.

Mandyata (2018) and Bunyasi (2010) indicated that persons with severe hearing impairments including students who are deaf are naturally unable to hear and they prefer to use Sign language in their everyday communication over spoken language. Sign language by design is a language of students who are deaf which uses manual communication to convey meaning and information as opposed to acoustically conveyed sound patterns. This form of communication is used in the day to day communication among the hearing impaired as well as a medium of instruction in educational cycles.

Stein (2013) reported that sign language was a language expressed through a combination of hand shapes and facial expressions. The language itself contains structures and processes that spoken languages do not seem to have. Additionally, it has grammatical structures which are suitable as visual medium but not necessarily for use in oral language

communication. According to Bunyasi (2010) Sign language in linguistic terms, is as rich and complex as any oral language despite the common misconception that it is not a real language as such. Bunyasi believes that it is important for one to understand factors surrounding its usage as a mode of communication to appreciate its increasing usage as a medium of instruction in the education of the deaf.

Wakumelo and Miti (2010) suggested that hearing impaired children need to be taught Sign language for them to use it effectively in the learning process. The study reports that Sign language needs to be learnt as a language and not necessarily depending on general usage of common signs used in the community. The concept of Sign language in the educational sense refers to the use of Sign language in the education system as a medium of instruction to facilitate teaching and learning. In relation to the hearing person, learning to speak a language starts with learning of concepts and associating them with objects and symbols as agreed upon in the community.

Mandyata (2018) posited that the hearing impaired needed to be taught in the local signs before exposed to national signs for them to benefit from its use as a medium of instruction. Unfortunately, this is not often the case for hearing impaired children born from hearing parents. Deaf children often are deprived of any form of organized language during the most critical phase of language development between the ages of 0 to 3 years. Such children find themselves exposed to a mixture of modes of communication which often leave them confused and unable to make sense of the communication.

Wakumelo (2009) opined that Sign language bridges the communication gap and creates an emotionally secure social and learning environment. Most of the children who are hearing impaired are born into hearing families. Thus, from the onset they have no

mentors or role models to help them acquire a Sign language as they grow but depend on hearing mentors.

2.3. Communication approach (es) to Deaf education used in the classroom

Communication is the process of transmitting and receiving meaningful information, organising and storing the information in the short and long-term memory, and retrieving the information for use at an appropriate time. Communication promotes thinking and classroom learning and participation among learners. Through communication in any form such as through speech or sign language, teachers disseminate information to learners and learners also acquire information (Gadagbui, 1998; 1998; 2007; Sekyi-Baidoo, 2003).

Communication can be described as the number one tool that helps individuals to connect thoughts, ideas and symbols into sign language, to learn, and to get in touch with the world and reality. Communication is an approach that helps any individual or society to accomplish tasks successfully and achieve the intended goal in life. Through communication individuals and members of a society are able to learn and understand their environment by exchanging thoughts, ideas, feelings, views, opinions, and ask questions, describe things, calculate and solve math problems, and narrate events- present, past, and the future. Napier and Leeson (2016) and Fobi and Oppong (2018) and Stredler-Brown (2010) submitted that all Deaf and Hard of Hearing (DHH) learners are entitled to, and must be in a classroom and a school where communication is fully available, where there is a ‘critical mass of communication peers’ and where staff can communicate effectively and directly through signed language with the DHH children.

Communication promotes thinking and classroom learning and participation among learners. Through communication, teachers disseminate information to learners and learners also acquire information. At all levels of education – particularly the Basic

school, communication may serve as a major factor that influences the academic achievement of DHH students. However, for communication to be effective and complete, the receiver should decode (make meaning/ understand) the message from the sender. Such meanings when derived, often requires a feedback from the receiver which aids the chain of communication not continue (Gadagbui, 1998; 2006; 1998).

In Ghana there is no clear-cut policy mode for communication as far as the formal education of Deaf and hard of hearing (DHH) children is concerned. The issue of Communication approaches for the successful education of DHH children throughout the world has been controversial over the past 200 years (Bender, 1981; Leeson, 2007; Marschark & Spencer, 2006; Marschark, Schick, & Spencer, 2006; Stredler-Brown, 2010; Oppong & Fobi, 2018).

According to Fobi and Oppong (2018) studies on communication approaches and education of Deaf and Hard of Hearing children have however not advanced to an appreciable level in Ghana and many developing countries. Unlike the developed countries particularly in the Western world, education of DHH children in Ghana and many developing countries started in the second half of the twentieth Century, that is, a little over sixty years ago.

There are some types of communication approaches to deaf education as far as delivery of classroom instruction to students with hearing impairment or deaf and hard-of-hearing students is concerned. Some of the communication approaches to deaf education are; the Oral Method or oralism, the Total Communication Approach or Simultaneous Communication and Bilingual-Bicultural Approach (Ladd, 2003; Moores, 2010). Each of the three approaches is discussed below;

2.3.1 The Oral Approach or Oralism

Historically, the first mode of communication within the deaf community and for that matter the communication approach in Deaf education is known as Oralism or the Oral Method. The oral approach is also referred to as auditory-oral or Aural-oral, auditory-verbal and most recently the listening and spoken language approach (Marschark & Spencer, 2006; Garate, Batamula & Kite, 2017). With the use of the oral approach helps to develop an educational plan that includes auditory training, speech or lip reading, making use of hearing aids in order to allow the child to communicate verbally by speech. Under oralism, the use of signs, mimicking or gestures as a learning resource was absolutely forbidden. In this approach, the whole process aims at rehabilitating the deaf, i.e. bringing them closer to the hearing world. In practice, the Oral Method depends heavily on utilizing all residual hearing the student may have (Moore, 2010; Johnston & Schembri, 2007; Humphries et al., 2013; Vieira & Molina, 2018). The ideological basis of the oral approach is that verbal communication, particularly spoken communication, is the predominant means of social exchange and interaction. For the Oralist, the goal of speech for Deaf people is morally justified on the grounds of individual freedom, independence and equality of opportunity.

Proponents of the Oral Method argue that the use of Sign language may restrict the natural development of speech and language skills, for example, communicating to students who are deaf through finger spelling limits speech or oral language acquisition (Moore, 2010; Johnston & Schembri, 2007; Vieira & Molina, 2018). On the other hand opponents of the use of the Aural-Oral Approach also contended that evidence from the past suggests that out of the group generally described as profoundly Deaf, few or none were able to achieve the goal of verbal language and fluent spoken communication. In

effect young Deaf people typically left school with poor educational qualifications, poor command of the structure of verbal language with a very restricted vocabulary and with speech that was unintelligible (Spencer & Marschark, 2010; Moores, 2010).

Research on Oral Approach to education of the Deaf began to indicate the poor achievement levels of Deaf children. A seminal study by Conrad (1979) found that Deaf pupils left school with median reading ages of nine, with poor speech intelligibility and with lip-reading skills no better than those of the hearing population, despite their training in this area (quoted in Gregory, 1996). This dissatisfaction with oralism led to the introduction of what became known as ‘total communication’ methods and, later, bilingual education.

Domagała–Zy’sk and Podlewska (2019) and Moores (2010) pointed out that advocates of Oralism attribute what they believe to be evidence of the success of the auditory-oral approach, as currently practiced, to developments in technology; in knowledge and in service for children who are hearing impaired. These developments, earlier diagnosis, fitting of hearing aids, it can be argued, have enabled severely and profoundly Deaf children to make better use of their residual hearing since the 1980s. Attempts in special schools for the deaf, in the past, to teach deaf children vocabulary and structure of language have been observed to lead to stilted, artificial and restricted language input, thus effectively denying the children exposure to their language potential (Knoors & Hermans, 2010; Luckner, 2010; Sarant et al., 2009).

It is generally believed that Deaf children in the past, unable to use oral language for “real” communication, typically would use sign amongst themselves and therefore were not reinforcing and developing verbal language. Leeson (2007) observed that policy shifts towards the use of an Oral Approach in the early twentieth century caused major

difficulties for members of the deaf community, in that a strictly enforced Oralist policy was often accompanied by a diminished use of sign language. This made it difficult for many Deaf pupils to access the curriculum in schools as they couldn't understand what the teachers were saying. In recent times, Oralists themselves argue that providing a conducive environment for the successful development of spoken language in a profoundly Deaf child is difficult, but not more difficult than providing the conditions necessary for language development using any of the available alternative communication approaches. As suggested by Lynas (1994), at present Oralism in its own terms, still has failures even though Oralists cannot, as yet, offer a satisfactory solution to this problem.

2.3.2 Total Communication Approach

Total communication(TC) is a philosophy rather than a method for the education of learners with hearing loss that incorporates all means of communication; sign language, natural gestures, visual images(pictures), fingerspelling, body language, listening, cued speech, reading, writing, drawing, lip reading, speech, speech reading and pantomime all of which could be used by adults and students in educational settings. With the use of the TC approach, learners with residual hearing use hearing aids and cochlear implants to learn speech and language. Most TC programs use some of simultaneous communication (SimCom) methods for delivery of classroom instructions to learners with hearing impairment. The philosophy of TC is that the program should be fitted to the child, instead of the other way round. TC acknowledges that means of communication may need to be adjusted based on the situation. For example, a deaf child who cannot communicate well orally gets the additional support of sign language, and vice versa (Holcomb, 2010; Rendel et al., 2018; Woll, 2019).

The claims made on behalf of TC suggest that the TC approach does offer a solution to the problem of Oral Approach failure. The aim of TC is to make use of the Deaf child's residual hearing through hearing aids but also to reinforce speech through the visual medium of signs and any other communication methods that work (Knoors & Hermans, 2010; Luckner, 2010; Moores, 2010; Skutnabb-Kangas, 2008; Woll, 2019). Vieira and Molina (2018) postulated that signs are totally accessible to the Deaf child but speech is always heard imperfectly, even with the help of a hearing aid and for that reason Vieira and Molina (2018) maintained that sign should play a part in the education of the deaf.

The use of the TC philosophy was on the premise to use all possible ways of communication with the Deaf child and that no particular method or system should be omitted or emphasized. In order to do so, natural gestures, alphabet and facial expressions should be used. Proponents of TC believe that all of these communication ways should be used along with speech that would be heard through an individual device for sound amplification.

The basic idea for the use of TC was to make use of anything that could convey vocabulary, language and concepts between the speaker and the child who is deaf. Those advocating for TC argue that Deaf children should have the supplement of sign and any non-verbal communication to accompany speech. With signs representing the symbols of verbal language, furthermore, proponents of total communication believe that Deaf children can have access to "total" linguistic information, in contrast to speech, which gives only "partial" linguistic information (Bedoin, 2011; Domagała–Zy'sk & Kontra, 2016;). Total communication is thus believed to avoid failure experienced by some Deaf children in acquiring verbal language and also to accelerate verbal language acquisition

in all Deaf children. Large scale surveys of educational attainments in the USA, involving thousands of Deaf children and young people, revealed that educated young people are leaving school with poor reading skills, very poor speech and poor command of the structures and vocabulary of verbal language (Allen, 1994).

In practice, the use of TC does not make speaking oral language possible on the part of the students who are deaf as the teacher uses speech and sign at the same time. Oral speech in sign form takes about twice as long to articulate as it does in the spoken form and that there are distortions to both the signed and spoken components of SimCom, speech is slowed down and signs are deleted (Jones, 2000; Oppong, 2003; Vieira & Molina, 2018; Baker, 1999).

One limitation of TC approach is that, while the philosophy may be sound, it may not be put into practice accurately enough in some situations. Many students who are deaf are immersed in a form of SimCom that does not match their level of linguistic (language) readiness or ability. In the classroom, TC often becomes a Simultaneous practice of combining manual concepts (signs and fingerspelling) with spoken components used in English word order. Although TC educational program will differ on the selection of a manual system, all seem to combine signing with speech. The very nature of the two modes (spoken and visual) may cause signers/speakers to alter their messages to accommodate one or the other mode, causing a compromise between the two methods. Although the idea of individualization is at the heart of TC, teachers are limited to how many different modes they can use at a time. It may be impossible for one teacher to meet all the communication needs that might be present in a single classroom of learners who are deaf and hard-of-hearing (Wilcox, 1989; Mayer & Lowenbraun, 1990; Moores, 1996; Kaplan, 1996).

Furthermore, the task for a hearing person attempting to speak and sign simultaneously appears to be psychologically and physically overwhelming. Under such difficult conditions, one or both parts of the signal will deteriorate. A hearing person signing to the deaf will typically begin to audit the speech portion of the signal and will allow the signed signal to deteriorate either by omitting signs randomly or by deleting those signs that do not fit the rhythmic pattern of oral speech. At the same time, the spoken signal is typically slowed down and altered phonologically and is often characterized by excessive halting, hesitation, repetition or other delaying tactics. In general, the less the speech signal is altered, the more the signed signal will be unintelligible (Jones, 2000). Bedoin (2011) noted that whilst total communication is supposed to make use of all modalities, and offer “total” linguistic information, it seems that up to now it falls very short of that goal. Total Communication involves the use of gesture, sign, speech, speech reading, fingerspelling, reading and writing to convey messages to Deaf people. When people refer to TC to mean spoken language accompanied by simultaneous use of sign, they usually mean Sign Supported English (SSE), hearing teachers who teach the deaf mostly sign every word and feature of English, using invented signs or finger-spelling to represent grammatical features of English (Watson, 2009).

2.3.3 Simultaneous Communication (SimCom) or Sign Speech-Supported applied as a medium of instruction in the classroom.

SimCom is an approach that employs a combination of aural-oral communication and Sign language for the purpose of effective interaction and education for Deaf and Hard of Hearing Children. SimCom involves the concurrent use of speech and Sign language to convey information and to receive information for the purposes of teaching and learning.

Fobi and Oppong (2018) citing Luetke-Stahlman and Luckner (1991) explained SimCom as an approach that involves the concurrent use of speech and sign language.

Simultaneous Communication (SimCom), unlike TC, SimCom is a methodology, not a philosophy. SimCom refers simply to the simultaneous use of sign and spoken language, thus, it is manual method which is driven by the natural word order of English. SimCom is an approach to teaching learners who are deaf that gives priority either to the spoken or the sign language. The completeness of the sign component of SimCom is dependent on the skills of the signer (Schiavetti et al., 2004; Demissie, 2011; Haualand & Allen, 2009). According to Demissie (2011) SimCom has several forms and among these, Manually coded spoken language and Signing Exact spoken language which are widely used.

In the 1960s, the philosophy of simultaneous use of speech and sign was introduced by Roy

Holcomb, a deaf man with two deaf sons and a supervisor of a program for deaf students in California, US. Rendel et al. (2018) contended that in practice, there is no empirical basis to suggest that both SimCom and TC are umbrella terms used to generally describe speaking and signing simultaneously.

2.3.3.1 Sign language Systems

In the 1960s, attempts were made to modify ASL for its structure to conform to that of English Language (Oppong, 2007). Oppong referred to this system as manually Coded English (MCE), thus Manually Coded English is a Sign language system that uses signs from sign languages of English-speaking countries of the world to represent English words or word parts. Oppong (2007) posited that in MCE, new signs and finger spelling are used to accommodate English language grammar. To the author MCE is English-based

because it takes signs from sign languages and use such sign languages and use such signs to conform to English language syntax. Opong (2007) indicated that sign systems grouped under MCE included; Seeing Essential English (SEE1), Signing Exact English (SEE2) and Linguistics of Visual English (LOVE), Signed English(SE). In all these sign systems, speech was paired with signs, creating bimodal input that transferred English spoken with the mouth and hands, in situations where interpreting is being done, the system are technically transliterated- thus changing the English language from one form to another and not from one language to another.

2.3.3.2 Seeing Essential English (SEE1)

Seeing Essential English (SEE1) is a Sign language system that strongly advocates for a signing system that strictly conforms to the English structural order. The systems uses pronoun, forms of the verb to be, past and present tenses and articles among others. Historically Opong (2007) citing Powers (1997) and Luetke-Stahlman and Luckner (1991) indicated that Seeing Essential English is a morphologically – based sign system that was created by a hearing impaired man by name David Anthony. It is referred to today as the Morphemic Sign System (MSS). The system uses separate signs for most syllables of words and is often sign by “root word”. For example, gene is the root for genetic, general and generous. The SEE1 was introduced in 1966 by David Anthony, a deaf man who was a teacher of the deaf (TOD). Opong (2007) citing Power (1997) observed that David Anthony used 14,000 signs. Opong (2007) noted that the problem with Seeing Essential English (SEE1) is that it is difficult for individuals who are deaf to learn because its structure differs significantly from that of Sign language. Opong (2007) posited that the linguistic structures of most sign languages of the world (GSL, ASL) differ significantly from the English language. Opong (2007) posited that sign languages

of the world are languages in their own right and that their own right and that the structures of sign languages of the world are not based on that of English language structure. It therefore looks a bit absurd to ask and force a cultural group of people to change the structure of their language (mother tongue) to conform to mother language (English Language).

2.3.3.3 Signing Exact English (SEE2)

According to Oppong (2007) Signing Exact English (SEE2) is a Sign language system developed by a deaf woman by name Gerilee Gustason and her colleagues- Gustason, Pfetzing and Zawolkow (Luetke-Stahlam & Luckner, 1991). Oppong (2007) citing Slike (1997) pointed out that SEE2 uses the 2 out of 3 principle- that is used for two of the three features- pronunciation, spelling and meaning. In such instances GhSL/ASL signs may be used, or a new sign invented. Oppong (2007) indicated that in SEE2, the use of the voice always accompanies the signing – a system called “Simultaneous Communication (SimCom). Signs in SEE2, correspond with the morphemes (smallest units of meanings of the English Language. For example, “mango” and “butterfly” are represented with single signs each to give the real meaning to the word being signed.

Oppong noted that since SEE2 uses the “two-out-of three rule”, the word “run” is signed as “run”, whether it means “to run”, “to have runny nose” or “to run a machine”. Oppong (2007) stated that signed English as a sign system was developed by Harry Bornstein and Karen Sauliner-both hearing educators. The system is voiced as it is signed and follows the English language grammatical structure order.

Signing Exact English (SEE-2) is a system of manual communication that strives to be an exact representation of English vocabulary and grammar. It is one of a number of such

systems in use in English-speaking countries. It is related to Seeing Essential English (SEE-1), a manual sign system created in 1945, based on the morphemes of English words (Luetke-Stahlman, 1991).

This system is designed to correspond with the number of morphemes (or smallest units of meaning) of spoken language to sign language. So the word “butterfly” is only one sign because butterfly has one unit of meaning. Thus, this kind of attempt of trying to make Sign language conform to the structure and rules of English is what give rise to the artificial signed Exact English (SEE-2) also known as Manually Coded English (MCE). Though manual like sign language, SEE-2 tries to represent exactly how English sentences are made. It therefore, uses English lexicon and grammar but uses signs instead of English words. This method also has its own limitations since it tries to use two different languages simultaneously (Oppong, 2007; 2003).

2.3.3.4 Linguistics of Visual English (LOVE)

This is a sign system similar to SEE1. LOVE is a sign system that tries to achieve a one (1) to one (1) correspondence between English words and single sign for each English word Oppong (2007) citing Powers (1997) and Slike (1997).

2.3.3.5 Signed English (SE) or Pidgin Sign English(PSE)

Signed English is a sign system developed by Harry Bornstein and Karen Sauliner-both hearing educators. The system is voiced as it is signed and follows the English language grammatical structural order.

2.3.3.6 Sign Languages and Manually Coded Sign Systems

There have been different communication approaches employed worldwide as far as deaf education and language development of deaf learners is concerned. The manually coded sign systems are used to represent spoken languages in a gestural-visual form, i.e. signs

produced in the same order as spoken words that follow the grammar of the spoken language. These signs are a combination of signs from ‘natural’ sign languages and invented signs to represent grammatical aspects of the spoken language (Oppong, 1997; 1998; 2007; Stredler-Brown, 2010).

Oppong (2007) indicated that Manually Coded English (MCE) is a Sign language system that uses signs from sign languages of English-speaking countries of the world to represent English words and word parts. Oppong further indicated that, new signs and fingerspelling are used to accommodate English language grammar. According to the author, MCE is English-based because it takes signs from Sign language and use such signs to conform to English language syntax.

These systems are attributed to Charles Michel Abbé de l’Épée who in the 1790s developed hand signs to teach a form of the French language to deaf children with the belief that the ‘Language of signs’ was the natural language of deaf people (Moores, 2018; Poelane, 2017; Spencer & Marschark, 2010). They are commonly referred to as TC which originally aimed at the use of varied communication patterns and different strategies in order to meet the needs of individual learners in particular contexts (Moores, 2001; Stredler-Brown, 2010). This is the combined use of the child’s own gestures, sign language, speech, finger spelling, manually coded sign systems, drawing, imitating, and lip reading. Kimani (2012) reported that in a Kenyan school setting, teachers are free to use any or all of these to achieve effective communication. The system that combines the use of signs and spoken words is described as SimCom (Moores, 2001) and elsewhere is referred to as Sign Supported Speech (Johnson et al., 1989; Marschark & Spencer, 2006; Powers, 1997; Slike, 1997).

Kimani (2012) further revealed that whereas hearing teachers in Kenya tend to use SimCom, the use of the system has been controversial in some countries with some people arguing that Sign language should not be accompanied with speech and others arguing that speech would benefit those with residual hearing.

2.3.3.7 Structural similarities and differences between sign and spoken languages usage

Sign languages employ various articulators such as the hands, the upper part of the body, the heads, and the face to express grammatical features simultaneously. Secondly, sign languages use the geometrical properties of the signing space to realize morphosyntactic, semantic, and pragmatic categories in the three dimension signing space. Thirdly, Sign language grammaticalise and integrate gestural elements, since Sign language and manual as well as non-manual gesture use the same modality.

As a consequence, the interface between these two systems is permeable (Grosvald et al., 2012; Goldin-Meadow & Brentari; 2017) and leads to a more prominent presence of iconicity at different grammatical levels (Taub, 2012). By contrast, there is much less transparency between the signals used in auditory communication and their meaning (Schlenker, 2018).

Similarly, Woll (2019) and Matthew, Hall and Caselli (2019) observed that early modern research on sign languages emphasized the underlying structural similarities of spoken and sign languages, but more recent research has moved towards the recognition that there are systematic typological differences, arising mainly from the interaction of language form with modality.

Woll (2019) and Matthew, Hall and Caselli (2019) maintained that phonological and morphological structures in sign languages and spoken languages differ, because sign languages have greater correspondence between form and meaning (iconicity or visual

motivation) than spoken languages do. The authors noted that sign languages also exploit space for grammatical purposes, creating syntactic structures exhibiting extensive simultaneity, while spoken languages prefer linearity and affixation processes.

Other differences arise from the properties of the articulators (sign languages use two primary articulators – the hands – as well as non-manual articulators, including the torso, head and face, eyes and mouth) and the differing properties of the visual and auditory perceptual systems. Similarly Moores (2018) reported that professional linguists have studied many sign languages and found them to have every linguistic component to be classified as a true language and that there are many ways in which Sign language grammatically differs from spoken English.

Moores (2018) indicated that it should be noted that the difference is more than simply differences in the way that things, objects and processes are named. Sign language and English are structurally different. The ways in which phrases, sentences and discourse are structured in both languages are different and have been found to be a source of confusion and difficulty. Moores (2018) pointed out that there is no possibility of translating a Sign language sign for a word into English or translating an English word for a sign into sign language. This is because the two languages have entirely different grammatical structures and processes.

For instance Woll (2019) and Matthew, Hall and Caselli (2019) further indicated that both spoken and signed languages articulate lexical items sequentially and that spoken languages can give some linguistic information simultaneously, (as in, for example, tone languages), and prosody adds further grammatical and affective information to the lexemes uttered. The authors contend that though humans have only one vocal apparatus spoken languages must use sequential structures. Indeed, linear syntax may be seen as a

solution adopted by spoken languages to deal with the availability of only one articulatory system.

The availability of two hands, head and face enables Sign languages to use simultaneously articulated structures (Vermeerbergen, Leeson & Crasborn, 2007). Research on sign languages has also encouraged a recognition of the interrelationship of language and gesture, for example the presence of slots in discourse structure where signers can switch to gesturing, such as when they want to show the roles of characters in a story. Cognitive models are increasingly used to account for the visual motivation behind the structure and form of sign languages, irrespective of the level of language analysis (Taub, 2001).

According to Spencer and Marschark (2010) manually coded sign systems are not considered as 'natural' sign languages rather they were originally developed for use in the education of deaf children and were the dominant form of communication used by hearing teachers and interpreters in classrooms with deaf students in most parts of the world from the 1970s. This has resulted in the various systems being referred to as 'Signed English', 'Sign Supported English' or 'manually coded English' in countries such as United States, United Kingdom and Australia. In Ghana it is referred to as 'Signed Exact English' commonly known as SEE. This is a Sign language that hearing Ghanaians have developed to use when communicating with deaf learners and when it is used in school, sometimes learners are expected to use it although it is not their language.

Hearing people seem to have assigned themselves the power to design a language, that is closely related to their own (speech), to facilitate communication with deaf people rather than appreciating and learning how to use sign language, the language of deaf people (Oppong, 2003 ; 2007). On the other hand, deaf people seem to have been overshadowed by the hearing majority and have been deprived of a voice in deciding the language which

is most suitable for them. Like the case in Ghana Kimani (2012) noted that the coded English is not only used by hearing people in Kenya but deaf people are also obliged to use it when communicating with those who do not know sign language.

Kimani (2012) reported that studies have been conducted on the use of manually coded English and yielded varied results. Whereas some Australian (Power et al., 2008) and American (Schick & Moeller, 1992) studies have shown that manually coded English provided a useful base for acquisition of English -some aspects of language and its word order – its use by adults, such as teachers and parents, has resulted in inconsistent and incorrect use of signing systems due to difficulties experienced in adjusting to the timing and visual attention needs of the learners (Spencer & Marschark, 2010). Kimani (2012) posited that although the use of signs simultaneously with speech has its basis in the lexicon of sign language, the signs lose their original syntactic and semantic property contrary to original sign languages making it difficult for message transmission.

A study conducted in USA by Swisher (2000) revealed that when hearing parents and teachers use simultaneous communication they fail to represent spoken language accurately due to the modality difference – vocal versus gestural. Johnson et al. (1989) amplified the same thought when they stated that this mode of communication suffers from distortion and omission of obligatory words, inaccurate productions by parents and teachers resulting in capturing neither the grammatical forms of the original Sign language nor the spoken language (Spencer & Marschark, 2010).

Additionally, Slobin (2008) contended that languages do not differ from one another in all possible ways. Acknowledging that all Sign languages are ‘real languages’, he focused on the revolutions in Sign language linguistics and challenged the presupposition that there

are no essential structural differences between signed and spoken languages. Referring to recent linguistic research he claims that signed languages are treated in their own right rather than as a priori reflections of spoken languages.

Slobin argued that the modulations of face, posture, and rate of intensity of motion that are characteristic of Sign language are expressed on a continuum that cannot be broken up into discrete categories such as verbs, pronouns, subject, object, etc. In Sign language there are no such categories or elements rather there are hand-shapes, eye gaze, facial expressions, role shift, etc. all linked into each other. He reasoned that ideas are conveyed in a visual (sign) language by uses of location and motion that are not available to an auditory (spoken) language. This explains the challenges that those attempting to have Sign language in written form, as is the case in Kenya, are facing.

Slobin advised that in an attempt to compare Sign language with other spoken languages it is important to understand their special characteristics. Signs are known to convey meanings that are difficult to capture in English words due to the fact that sign languages do not have direct sign-for-word correspondence or meaning (Paterson & Konza, 1997) and that they depend heavily on body language and facial expressions for the communication of meaning. They argued that translating the nuances of the curled lip or the raised eyebrow into one spoken word equivalents and representing meanings of words that have complex ideas in signs would be difficult tasks.

Power & Leigh's (2003) work argued that acquisition of Sign language skills is expected to facilitate access to curriculum content and that it forms a basis for acquisition of English as a second language through reading and writing. Spencer and Marschark (2010) noted that in general, sufficient evidence from empirical studies is lacking to allow

evaluation on the language outcomes due to more focus on the program implementation rather than the actual children's language accomplishments.

2.3.8 Bilingual-Bicultural (Bi-Bi) or Bilingualism Approach

In this approach, Sign language is considered to be the natural language or 'mother tongue' that will be acquired as a first language. Spoken language, which is not acquired naturally by Deaf children, will be learned as a second language as the child's cognitive skills developed (Marschark & Lee, 2014; Falkowska, 2016; Gregory, 1996 ; Hauland & Allen, 2009).

The Bi-Bi approach focuses on the use of two languages, for example, American Sign language (ASL) and the native language of the family (for example, English or Spanish). That is the bilingual-bicultural approach has been described as an approach to the education of deaf children which uses both the Sign language of the deaf community as the language of instruction and the written/spoken language of the hearing community and the second or third language (Marschark & Lee, 2014).

Bilingual-Bicultural approach to education is a communication approach where the child's natural Sign language is modelled and expected to be the child's first language and primary means of communication, as well as to serve as the classroom language and to provide a bridge to learning literacy skills in the hearing community's spoken language (Marschark & Spencer, 2009). It is the most recent approach to instructing Deaf students, having originated in the early 1990s (Singleton & Morgan, 2006).

Skutnabb-Kangas (2008) indicated that Bi-Bi approach amounts to the parallel operation of two systems, with Sign language as the dominant one while using conventional English to build good proficiency in reading and writing. It makes use of American or British Sign

language as the first medium of communication (Moores, 2010; Swanwick, 2016). Bilingualism challenges the terms of reference of both Oralism and total communication. Proponents of bilingualism believe that it is morally wrong to offer Deaf children oral language as a first language.

Natural sign languages have been analyzed by linguists and judged to be “proper” languages with the same capacity as any verbal language for the expression of ideas (Falkowska, 2016; Moores, 2010; Swanwick, 2016). Bilingualists argue that Deaf children have the right to “their own language,” i.e. Sign language used by Deaf people within their own community. They believe that access to “the natural language of the Deaf is the birthright of all Deaf children. According to bilingualists, Sign language users are free from disability.

With sign language, children can develop a distinct Deaf identity of which they can be proud of. Educators have sought to impose their hearing-speaking culture on Deaf children and have disabled them (Falkowska, 2016). The Deaf individual, even if orally competent, can never be equal in situations where speech is the medium of exchange: he or she is always at a disadvantage when struggling to understand and produce speech. With sign language, however, the Deaf individuals or students can communicate as effectively as anyone else.

To try to make Deaf children speak, as the primary mode of communication, is a violation of their rights to their own language and culture. No longer, say bilingualists, should a socially oppressive hearing society impose its norms on the Deaf as a minority group. Bilingualists support the goal of oral language, at least in the written form, but they believe that oral language should be taught as a second language and only when Sign language as a first language has been acquired. It is claimed that Sign language is

established when the child's "common underlying proficiency" can be used as a means of acquiring verbal language (Cummins, 2000).

Since Sign language is to be the Deaf child's "mother tongue" bilingualists emphasize that information and education should be offered primarily through Sign language rather than oral language.

Bilingualism, or bilingual-bicultural education or Sign bilingual education could be defined as using "two or more languages in their daily life of children, at least one of which is a sign language" (Swanwick & Gregory, 2007; Singleton & Morgan, 2006). This bilingual method offers a classroom environment in which deaf children are taught using a natural signed language, with spoken language as a second language. In the USA, most mainstream settings do not offer an ASL or a bilingual approach to deaf students in public schools (Singleton & Morgan, 2006).

Sign bilingualism refers to the use of the Sign language of the indigenous Deaf community and the spoken and/or written language of the hearing community. There are several factors that have contributed to the growth of bilingualism, including: the underachievement of Deaf students who had been educated mainly in oral programmes; criticism of the use of Total Communication in terms of spoken language plus Signed Supported English (SSE); the relative academic success of deaf children from signing deaf families; the recognition of sign languages as full languages in their own right; and a changed definition of bilingualism away from its traditional meaning of native speaker competence in two languages towards that of native competence in one language and the ability to use another. A key aim of sign bilingualism is for deaf children to acquire proper language levels in British Sign language in the first three to four critical years of language acquisition. Whilst this is perfectly possible for the deaf children of Deaf parents with

native Sign language competence, it is much more difficult to achieve for deaf children in hearing families because of parents' lack of BSL (Wilson, Miles, & Kaplan, 2008 ; Miles, Khairuddin, & McCracken, 2018 ; Rendel et al, 2018).

Proponents of Bilingual-Bicultural communication approach to Deaf Education refer to Sign language as the 'natural' language of individuals who are deaf, as it fits with a visual orientation to language. A sign bilingual approach adopts a positive view of deafness, which is seen in terms of a difference, rather than a disability, while Deaf people are seen as a linguistic minority group with their own language, history and culture. Deaf children themselves may for the first time have a genuine choice (Swanwick & Gregory, 2007; Swanwick & Watson, 2005; Watson & Swanwick, 2008).

Woll (2019) opined that with the development of research on Sign languages, it has become clear that bilingualism can be bimodal as well as unimodal. To the author, unimodal bilingualism occurs when either two spoken or two Sign languages are used (e.g., Irish Sign language and British Sign Language) whereas bimodal bilingualism occurs when the two languages exist in different modalities: one signed and one spoken/written. Woll (2019) further points out that recognition of bimodal bilingualism has led to a re-evaluation of models of bilingualism.

According to Woll (2019), Sign languages are able to accommodate spoken languages visually in various ways and that one widespread method is the use of fingerspelling by means of manual alphabet. Manual alphabet uses distinct hand configurations to represent each letter of a written alphabet, enabling the signer to recreate the spelling of any written word using that alphabet. Different sign languages use fingerspelling to different extents.

In 2010, 130 years after the Milan Conference of 1880, in Vancouver, Canada, the 21st International Congress in the Education of the deaf rejected the resolutions of the Milan

1880 conference but rather affirmed the benefits of Sign language in the education of students who are deaf. Signs and Sign languages will exist as long as there are deaf individuals, and it is the responsibilities of stakeholders in education to ensure that signs and Sign language are available to deaf children from birth and through the entire educational process (Moore, 2018; Poelane, 2017).

Hall and Bavelier (2009) in a study of Working Memory (WM), deafness and sign language, found out that when faced with complex and naturalistic tasks, both deaf and hearing individuals have a full complement of working memory systems at their command. Hall and Bavelier in their research observed that although signers and speakers may differ in the extent to which they call upon any given sub-system, the available evidence indicates that their ultimate attainment is equal.

Moore (2018) posited that research on cognition and deafness may have no obvious connection with Sign language usage but believed that the traditional biases holding that deaf individuals were “concrete” thinkers and that sign languages were primitive iconic gestural systems were related. Moore observed that by understanding both the language of deaf communities and the intellectual potentials of deaf individuals, well-meaning hearing educators and other professionals unconsciously imposed low expectations on deaf learners. However, a literature reviewed on studies on perception, cognition and language studies conducted with deaf subjects and hearing parents subjects revealed that no differences were found between deaf and hearing subjects in conceptual performance when the linguistic factor presented were within the language experience of the sampled deaf children and that abstract thought was available to deaf as well as hearing individuals.

With Sign language as a mode of communication approach in the education of students who are deaf, the deaf teacher employs finger spelling, hands and fingers that are shaped

in front of the chest to convey the letters of the written alphabet. The speed and rate of using such alphabetical finger spelling differs considerably according to each individual's experience and proficiency. Sign language, such as British Sign language and American Sign language (ASL), Ghanaian Sign language make use of both hands to convey words and/or ideas via a set of alphabetical and cued signs that all Deaf people in a given community have agreed upon for communication purposes (Alemayehu, 2000; Ladd, 2003; Wakumelo & Miti, 2010; Stokoe, 2000; Pfau, Steinbach & Woll, 2012). According to Moores (2010) each sign in any Sign language system has to include three main features. Firstly, there is the exact positioning of one or both hands. Secondly, there is the shape of the hands and what the fingers look like.

Thirdly, there is the movement of the hands and fingers in various directions and the user's facial expression (Oppong, 2003; 2007).

Opponents of the use of Sign language have long believed that their use, especially in the classroom, discourages the learning of oral communication skills. In this way, proscription of sign languages has appealed to hearing parents eager to believe their deaf children can learn to function like hearing people, and on those terms participate more fully in society. However, educational research has shown that Deaf children struggle to make sense of spoken language when it is the medium of instruction rather than a Sign language (Slegers, 2010; Padden & Humphries, 2005).

In a study conducted in Ethiopia – Addis Ababa, Demissie (2011) attempted to examine Sign language use as medium of instruction in primary classes of Mekanissa School for the Deaf. The study employed a case study research design. The data were collected through 20 classroom observations, individual interviews with 7 teachers, 10 students, 10 parents and 3 officials as well as several document analyses. Those data were examined

and presented based on their themes in detail following narrative analysis method to achieve the purposes.

The findings of the study revealed that the Deaf communication approach dominantly employed in primary classes of Mekanissa School for the Deaf is SimCom which is considered as best method by the teachers. The study also showed that Signed Amharic (Manual Codes for Amharic) is the principal medium of instruction, while written and spoken Amharic served in few classroom activities. The results of the study also revealed that both the teachers and students sometimes exhibited incompetency to make use of the signed language in the classes besides their unconvinced attitude to utilize the natural Sign language as capable instrument of education.

The study also revealed that classrooms and their facilities were found to be unsuitable for effective use of Sign language as a medium. The study also revealed that challenges that hinder the effective utilization of Sign language as medium of instruction related to lack of proficiency on the part of some teachers and students. The research also showed that teachers, students and parents demonstrated negative attitude towards the use of Sign language as a medium of instruction. In the developed world a lot has been achieved in terms of early identification and more advanced interventions, the development of language skills in children with hearing impairment is still a problem (Spencer & Marschark, 2010 : Kimani, 2012). Notwithstanding these achievements different academic researchers have held different opinions regarding the best approach in supporting the language development of deaf learners.

2.4 Teaching and Learning resources for effective use of Sign language as a medium of instruction in the classroom

The availability of appropriate, high-quality resources is a prerequisite for teaching and learning a subject and for that matter teaching the curricular content. Pflapsen and Pallangyo (2019) posited that children and their teachers need high-quality, contextually appropriate and sufficient teaching and learning resources to learn the target subjects or content in the classroom. They also need language-appropriate textbooks and other materials to both support language learning and to learn content across the curriculum.

According to Mpofu and Chimhenga (2013), teachers of students who are deaf can use different equipment including overhead projectors, bulletin board, computers and television for classroom instruction. The researchers further indicated that teachers can also make use of materials such as pictures, illustrations, slides, computer graphic and films with captions. On the issue of the importance of using appropriate teaching aids for lesson delivery to students with hearing impairment, Sheeya (2018) reported that the use of overhead projectors, smart boards and other visual aids provide supplement to what is taught by the teacher and in effect help learners with hearing impairment to recall fast the information learned.

Obosu (2012) noted that visual aids are the channel of communication that employs the vision or sight to reach the mind and that with the use of visual aids it will help learners who are deaf to receive alternative support to acquire the needed education. It should be stated that without visual aids, teaching of students who are deaf may be challenging. Obosu (2012) maintained that computers and projectors are both electronic devices that display information. In modern classrooms, these can become useful visual teaching tools.

According to Obosu (2012) computers and projectors are excellent tools that have all the features and using that can support teachers in lesson presentations. They can be used without the need for the teacher to turn his back on the class. Visual presentation programmes such as the Microsoft PowerPoint allow teachers to modify their slides to suit learners.

The physical environment of the classroom is an important factor in facilitating access to education for learners with hearing impairment. Background noise is especially problematic for these learners, including those using hearing aids. It is therefore important that classroom acoustics are addressed (Marschark & Spencer, 2009). Sheeya (2018) argued that for effective use of Sign language as language of instruction, resources should be available to facilitate teaching and learning. This means that the physical environment in which learning takes place must be conducive. According to Sheeya the physical environment includes factors such as classroom spaces, classroom infrastructure and arrangement of furniture, class size, classroom displays. Sheeya contended that it is critical for teachers to consider the earlier mentioned resources when considering the learning needs of students with hearing impairment.

Sheeya (2018) citing Alshahrani (2014) stated that lack of resources and facilities in schools for the deaf is indeed a major difficulty of learners who are deaf. Sheeya observed that education of the deaf is often compromised due to lack of adequate teaching and learning resources, support staff and other needed resources. Studies carried out by Mapolisa and Tshabalala (2013) confirmed the above findings that these are limited resources and facilities to cater for the educational needs of learners with hearing impairment. On their part Mapepa and Magano asserted that support services are needed

in addressing barriers to learning of learners with hearing impairment. These include the provision of appropriate teaching materials. Mapepa and Magano further indicated that visual materials appropriate for learners who are deaf include pictures and diagrams. Slides, DVDs and illustrations and that the use of these materials for teaching learners who are deaf enhances their understanding. In addition, Nyaywa (2018) indicated that equipment such as overhead projectors, bulletin boards, computers and televisions showing captions on the screen can be used by teachers who teach the deaf to facilitate their teaching.

Similarly, Demissie (2011) and Glaser and Lorenazo (2006) maintained that learners who are Deaf rely on visual input and therefore the classroom should be arranged to facilitate all their visual requirements. Students should be able to see clearly the signed presentation of the teacher, the signed contributions of all the other learners as well as any visuals, such as blackboard, flipcharts, pictures, video materials, and so on. Thus, appropriate seating and lighting adjustments should be ensured in the classrooms. Good lightening is essential to be able to see the signs and facial expressions of the teacher properly. Thus, it is suggested that the teacher stands in front of the students or within close proximity and avoid movement while teaching (Rosy, 2010).

Glaser and Lorenazo (2006) pointed out that U-shape arrangements of tables and the chairs, with the teacher and/or interpreter at the open end, are also an important seating structure. The lighting required varies for different classroom activities. For instance, watching a TV screen is easier when the room is darkened, whereas watching live signing requires good lightning.

Therefore, it is important to look at the adjustments in classrooms while using a Sign language medium.

Demissie (2011) also argued that to use Sign language in a classroom, it is important to have appropriate materials that support the teaching-learning process. Videotapes, CD-ROMs and other visual materials containing Sign language examples provide an alternate form of training materials, as the dynamic nature of a visual language is best shown using images. These Sign language resources are also most easily accessed by learners, provided, of course, that the necessary technology is available to them (Glaser & Lorenzo, 2006).

Paucity of material resources is a factor that contributes to ineffective teaching in primary schools. Chingos and West (2010) indicated that the quality of learning materials such as textbooks is an important ingredient in improving instructions. It is not the buildings themselves that are critical for effective teaching and learning but the quality of the processes that take place within the buildings and that physical infrastructures will not have an impact if they prevent work from being done (Butts, 2010; Peterson, 2009).

The challenge for the teacher is not only to identify and develop mastery of certain instructional strategies and behaviours accepted as effective practices, but the teacher is also challenged to develop the ability to effectively match these strategies and behaviours, at the appropriate time, to individual students and student groups, in specific teaching situations as these relate to the teacher's desired student learning outcomes (Hunt, Touzel & Wiseman, 2009).

Mandillah (2019) observed that lack of teaching and learning resources if not addressed will equally hinder the transmission of content in the languages of instruction in the classroom. This observation is based on the fact that many of the African languages in Kenya do not have an orthography, resulting in a lack of written materials. Consequently, children taught in such languages would not have class readers and other materials to support their learning. A study carried out in Nigeria on quality educational output revealed that the availability of teaching and learning resources such as textbooks, laboratories and other equipment is vital for effective teaching and learning (Adegbija, 2008). Adegbija further noted that a lack of such materials compromises quality teaching, which affects quality learning in educational institutions. Bloch (2002) in South Africa posits that producing visually appealing, high-quality materials in the L1 and/or L1 plus other languages such as Sign language is motivational and raises the status of the L1.

Matimbe (2014) is of the view that lack of instructional materials such as syllabi and appropriate textbooks, teacher's guide and learning process negatively affects effective teaching. Resources refer not only to teaching methods and materials but also the time available for instruction, the knowledge and skills of teachers acquired through training and experience. It is important for teachers to manage their time and cover the whole syllabus so that pupils gain adequate content to tackle examinations. Schools that are efficient in terms of time management are at an advantage in terms of effectiveness. School efficiency is a measure of how well resources are being utilised to produce outputs.

The most important resource which schools should effectively use is time (Delvin, Kift & Nelson, 2012). In their studies of school achievement discovered that schools which are well equipped with relevant educational facilities which comprise instructional materials such as textbooks, libraries and even laboratories do much better in standardized

examination such as grade seven than those which do not have resources. The major factor that ignites teacher effectiveness towards teaching in primary and Junior High schools is the availability of instructional materials such as charts, textbooks and syllabi.

However pupils still fail if teachers lack didactical and pedagogical skills and if these resources are underutilized.

Oyugi and Nyaga (2010) maintained that teaching and learning resources include; peripatetic services, support staff (Sign language interpreters and Braille transcribers), community involvement, regular and special teachers among others. Inadequate trained special education teachers and professionals acts as an obstacle to effective teaching of learners with special educational needs including students who are deaf (Kochung, 2011). Kochung (2011) conducted a research on the effects of instructional resources on students' performance in West Africa School Certificate Examinations (WASCE). The achievements of students in WASCE were related to the resources available for teaching. The researcher concluded that material resources have a significant effect on student's achievement since they facilitate the learning of abstract concepts and ideas and discourage rote-learning. When Teaching and Learning Resources are inadequate education, is compromised and this inevitably is reflected in low academic achievement, high dropout rates, problem behaviors, poor teacher motivation and unmet educational goals.

Eleweke and Rodda (2002) emphasized that classroom need to be colourful, interesting, for learners to feel enthusiastic about coming to school. For easy access, ramps (for children with physical disabilities), hand-rail (for children with visual impairment), proficient Sign language interpreters, Braille for reading and writing and wheelchairs are needed.

Tety (2016) contended that instructional materials have been observed as a powerful strategy to bring about effective teaching and learning. The importance of quality and adequate instructional materials in teaching and learning can occur through their effective utilization during classroom teaching. Instructional materials here include all the tools that the teachers can use to make the learning more interesting and memorable. Tety (2016) maintained that instructional materials are considered important in teaching and learning at all levels of education because textbooks and other resource materials are basic tools. Absence or inadequacy makes teachers handle subjects in an abstract manner, portraying it as dry and non-exciting concepts and ideas. For example, textbooks, charts, maps, audiovisual and electronic instructional materials such as radio, tape recorder, television and video tape recorder contribute much in making learning more interesting (Atkinson, 2000; Adeogun, 2001).

In his study Adeogun (2001) found a strong positive link between instructional resources and academic performance. According to Adeogun, schools that possess more instructional resources performed better than schools that have less instructional resources. This finding supported the study by Babayomi (1999) that private schools performed better than public schools because of the availability and adequacy of teaching and learning resources. Adeogun (2001) noted that there was a low level of instructional resources available in public schools and hence commented that public schools had acute shortages of both teaching and learning resources. He further commented that effective teaching and learning cannot occur in the classroom environment if essential instructional resources are not available.

Fuller and Clark (1994) suggested that the quality of instructional processes experienced by a learner determines quality of education. In their view quality instructional materials create into the learners' quality learning experience. Mwiria (1995) also supports that students' performance is affected by the quality and quantity of teaching and learning resources. This implies that the schools that possess adequate teaching and learning materials such as textbooks, charts, pictures, real objects for students to see, hear and experiment with, stand a better chance of performing well in examination than poorly equipped ones.

Luckner, Bowen and Carter (2001) contended that to enhance communication and instruction with students who are deaf there is the need for the instructor to establish visually rich learning environments. To the authors in such environments, the teacher would have to use the following instructional aids; equipment such as overhead projectors, bulletin boards, computers and televisions. In addition, materials including pictures, illustrations, artefacts, slides, computers, graphics and films with captions.

Luckner et al. (2001) further argued that given the auditory limitations that accompany a hearing loss, most students who are deaf are primarily visual learners. The authors further indicated that though using sign for communication and instruction has many benefits for students, signing, like speech, provides a transient signal. The signal moves- it is there, and then it is gone. Luckner et al (2001) suggested that teachers need to find more visual strategies to help students focus on important information, see how concepts are connected, and integrated prior knowledge with new knowledge.

According to Luckner et al (2001) for students who are deaf to succeed in school , teachers have to adapt learning environments and use teaching and learning resources and teaching

strategies that will help students maximize their learning time. Pakata (2015) noted that studies in the United States of America in 2005 revealed the influence of school environment on the use of Sign language showed that learner's achievement is affected either positively or negatively by the school environment (Mercer & Littleton, 2007).

Studies about students' achievement and building conditions concluded that the school significantly affects student achievement. There is enough research evidence to show that the buildings in which students spend a good deal of their time learning, influences how they learn. A desirable school environment in design is friendly having wide entrance to classrooms for learners who are hearing impaired to support use of Sign Language. Obviously a deaf learner cannot learn in a dark place as they need vision to communicate. The experience of using a range of teaching/learning resources and related equipment, supplies, furniture and various forms of printed media for teachers are critical in facilitating the process of teaching and learning worldwide (UNESCO, 2012). These resources include hearing aids that offer services to teachers to enrich their teaching however, the resources are expensive and need a replacement (Pakata, 2015).

The high expenditure incurred on repair can be cut down by training teachers on how to use and maintain the equipment with proper instructions to learners as well on how to use them. In the United States of America (USA), **50%** of teachers reported that they lack adequate teaching materials (Pakata, 2015). Differences in school facilities seem to account for differences in achievement. Facilities such as library, textbooks, laboratories, dormitories, visual aids, electricity, water and playing grounds enhances better learning.

Teaching and learning resources play a central role towards the quality of education. Motivation of teachers and the pupils which undoubtedly constitutes an important factor in the academic performance and the success of any learner (Pakata, 2015). He further stated

that to improve learning, teaching resources like textbooks should be used as instructional materials at all levels of teaching because they reflect and deliver the curriculum.

The report on studies carried out in Malawi and Guinea Bissau which established that teachers lack essential teaching materials such as teachers “guides and other pedagogical documents to accompany the text books contributed to poor performance of the candidate at the examination level. Also lacking were teaching aids such as globes, wall maps and laboratory equipment. Some schools have no proper classrooms that affect the quality of education leading to low academic achievement and poor performance in examinations (Wanjau, 2005).

Lack of teaching materials in most rural schools have discouraged teachers from doing their best when teaching. He concluded that if schools were well equipped, they would motivate the teachers to facilitate learning. However, Wanjau (2005) noted that teachers were not innovative enough and failed to utilize and improvise from the resources available at the school environment to improve their teaching. He also argued that it is not only the availability of teaching and learning resources that can motivate use of Sign language but rather how teachers make proper use of the teaching resources provided.

Similarly, Mweri (2014) pointed out that the infrastructural anomalies in deaf children’s learning environment and that the importance of education in people’s lives cannot be gainsaid. This importance is reflected in the kind of infrastructural development that governments engage in as far as education is concerned. Pakata (2015) noted that the educational environment, within which deaf pupils find themselves specifically, is far from being conducive and thus hinders the capabilities of a deaf child from reaching their fullest education potential.

The physical environment deaf children find themselves in schools is far from conducive in as far as infrastructure is concerned and this impacts negatively on their education. This state of affairs can be exemplified by the words of the Permanent Secretary (PS) in the Ministry of Gender, Children and Social Development in Kenya while addressing participants at the commencement of the deaf awareness week in 2011, he stated: “The deaf were the most likely to be less educated among all persons with disability” (The East African Standard, September 20th 2011, p. 7). In effect, the PS was confirming the truth as stated above. In essence what this means is that the deaf school system in Kenya effectively produces educationally and socially “handicapped” young adults and in so doing helps to perpetuate the belief that as disabled people the Deaf are inadequate, in this way legitimizing their discrimination.

2.5 Challenges affecting the use of Sign language as a medium of instruction in the classroom.

2.5.1 Sign language proficiency of teachers of the deaf

Teachers need to be knowledgeable about the curriculum and be able to apply their acquired knowledge and skills to deliver instructions on the content or subject matter in the classroom. They also must have the knowledge and skills to teach literacy appropriately when children are learning to read a language that is their second language (an approach which should be reflected in the curriculum and teacher guides, but one that teachers will need to be well-trained to implement. Amoako-Gyimah (2015) argued that there is the need for professional development to focus on teachers’ proficiency in sign language. To him, this is necessary because Sign language is the medium of communication and as such if teachers are not proficient in it, it makes teaching very difficult. Amoako-Gyimah contended that a teacher should have absolute command of the

subject matter and also must possess the necessary teaching strategies and skill to be able to effectively deliver lessons to students who are Deaf using the Sign language medium of instruction.

Amoako-Gyimah (2015) maintained that if the teacher is not proficient in the communication mode he or she has to use in teaching the children, the teacher will find it extremely difficult in making any positive impact as far as the teacher's delivery of lessons in the classroom is concerned and for that matter proficiency in Sign language is important. Similarly, Pflapsen and Pallangyo (2019) argued that teachers need to be proficient in the language(s) of instruction to be able to effectively teach. Proficiency includes an ability to speak, use, read and write the language sufficiently well to teach it and to teach in it. This includes proficiency in Sign language for teachers who will be teaching children who are deaf and hard of hearing (Mulonda, 2013).

Similarly, teachers of students who are deaf should be able to deliver quality instructions to students through Sign language but it appears the professional competencies of teachers of deaf students is in doubt. In a study, conducted in University of Education, Winneba (UEW) by Oppong, Fobi and Fobi (2016), a descriptive survey was used to explore the perception of 23 deaf students of UEW, Ghana, on the quality of Sign language interpretation that they receive. Using a 15-Point Likert Scale questionnaire, they found out that the students had concerns about the professional competencies of their Ghanaian Sign Language (GhSL) interpreters and found the quality of the interpretation service to be unsatisfactory. The gap in this study is that their study failed to provide demographical information on the educational level and qualification of the Ghanaian Sign Language (GhSL) interpreters employed by the University which could have provided insight into whether qualified or unqualified interpreters were used.

In another study conducted in Bulawayo (Zimbabwe) by Sibanda (2015) to investigate Sign language proficiency among teachers of the deaf, a descriptive survey and ex-post facto research design were employed in soliciting data from a sample of 15 teachers of the deaf and 5 college lecturers. Data were collected using a structured questionnaire and Modified Sign language Proficiency Interview (MSLPI) on a 6-Point rating scale. Document analysis and observation were used to authenticate responses from college lecturers and teachers respectively. The Statistical Package for Social Science (SPSS) and descriptive summaries were used to analyse the data. The data indicated that teachers of the deaf in Bulawayo lacked Sign language proficiency. The findings of the study revealed that what teachers at times mistook for Sign language was mere finger spelling and some distorted signed systems. The study concluded that the learning of children who are deaf in primary schools in Bulawayo was heavily compromised due to lack of effective communication between teachers and the learners. The study further concluded that the inclusion of deaf children in the schools would remain a pipe dream as long as the teachers were not proficient in Sign language which is the first language of the deaf.

Similarly, in a study conducted in Ethiopia by Asfaw (2017) which was aimed at establishing a situational analysis of the communication challenges of teachers teaching pre-lingual deaf pupils in inclusive classroom and also finding out the levels of Sign language training for teachers of the pre-lingual deaf. The study adopted the case study design. The population comprised one school with two classroom that was selected for the study. The two classrooms had a population of 81 pupils. Of the total number of pupils in the classrooms, there were 25 pupils with pre-lingual deafness, 24 post-lingual deaf pupils, 5 hard of hearing, and 27 hearing pupils. The pupils were not interviewed but only took part in the study through the observations that were conducted by the researcher. Six

teachers were purposively selected to take part in the study. Data were gathered through interview guide directed to the teachers and observation checklists were used to collect classroom observed data. The findings of the study revealed that majority of teachers teaching in the two classrooms investigated never underwent comprehensive training in sign language. The study also revealed that Sign language is mainly a first language for pre-lingually deaf learners and failure by teachers to use their preferred mode of communication thwarted the achievement of learning outcomes.

It was also discovered in the study that teachers use Ethiopian Sign language rarely, sign Amharic/English while they are using spoken language, in which they code switch naturally. The results of the study showed that the major challenges which teachers and pupils face are lack of skill of sign language, limited vocabulary of Ethiopia Sign language and limited learning resources in sign language. The study also revealed that teachers try to overcome these challenges by learning signs from the learners, consulting from more experienced teachers of the Deaf, depending more on visual aids like chart and pictures. Lastly the study showed that the overwhelming majority of the teachers want in-service training in Ethiopian sign language.

Mann (2016) cited a study by Long, Stinson, Kelly and Liu (1999) which focused mainly on the teachers' affection on the students, the students opinions of the teachers' communication skills in Sign language were investigated and was reported that rating of communication skills in Sign language was higher for teachers with higher scores in their Sign language. Long et al., (1999) conducted a communication proficiency research on teachers in the use of Sign language as a medium of instruction. The findings of their research revealed that teachers' with strong skills in Sign language maintained a strong and positive relationship with students who are Deaf and were well able to foster

interactive communication to provide a safe and healthy learning environment which will help to improve learning outcomes of students.

By inference from the findings of the study, it can be deduced that teachers with weak Sign language skills will result in negative relationship with students and will hinder interactive communication which will not facilitate conducive learning atmosphere and in the end will make learning outcomes of learners deteriorate.

In addition, recent research has shown that when taught by experienced teachers of the Deaf in mainstream classrooms, deaf and hard-of-hearing students may learn as much as their hearing peers, even if they come into the classroom with less content knowledge (Marschark & Spencer, 2009). More so Marschark and Spencer (2009) posited that teachers' ability to communicate well in the language used by their students clearly represents 'best practice' in Deaf educational settings. According to them all teachers should understand the ways that Deaf and hard-of-hearing pupils learn and also teachers of the Deaf should be cognisant of the body of knowledge that now exists in relation to the use of effective strategies in the classroom, particularly as outlined in the international review of the literature. It is particularly important that all teachers have high expectations of achievement for Deaf and hard of hearing pupils.

It is argued that for effective teaching and learning to take place, teachers need to possess sufficient degree of experience and skills. Mavhundutse (2014) is of the view that experience and skills are some of the major factors that contribute to effective teaching. To acquire the required skill, Tshabalala (2014) advanced the argument that the quality of teacher training has an impact on teaching methods and improvement of skills. Tshabalala further argued that most people have come to accept that sign languages are not literal translations of spoken languages and that their complex spatial grammars are markedly

different from the grammars of spoken language predominantly used in regular classrooms and for that matter teachers who teach students who are deaf must demonstrate mastery over the use of the Sign language as the language of instruction in schools for the deaf.

Wakumelo and Miti (2010) observed that Sign language is expressed through the combination of hand shapes and movements, body movement and facial expressions. They contain structures and processes that spoken languages do not have and that they have grammatical structures which are suited to the visual medium.

On his part, Wakumelo (2009) noted that teachers mainly depend on pupils during classroom instruction where teachers for lack of Sign language skills write words on the chalkboard and ask pupils to give the signs for those words. Wakumelo (2009) further argued that in such cases “the pupil who is supposed to be the learner now becomes the teacher.” This is a strange system in a country where schools for the Deaf and education of the Deaf have been in existence for some time. Wakumelo (2009) further indicated that sometimes teachers resort to the use of aids/objects/apparatus for the children to see what they are referring to. Wakumelo (2009) maintained that the success of such an approach depends on whether pupils know what is in the picture because if they do not, they have no concept and hence no sign for the object. Wakumelo (2009) reported of some challenges which teachers have to go through when it comes to technical subjects like English, mathematics and Science. The problem of lack of enough Sign language when it comes to the teaching of English, science and mathematics at high school level becomes more acute. This is compounded by the fact that the few teachers who are knowledgeable in Sign language only know the basic signs and they are not able to sign technical concepts. This phenomenon delays teaching and slows learning. When the teacher fails to formulate appropriate concepts they resort to oral speech while pupils have to resort to lip

reading which may not be helpful sometimes (Wakumelo 2009). Wakumelo contended that the pupils and teachers have difficulties in understanding each other and that this emanates from the nature of signs both categories use. The study has found out that teachers have to repeat themselves several times to be understood by their pupils.

According to Johnson and Seaton (2012), in the United States of America too, most teachers of deaf and hard-of-hearing frequently experience teaching the same information or skill to the students over and over again. They pointed out that teachers spend a tremendous amount of time teaching basics and background information to their students and that so much time is spent on filling in gaps on students' knowledge that teachers rarely have time to complete their lessons or circular units. Johnson and Seaton maintained that teachers become frustrated and their pupils become bored as they repeat the same materials and students lag further behind the academic achievement of their hearing peers.

Johnson and Seaton (2012) further indicated that miscommunication between teachers and the Deaf pupils is hence quite common. To the authors this situation could be solved if there were deliberate efforts to have an intensive and comprehensive Sign language teaching program in the early years of the children's language development. Hearing children have opportunity in the context of their home environment, it is not the case for Deaf children especially those born of hearing parents who have no knowledge of sign language. Johnson and Seaton (2012) indicated that to remedy this situation there must be a deliberate government policy on early detection of deaf children and a program to aid them in the acquisition of their language which is sign language.

Chifinda and Mandyata (2017) opined that the challenge of mispronunciation or disarticulation of signs also noted in the study is an indicator that teachers of the deaf are really in need of training. The study observed that during assessment of hearing impaired

learners were accustomed to the deaf culture i.e. telegraphic language. As a result, learners with hearing impairment found it difficult to read and understand the questions in assessment items to respond appropriately. Chifinda and Mandyata's (2017) explanation was that most teachers of the hearing impaired did not have sufficient skills in Sign language to use as a medium of instruction. Hence, the dependence on total communication. Starczewska et al (2012) posited that most teachers of the deaf use oral language alongside signing as their modes of instruction because of their limitations in the use of sign language. These raises concern about appropriateness of language of instructions available in schools as well as the low achievement levels of the deaf in comparison with that of the hearing learners. Studies have begun to move an in-depth understanding of language of the deaf in relation to that of the hearing.

Mandyata (2018) in a study found out that most teachers of the hearing impaired did not use Sign language as a medium of instruction, instead teachers favored the use of total communication, oral language and pointing in the teaching. In the study in which students with hearing impairment were participants they commented that they understood lessons taught them by deaf teachers who used mainly Sign language better than when taught by hearing teachers who heavily depended on total communication. These comments by the participants were supported by Svartholm (1994) and Adoyo (2002) who reported that teachers in schools for the hearing impaired were required to impart knowledge through the use of Sign language and not necessarily a mixture of communicative modes. However, Harlan (2011) explained that the situation of the hearing teachers as they being linguistically handicapped in relation to sign language. They rather prefer the use of oral language or a combination of oral and Sign language in classroom instructions.

In addition the study by Mandyata (2018) also revealed that learners with hearing impairment disapproved of the use of a combination of communicative approaches in delivery lessons in the classroom setting. Mandyata (2018) in his study established that teachers struggled to operate effectively with the use of Sign language as an instructional language and that the challenge was attributed to the inadequacies in the preparation of teachers at college and university levels. It was observed that there was a situation where most teachers graduated with little or no knowledge of Sign language as a medium of instruction in the learning of learners with hearing impairment.

Adoyo (2002) and Bragiel and Kaniok (2016) for instance, reported that in Kenya and Poland, teachers for the hearing impaired lacked competence in Kenyan Sign language and Polish Sign language to effectively communicate in Sign language alone during classroom instructions. These studies showed teachers preference for more use of total communication as opposed to Sign language alone. Adoyo (2002) and Bragiel and Kaniok(2016) again noted that lack of experts in Sign language as contributing elements to failure to teach through the use of Sign language alone. These studies revealed that the problem with the use of Sign language as the only medium of instruction, emanated from the teacher training institutions which did not prepare teachers for such purpose.

Wakumelo (2009) reporting on Zambia teachers of the deaf cited the teachers' inability to use Sign language as a medium of instruction for learners with hearing impairments. The researcher sees it as a product of ill-preparation of teachers; lack of interest in the language of the hearing impaired and limited resource to teach it.

Mweri (2014) argued that a good deaf education program must revolve around the child's needs. In deaf education of the Deaf, the child must be an active participant and not a passive one. This participation must mostly be visual so that the environment the deaf

child operates in, say in the classroom, is one of more of seeing than of hearing. Participation for the deaf learners means it increases the possibility of them being able to develop different skills and also master the world around them. Mweri (2014) maintained that participation also enables the deaf learner to develop the value of cooperation as they enjoy and play with other deaf learners and in the process it enhances their ability to acquire visual language, in this case Ghanaian Sign Language (GhSL).

Mweri (2014) further indicated that the teachers' role cannot be overemphasized, given their central role in the lives of the deaf learners, all teachers in schools for the deaf must become fluent in GhSL. This may seem to be a difficult feat to achieve. However, through deliberate in-service programs for teachers, where the emphasis will be GhSL for specific purposes, it can be achieved. Mweri (2014) maintained that teachers must also ensure that the class arrangement is appropriate since the pupils must be in a position where they can see the teacher and also see each other. The classroom must also be visual, as earlier indicated, thus there must be plenty of pictures and diagrams. The classroom must be well lighted since the language used is visual; the teacher must draw the attention of who is communicating at all times.

2.6 Opinions of teachers and students on the use of sign language as a medium of instruction

Attitude is a predisposition or tendency to respond positively or negatively towards a certain idea, object, person or situation. People usually have an attitude, either positive or negative, about languages. They may feel one language is expressive and prestigious and the other as immature and has low-status (Burns, Matthews & Nolan-Conroy, 2001; Demissie, 2011; Pakata, 2015; Tameru, 2014; Endale, 2016). However, from a linguistic point of view, all languages or language varieties are equal in serving the speakers of the

language. The attitudes people develop are results of social judgments that manifested the social status of the speakers.

Since language attitudes are complex psychological entities, they can influence language use and the choices of a person in different domains. Slegers (2010) reported that educational research has contributed to changing attitudes towards the use of Sign language as a language of instruction. Slegers further indicated that there is a growing body of international research over the past three decades that supports the notion that children who are deaf achieve better academically in a bilingual classroom setting. Slegers maintained that an environment with Sign language as the language of instruction has been shown to facilitate the teaching and learning of the content or the subject matter (Komesaroff 1996; Branson & Miller 2002).

As Burns, Matthews and Nolan-Conroy (2001) stated, language attitudes can have a significant influence on education as well. The attitudes the speakers of a language have are often a basis for choosing the language as a language of teaching and learning. The attitude of the teacher and students towards a certain language is the most important matter in this regard. Especially teachers, according to them, the attitude of teachers towards the use of a certain language is crucial in the educational settings. Research findings show that some teachers of the deaf have unconstructive and misconceived attitudes towards Sign language (Burns, Matthews & Nolan-Conroy, 2001; Demissie, 2011; Mweri, 2014).

Some learners who are deaf enter school with no language and if these learners cannot find efficient teachers who have positive attitude towards the language to train them with the language, they usually build up poor Sign language proficiency. Incapability to express their ideas properly usually leads the students to develop a negative attitude towards sign language, thinking it is unqualified of expressing abstract ideas. According to a study

conducted in Gallaudet University in US, American Sign language (ASL) users are taken as less educated Deaf and the Deaf who use Manually Coded English or Signed English are considered as highly educated (Burns, Matthews & Nolan-Conroy, 2001 cited in Demissie, 2011). Another study done in Ireland also can be evidenced for such an attitude among Deaf students (Burns, Matthews and Nolan-Conroy, 2001 cited in Demissie, 2011). Students there placed great importance on the acquisitions of oral language skills and 75% of the students preferred placements in classes that employ oral languages as the only medium.

As mentioned in the study, many students think that signing has a negative impact on spoken language learning, though there was a considerable difference between the views of the profoundly Deaf and hard-of-hearing students. However, these views were reflected with regard to using Sign language for education. In other communications, Sign language is prevalent among the Deaf students. As Burns, Matthews and Nolan-Conroy (2001) and Demissie (2011) suggested by referring to different research findings, there is a need for radical change in language practices at schools for the Deaf. They also recommend shifting people's attitude and beliefs towards the Deaf and their language. As many studies show, the overall level of achievement of Deaf children is limited in oral communication, with low level of attainments in reading and writing. Therefore it is obligatory to advocate natural sign language's employment in classrooms.

On their part Tameru (2014) and Khejeri (2014) argued that a teacher is the most important component of educational system and that without the teacher no educational activity can be carried out. Tameru maintained that increased funding, better infrastructural facilities, new curricula, improved syllabi, availability of learning resources, effective planning and administration as well as political will to change and

popular support for what is done, all might have their own part to play as far as delivering quality education to learners is concerned. However, the end success or failure of any educational system depends on the teacher in the classroom. Tameru (2014) citing Million (2006) noted that teachers with negative attitude are not only potential drop outs, but they are likely to be transmitters of negative values and attitudes about teaching to the pupils they teach. Khejeri (2014) pointed out that attitudes of teachers towards the language of instruction is an indispensable factor for those who are engaged in implementing the language policy.

Poelane (2017) citing (Hardonk, Daniels, Desnerck, Van Hove, Van Kershaver, Sigurjonsdottir & Loucks, 2011) posited that when a child is born deaf or becomes deaf (e.g. through illness or accident), parents are faced with a number of important decisions, especially with regard to the medium of communication their child will use, a decision that shapes every aspect of a child's life. Tameru (2014) pointed out that if the attitude of parents towards the language of instruction is positive, then the attitude of the learners is most likely to be positive. On the other hand, if the attitude of parents is negative, it is more likely that learners will develop negative attitudes towards the whole education system in general and the language of instruction in particular. Generally speaking, the importance of both parental and community members' attitude in education system has serious psychological effect on pupils' learning and their performance. This is a very personal decision and is influenced not only by the child's parents, but also by professionals working with the family, friends, and extended family members (Ingber & Dromi, 2010).

2.7 Conceptual Framework

The study explored the use of Sign language as a medium of instruction given all variables are manipulated adequately. The Conceptual Framework shows the effect of independent variables, i.e. Best Teacher Practices has on the dependent variable, thus, the use of Sign language as a medium of instruction with the support of the available teaching and learning resources could lead to effective use of Sign language in delivery classroom instructions while lack or inadequate learning resources and negative teacher and student attitude towards the use of Sign language as a medium of instruction could impede the use of Sign language for effective classroom teaching and learning. The other variables in the study are presented diagrammatically in Figure 1.



CONCEPTUAL FRAMEWORK

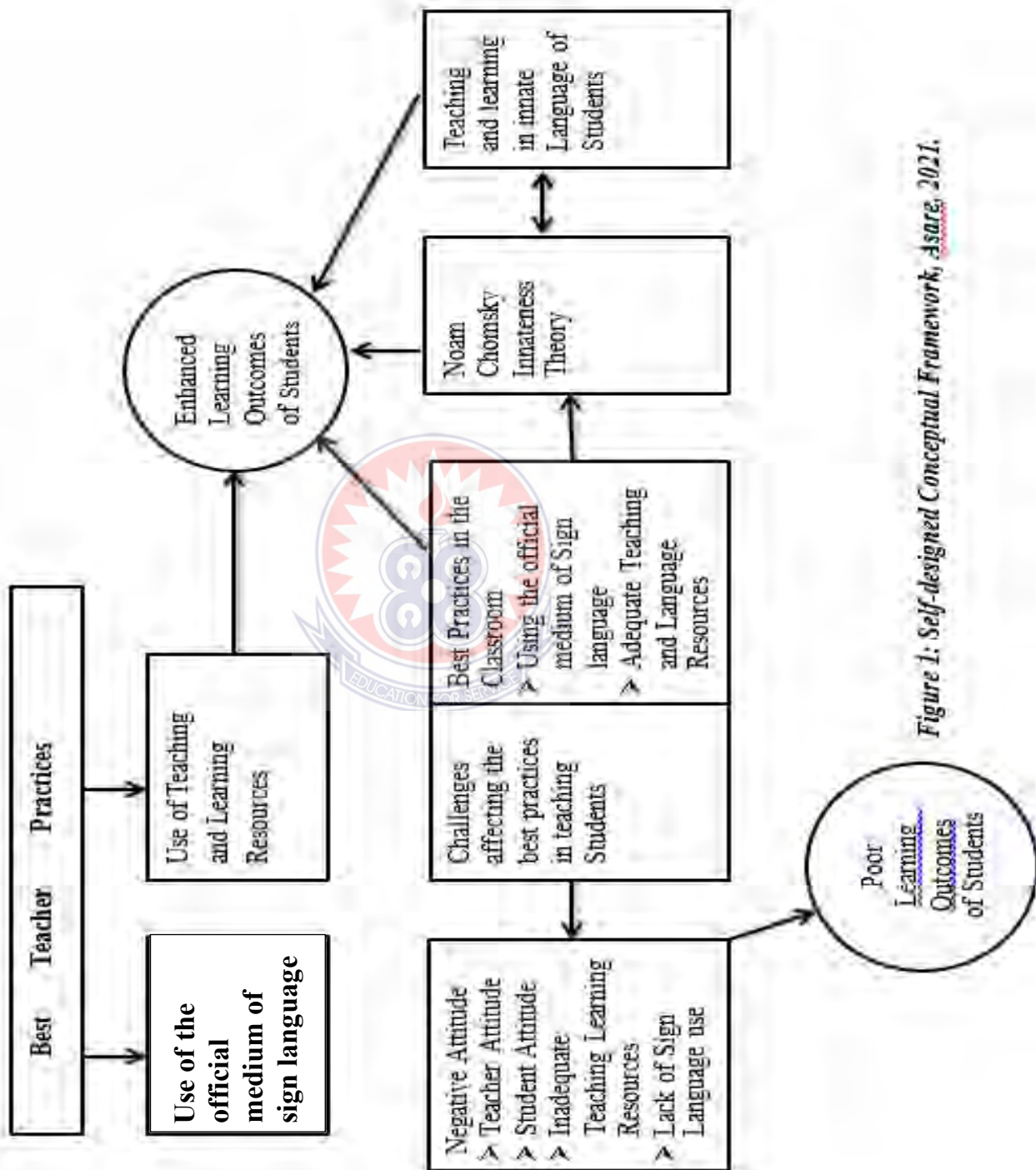


Figure 1: Self-designed Conceptual Framework, Asare, 2021.

2.8 Summary of Literature Review

This chapter reviewed related literature on the research topic, empirical literature and the theoretical framework. The chapter was discussed under the following strands: communication approaches to Deaf education used in the classroom, teaching and learning resources for effective use of Sign language as a medium of instruction in the classroom, challenges affecting the use of Sign language as a medium of instruction in the classroom, language attitudes and its implications in Education.

The evidence provided by the literature together with the empirical evidence involved in the study has revealed that there are three main communication modes in of educating the Deaf with its strengths and weaknesses in its application in the classroom setting. The literature has also revealed that there are challenges that affect the use of Sign language as the medium of instruction. Some of the challenges according to the literature are teachers' lack of proficiency in Sign Language, inadequate teaching and learning resources for the effective use of Sign language as the medium of instruction.

In reviewing literature for the study it was revealed that all the previous studies were carried out in a primary schools to investigate benefits of Sign language for teaching deaf students. Those studies were descriptive in nature and teachers of the deaf were the sample of the study selected by using simple random sampling technique. A total number of 40 teachers of the deaf from four schools were the participants of the study. For the purpose of collecting specific information, a structured questionnaire was developed on the basis of a 5-Item Likert scale.

Collected data was tabulated and analyzed by using descriptive and inferential statistics. The gap in the previous study is that their study failed to include deaf students as respondents even though the study concerns them as far as their classroom learning was

concerned. To fill the gap in the previous studies, this current study is carried out in a Junior High School (JHS), students who are deaf are made part of the sample for this study, Interview is the research instrument used to elicit views and opinions of students who are deaf on the challenges affecting the use of Sign language as the medium of instruction. This is an area where little research has been conducted over the years. This might be the first study in Ghana on the use of Sign Language as a medium of instruction in a Basic Special Schools in Ghana.



CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the methodology for the study. The philosophical underpinnings of this study was based on the Social Constructivist as well as the Transformative worldviews or beliefs. Social Constructivist conducts naturalistic inquiry on participants under a given study to ascertain what prevails in their natural setting, make inquiry using open-ended questions, live in the natural setting of the participants, and his or her understanding of the people help to shape their way of behavior better. This constructs i.e. the researcher lives with the participants, in addition to teaching them for ten years in the school. The use of the Social Constructivists worldview or beliefs helped the researcher to use opened-ended questions (Creswell & Creswell, 2018) to get certain understanding on which methods and teaching and learning resources are used for teaching and the challenges affecting the use of Sign language in the classroom setting.

The Transformative worldview or beliefs focuses on finding out the views or opinions of the participants who are disabled, underprivileged, oppressed and are disadvantaged in their natural setting, the Transformative worldview has the objective to bring about policy change in the ways things are done in the social setting of the participants, and also hold beliefs as to how programme works, and focuses on where there is a problem. The adoption of the Transformative worldview by the researcher was useful because the participants of the study are deaf (Creswell & Creswell, 2018) and therefore there was the need for the researcher to establish whether or not teachers use a standard Sign language to deliver classroom instructions to the students. The use of standard Sign language will facilitate the understanding of the students which will in effect enhance their learning

outcomes (Creswell & Creswell, 2018). The other areas that were covered under this chapter include: research approach, research design, population, sample size, sampling techniques, instrumentation, validity and reliability of instruments, positionality, methods of verification of trustworthiness, ethical considerations, procedure for data collection and data analysis procedures.

3.1 Research Approach

The study employed the qualitative research approach based upon the Social Constructivist beliefs in making social inquiry at the natural setting of the participants to explore the use of Sign language as a medium of instruction in the school. Qualitative research is a holistic research strategy as it seeks to understand events in their natural context rather than in isolation in order to gain trust and understanding, and to get close to the participants who form the focus of the issue under consideration. It involves an interaction between the researcher and the participants in the socio-cultural context of participants of a study (Kusi, 2012; Cohen, Manion & Morrison, 2011).

In qualitative research, Bryman (2008) and Creswell (2013) opined that participants are expected to give detailed rather than general information on the features of the specific phenomenon under investigation. Creswell and Creswell (2018) citing Creswell (2016), Marshall and Rossman (2016) posited that qualitative researchers tend to collect data in the field at the site where participants experience the issue or problem under study. In addition, qualitative research approach considers collecting information from participants in order to understand the phenomenon under consideration from the perspectives of those involved in the study (Ary, Jacobs, Sorensen & Razavieh, 2010). This study used the qualitative approach, in order to have a detailed account of the views of participants on the use of Sign language as a medium of instruction in the school.

3.2 Research Design

A Descriptive case study research design was adopted for the study. Kusi (2012) indicated that a case study is the collection and presentation of relatively detailed unstructured information from a range of sources about a particular group or institution usually including the accounts of the participants themselves. Kusi posited that a case study aims to investigate the case in-depth and in its natural setting aiming to preserve and understand the wholeness and unity of the case. Similarly, Fraenkel and Wallen (2009) argued that in a Case Study, the researcher is primarily interested in understanding a prevailing situation. It was imperative for the researcher to adopt the Case Study Research Design to be able to understand the case in-depth and in its natural setting, in this context to explore the use of Sign language as a medium of instruction in the school.

3.2.1 Justification for choosing Case Study

The researcher chose Case Study as the research design because the researcher is a teacher at the research site or the school and teaches students who are Deaf by using Sign language as a medium of instruction. The researcher believes this exposure, experience and understanding of the context and role enhances my awareness and knowledge on the use of Sign language for teaching the students who are deaf. In addition, this ideas, experience and knowledge will complement my understanding of the data being collected for this study.

3.3 Population

The population for the study involved Sixty-three (63) participants made up of 52 Junior High School (JHS) students, 10 teachers and the Head teacher of the school. Hayford (2013) argued that a population is a group of elements or cases, whether individuals,

objects or events that conform to specific criteria and to which the researcher may intend to generalize the results.

The population for the study is presented in Table 1 below:

Table 1. Population Distribution

Source: Researcher's Computations from field Data, July, 2020

RESPONDENTS	JHS 1			JHS2			JHS3			
STUDENTS	M	F	T	M	F	T	M	F	T	
	12	14	26	5	5	10	10	6	16	
TEACHERS	MALE = 9					FEMALES = 1				
HEADTEACHER	MALE = 0					FEMALE = 1				

Key: M- Male

F- Female

T-Total

3.4 Sample Size

The sample size for the study was fifteen (15) respondents made up of six (6) hearing teachers, three (3) teachers who are deaf, five (5) Junior High School final year students and the Head teacher. The hearing teachers and the head teacher have had over 10 years' experience of teaching students who are Deaf and are Special Educators with first degree in Special Education whereas the teachers who are deaf have had little over five years' experience in teaching the deaf and two of them have had first degree in Special Education.

The teachers were selected because they teach the various subjects at the Junior High School and were in a better position to express their views on the practices and challenges of using Sign language as a medium of instruction. Hayford (2013) posited that the sample is the group of individual or elements or a single individual from whom data are obtained

and that the sample should have identical characteristics with the rest of the population. The sample size distribution is presented in Table 2.

Table 2. The Sample Size involved of the Study

Respondents	Number
Students who are deaf	5
Hearing Teachers	6
Teachers who are deaf	3
Head teacher	1
Total	15

Source: Researcher's Computations from field Data, July, 2020.

3.5 Sampling Techniques

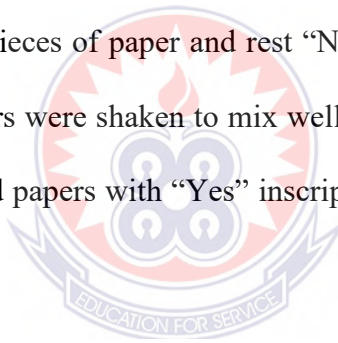
Purposive random sampling techniques were used to select the sample size for the study. Specifically the researcher employed the critical case sampling type of purposive sampling for the study. The critical case sampling is a type of purposive sampling in which just one case is chosen for the study because the researcher expects that the study will reveal insights that can be applied to the other like cases. The researcher randomly sampled the 3rd or final year students because they have been taught in Sign language for many years in the school than any other class in the school. The teachers and the head teacher were purposively selected because they were in the best position to provide relevant information relating to their experiences.

Avoke (2005) observed that in purposive sampling technique the researcher handpicks the cases to be included in the sample on the basis of their judgment of typicality. On his part, Fraenkel and Wallen (2009) argued that purposive sampling technique is a technique in which researchers use their judgment to select a sample that they believe, based on prior

information, will provide the data they need. To draw on a purposive sample, a researcher begins with specific perspectives in mind that he or she wishes to examine and then seeks out research participants who cover that full range of perspectives.

Some scholars argued that purposive sampling techniques are more suitable for studies located within the qualitative framework than studies that fall within the quantitative framework (Creswell, 2014, 2016; Gall, Gall, & Borg, 2007; Kusi, 2012).

Simple random sampling was used to sample the students because all of them had the same chance of being selected (Avoke, 2005). To select the student respondents for this study out of 16 final year students, the researcher wrote “Yes” and “No” on papers for each of the 16 students to pick only one. Five respondents were required, so five “yes” inscriptions were written on pieces of paper and rest “No” were written on the remaining eleven (11) papers. The papers were shaken to mix well, and then passed round. The five students who randomly picked papers with “Yes” inscriptions on them were the ones who were included in the sample.



3.6.0 Instrumentation

A semi-structured interview guide was used to elicit responses from the participants for the study as well as observation to confirm or otherwise the participants’ responses to the interview questions.

3.6.1 Semi-structured interview Guide

A semi-structured interview guide was used to collect data from teachers and students respondents. The interview items probed further into the four key themes in the research questions on the use of Sign Language as a medium of instruction. This is in consistent with Creswell and Creswell (2018) and Kusi (2012) who posited that the main aim of any

research is to answer the research questions. According to Avoke (2005) interviews can be described as a form of conversation between two people. Gall, Gall and Borg (2007) also believe that the researcher during an interviewing process requires the preparation of an interview guide which must specify the questions, their order and also make guidelines for the interviewer on how to start and end.

Creswell (2014) noted that in a qualitative study, interview is the main formal method applied within the study, Creswell and Poth (2018) and Creswell (2014) further indicated that an interview guide is a method that through face-to-face interaction with the participants, creates the possibility for the researcher to obtain their unique views and opinions. Similarly, Fraenkel and Wallen (2009) and Creswell (2014) contended that interview is one of the main techniques used to collect data in qualitative research. In the interviews, the researcher included probes and prompts to aid further exploration of his own line of questioning. The probes and prompts helped to explore and develop views of respondents and to prevent respondents from going off the main line of questioning (Creswell & Creswell, 2018; Kusi, 2012).

3.6.2 Observation

The researcher used data from non-participant observation to cross check the various responses on the interview. Non-participant observation was used as a support method to the interviews with the aim of gaining clarity or understanding the problems in detail. The researcher decided to use the non-participant observation in which the researcher took notes of what was observed. The researcher observed the teachers in the classrooms during lessons. Observation involves recording behaviour of interest in the natural setting. This helped the researcher to observe things as they were or as they really happened in the classroom setting during teaching and learning.

An observation guide refers to the process that enables the researcher to systematically confirm and record people's behaviour, actions and interactions in the natural setting (Mtuli, 2015; Bailey, Hennink & Hutter, 2011). The researcher used an observation guide on classroom teaching and learning at the Junior High School session (See Appendix 'D')

3.7 Validity of Instrument

Content validity was adopted to ensure the validity of the interview items. To ensure validity of the instrument, the semi-structured interview items were developed to cover the key themes raised in the research questions. The interview items involved open-ended questions and probes that were intended to elicit views and opinions from the participants. In addition, the interview guide was given to some of the lecturers in the Department of Special Education for their comments. Finally, the interview guide was given to the Supervisor for her expert comments. All comments made by lecturers and the Supervisor were captured in the final interview guide. Vanderstoep and Johnston (2009) and Guthrie (2010) explained validity as the ability of an instrument to measure what it is intended to measure. In this study, however, the face-to-face interviews were conducted in the natural setting of the participants in the school or the research site.

3.8 Reliability of Instruments

To ensure reliability of the interview items, the items were given for peer review. A pre-test was conducted for respondents at Kibi School for the Deaf who had similar characteristics as those for the study. Thus a pre-test was conducted with the interview items for three (3) final year Junior High School students, three (3) hearing teachers of Kibi School for the Deaf to get feedback about individual items in the interview guide and enabled the researcher to detect any ambiguities and weaknesses in the items for corrections and modification so as to improve the internal consistency of the instrument.

The items were further presented to researchers' Supervisor, a professional in the field of Deaf education for expert judgment, suggestions and approval (See Appendices "A", "B" and "C"). According to Creswell (2012) reliability means that scores from an instrument are stable and consistent. Creswell further indicated that scores should be nearly the same when researchers administer the instrument multiple times at different times.

3.9 Positionality

The term positionality refers to the stance of the researcher, his or her worldview about the task in relation to the social context of the study. Positionality also explains the researcher's worldview or where the researcher is coming from, his or her beliefs about the nature of social reality and what is knowable about the research site (Holmes, 2020; Rowe, 2014)

The researcher have taught at the research site or in the school for ten years, despite being with the students all these years, it did not in any way cause biases, neither did my background compromised data collection, analysis and the interpretation of the results of the study whatsoever, thus, the conduction of this study was highly objective based on the research questions.

3.10 Methods of Verification of Trustworthiness

Methods of verification of trustworthiness can be explained as the attempt the researcher makes to prove that the findings of a study is credible and therefore can be trusted (Schreier, 2012 ; Korstjens & Moser, 2018).

The researcher can confirm that the findings of the study is credible and can be trusted because the methods used for data collection were subjected to rigorous scrutiny by lecturers in the Department of Special Education, and also was vetted by the Supervisor of

the study who has deep and extensive knowledge and expertise as far as educational research is concerned. The duration of engagement with the participants during the interview was well structured to allow ample time for them to express their views on the open-ended questions which were followed up with probes and prompts where necessary. The study findings can be replicated with similar participants elsewhere.

Both data and methodological triangulation were employed on the study. The researcher ensured that there was data triangulation during the process of data collection for the study, a semi-structured interview guide containing open-ended questions were used to elicit views from the participants, and this was followed with probes. By methodological triangulation, non-participant observation strategy was also adopted by the researcher to verify responses of the interview data of respondents. The researcher was there when the interview was conducted and the recordings made during the interview were played back to the participants for them to confirm the information they provided during the interview session. In addition, the researcher reviewed literature on previous studies and all these information authenticate the findings of this study.

3.11 Confirmability of the Study

Confirmability is the degree to which the findings of the research study could be corroborated by other researchers. Confirmability is concerned with establishing that data and interpretations of findings are not figments of the inquirer's imagination, but clearly derived from data. To ensure confirmability, audit trail was adopted by the researcher and ensured that records of the research path were kept throughout the study (Korstjens & Moser, 2018). The researcher detailed all the processes of data collection, analysis and interpretation of the data. The researcher documented the procedures for checking and re-checking the data throughout the study. In addition, the researcher ensured that the

findings of the study were based on the participants' narratives and words or views, so there were no researcher biases whatsoever.

3.12 Ethical Issues considered in the Study

In considering matters of ethics, the researcher before conducting the interview, explained the purpose of the study to the participants. There were no coercive tactics used. The researcher told participants of their right to participate in the study voluntarily or withdraw from the study at any stage if they were uncomfortable. The participants were assured of the necessary confidentiality. Creswell (2012) indicated that this process requires a sufficient level of trust based on a high level of a participant disclosure. Creswell (2012) submitted that some of the ethical practices will include; informing participants of the purpose of the study, maintaining confidentiality and using ethical interview practices.

The researcher explained to participants that their names will not be needed in the course of data collection to ensure confidentiality. Before the researcher began the interviews, he ensured that the purpose of the study was understood by the participants and also treated the rights of the respondents with utmost care. Again, the researcher sought the permission of participants to use the tape recorder during the interview session in order to capture detailed data while concentrating on listening and prompting participants. The participants were promised that they could have access to the findings of the study and that they could contact the researcher if they had problems concerning this study.

3.13 Procedure for Data Collection

The researcher secured an introductory letter from the Department of Special Education, University of Education, Winneba (See Appendix E). The researcher also sought permission from the Head teacher of the school through Regional Director of the Ghana

Education Service (GES), Eastern Region to carry out the study (See Appendix F). To this, Creswell (2012) posited that it is important to respect the site where a research takes place. This respect, according to Creswell, is shown by gaining permission before entering the site.

An expert in Sign language interpreting, was tasked to explain the purpose of the study to participants who are Deaf. Hearing teachers as participants were also briefed on the purpose of the study and all the participants were assured of the necessary confidentiality of all information they would provide.

The participants were notified and their consent was sought days ahead before the interview session. . Interview for the students and the teachers who are deaf were conducted in Ghanaian Sign language with the assistance of two Sign language interpreters whereas the hearing teachers and the head teacher were interviewed in English. One -on- one interview sessions were adopted to interview all the participants of the study. Each interview session with each of the participant lasted for a minimum of 35 minutes and a maximum of 45 minutes.

A respondent was interviewed at a time in order to elicit correct responses. Responses from the participants (hearing teachers) were recorded on a tape recorder while that of the students and the teachers who are deaf were video-taped for easy transcription. The interview questions were asked from an interview guide with probing questions and prompts to elicit detailed responses from the participants.

The participants were given the opportunity to express their feelings and experiences without undue pressure on them. The answers to the interview questions were signed back to the respondents who are deaf for them to confirm or otherwise what was recorded by the interviewers. Likewise the answers to the interview as given by the hearing teachers

and the head teacher was read back to them to confirm or otherwise what the interviewer recorded.

The Sign language interpreter was tasked to transcribe the video-taped Ghanaian Sign Language (GhSL) interview data after which the data were translated verbatim from GhSL to scripts in grammatically correct English Language. After the transcription was done, the researcher met with the Sign language interpreter to cross check each of the transcriptions to make sure they depicted what was said in the interview. The interview for the hearing teachers and the head teacher were tape recorded and transcribed for analysis.

3.14 Data Analysis Procedures

The researcher organised the interview data, immersed myself in, transcribed it and generated themes. The researcher developed codes with the emerging themes from the transcriptions. Fraenkel and Wallen (2009) argued that the first step in coding data is to assign identity numbers to every group from whom data has been collected. Verbatim expressions of the participants were used for the analysis where necessary. In the analyses of data, the interpreter read the interviews from the videotape and transcribed them in written English Language. Kusi (2012) opined that thematic analysis is one of the ways of analyzing qualitative data in qualitative research. This analytical strategy requires the researcher to organize the data, immerse himself or herself in and transcribe the data, generate themes and code the data and describe them.

In analyzing the interview data, the transcripts of the audio recording were sent to the participants of the interview to ascertain whether the transcripts correspond with what the participants said during the interview. After this, responses from each participant were

played back several times. This was done to identify whether or not the various points of view of the respondents reflected in the major themes in the research questions.

In order to categorise each view or opinion expressed by the participants, each major theme involving the using of Sign language as a medium of instruction were written down individually on pieces of paper and as the responses were played several times, the key words and phrases expressed were jotted down under each theme. This was done for all the respondents after which the various views gathered were then compared according to the themes. Codes were assigned to the responses by using the key words in each theme. The various words, phrases and opinions that reflected on the research questions were finally categorized in relation to the themes. The data were analysed qualitatively and where necessary verbatim expression were used to support the findings.

3.15 Limitations of the Study

The researcher should have used observation checklist for the collection of data for the research question two, then again the researcher had to reframe the research question four to suit the study conducted. In spite of these limitations, the outcome of the study was not significantly affected.

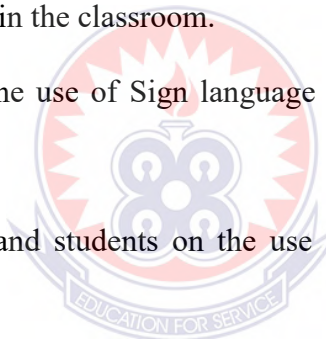
CHAPTER FOUR

PRESENTATION AND ANALYSIS OF RESULTS

4.0 Introduction

This chapter presents the results and analysis of research findings. The interview data were coded and subjected to thematic analyses. Consequently, the themes and sub-themes have been used in the analysis. The data were analysed to reflect the following key themes as raised in the research questions:

- a. Communication approach (es) to Deaf education used in the classroom.
- b. Teaching and Learning resources available for effective use of Sign language as a medium of instruction in the classroom.
- c. Challenges affecting the use of Sign language as a medium of instruction in the classroom.
- d. Opinions of teachers and students on the use of sign language as a medium of instruction



4.1 Results: Research Question 1

Which communication approach (es) to Deaf education is used in the classroom?

To answer this research question, the data collected during the face-to-face interviews were used. Two themes that emerged from the data, i.e. language used in class as a medium of instruction and communication approach (es) to Deaf education employed by teachers were used for the analysis.

4.1.1 Language used in class as a medium of instruction

As regards the language used in class as a medium of instruction, the following comments were made by the teachers:

One teacher remarked:

“I use Sign language because I teach students with hearing impairment and the language that best help them out is Sign language.” (Verbatim expression by a teacher who can hear).

Another teacher commented this way:

“Here in this school, since we are in a deaf community, I use Sign language as a means of communication to the students during teaching and learning.” (Verbatim expression by a teacher who can hear).

Another teacher had this to say:

“I use Sign language and sometimes I speak alongside the Sign language.” (Verbatim expression by a teacher who can hear).

A fourth teacher emphasized:

“I use both sign and speech in teaching. I speak and sign at the same time because that has been my mode of communication so I am used to that. The students will benefit from the signs alone but speaking with sign is my habit.” (Verbatim expression of a teacher with deafness).

Another teacher commented this way:

“I use Sign language to teach. I use Sign language because I am deaf and my first language is Sign language.” (Verbatim expression of a teacher with deafness).

From the comments of the teachers, it is evident that they all used Sign language as the medium of teaching the students in the classroom except that some of the teachers indicated that they used speech alongside Sign language during teaching.

To confirm the teachers responses concerning the language used in class as a medium of instruction, students' views were sought.

A student commented:

“The teachers mix the two i.e. that is teachers talk and sign while teaching.” (Verbatim expression of a student with deafness).

One student said:

“Sometimes teachers use Sign language and other times too they use English language, so they use two languages.” (Verbatim expression of a student with deafness).

Another student stated this:

Our teachers use Sign language and speech when they teach in class.

(Verbatim expression of a student with deafness).

Another student added this:

“The teachers sign and speak at the same time which sometimes is confusing. I wish they will use Sign language only without talking alongside.” (Verbatim expression of a student with deafness).

Comments from the students revealed that the language used as the medium of instruction in the classroom is Sign language. Comments of the students further indicated that teachers talk and sign alongside during teaching in the classroom.

4.1.2 Communication approach (es) to deaf education employed by teachers

Concerning the communication approach (es) to Deaf education employed by teachers during classroom instruction, the teachers made the following comments:

One teacher remarked this way:

“I use Sign language, speech and gestures at the same time when I am teaching in the classroom. I do that because some of the students are post-lingual, thus, some have some little residual hearing and also they can lip-read you as you are speaking, so

when you speak and sign alongside, the students understand lessons better than using only sign language.” (Verbatim expression by a teacher who can hear).

Another teacher stated:

“I speak and sign at the same time that is total communication, this is because some of the students can lip-read, thus, as I voice out the word, they hear and lip-read what the word is, so for me I speak and sign alongside during teaching. In fact I am of the view that signing alongside speaking is appropriate when it comes to teaching because some of the students are post-linguals and they can hear some sound.” (Verbatim expression by a teacher who can hear).

Another teacher indicated:

“As for me, I sign and speak at the same time because some of the students are post-linguals, so, I speak while signing, at times I use gestures too. I always sign and speak alongside because for those students who are post-linguals, the “speaking” will help them to be able to attempt speaking, so I prefer using the Sign language alongside the speech.” (Verbatim expression by a teacher who can hear).

Another teacher had this to say:

“I sign and then I don’t actually speak but I move my lips up and down because some of the students are lip-readers, so it is better to sometimes add speech, so I use sign language, body gestures and speech and all other means that will make my students understand what I teach them.”(Verbatim expression by a teacher who can hear)

Another teacher commented:

“I use both speech and signs when I am teaching, I think it is the best approach because sometimes words in Sign language and in English Language are different in meaning and in pronunciation. With speech, sign and facial expression I am able to help the students to better understand what I teach in class. There might be two or three words in English but in Sign language we have only one sign for those words so with this approach it help the children to differentiate between words, for example, using sign and speech alongside while teaching helps to differentiate between signed synonyms and gives better explanations to the students.” (Verbatim expression of a teacher with deafness).

It is clear from the comments of the teachers that they signed, spoke and used facial expressions while they taught the students in the classroom. However, few teachers indicated that the used only Sign language, thus, signing without speech to deliver classroom instructions. Two teachers remarked as follows:

One teacher remarked:

“I use Sign language to teach because I am totally deaf and cannot use speech so I use the hands to communicate. I think using Sign language alone is the best option because the deaf people use the eyes to see and listen but not the lips so the hands and facial expression will let the students understand what you are teaching them. If speech is used they can become confused on the words the teacher will be using. Sometimes the student pays much attention to the teacher lips when speech is used, and make students forget the hands used when signing and that get students more confused.” (Verbatim expression of a teacher with deafness).

A second teacher added:

“I use Sign language alone in teaching because the students are all deaf so if I add speech they will not be able to understand what I am teaching and they might get confused. When there is no speech the deaf student gets to understand whatever you teach them. Some of the students may like speech in addition to using Sign language but I am deaf and have no speech so there is no way I can add speech to my signing, I can only sign not to speak. It is not a choice of the students but it is personal, I just can’t speak.” (Verbatim expression by a teacher with deafness).

In order to confirm the communication approach (es) to Deaf education employed by teachers in the school, the head of the school had this to say:

“Here in this school and specifically at the Junior High School (JHS), teachers who can hear use Sign language and speech at the same time whereas the teachers who are deaf use only Sign language. This so because the teachers who can hear are used to talking and I am of the view that most of them think if they do not talk they cannot follow the English Language structure that is why most of them sign and speak alongside while teaching but some of the teachers also use only Sign language to teach with gestures, facial expressions and teaching and learning materials to support their teaching. For emphasis, I will say practically, teachers are using Sign language, speech and at the same time they use gestures.” (Verbatim expression by head of school).

The comments from the head of the school confirms what the teachers indicated on the communication approach (es) employed in the school. Thus, majority of the teachers used sign, speech, facial expressions and gestures side by side when teaching whereas few of the teachers especially those who are deaf themselves use Sign language without speech.

As regards to the communication approach(es) to Deaf Education that teachers employed to deliver classroom instructions, students views were sought on how they feel in terms of the specific communication approach(es) to Deaf education their teachers use to teach them. The students made the following comments:

One student stated:

“The teachers speak and sign alongside when they teach us. Sometimes I understand the lessons and other times too I do not understand. When they move their lips it does not match the sign and that makes it hard to understand. Sometimes I ask my friends to help me when I do not understand. When teachers speak and sign alongside it confuses me, I think speaking is different and the signing too is different, so they should not mix it, I want the teachers to sign without moving their lips or talk and sign alongside. They should sign alone when teaching because I am deaf and do not understand speech so I like to be taught in Sign language alone.” (Verbatim expression by a student with deafness).

Another student remarked:

“It depends on the teacher, some of the teachers use only signs while other teachers speak and sign alongside. When teachers speak and sign at same time I do not understand because I have no speech and do not hear what they say and that makes me feel bored. I understand lessons better when teachers sign alone to me, when speech is added it does not make meaning to me. If teachers will keep their mouth close and use only Sign language it will make me understands lessons better.”

(Verbatim expression by a student with deafness)

A third student also commented:

“Some of the teachers sign and speak at the same time which sometimes is confusing. It will be better for me when they use Sign language only when they teach in class. When they sign and speak alongside I feel bored and do not pay attention and I sometimes sleep in class. I also understand only two teachers but the rest I do not understand because signing with speech get me confused. I understand everything when only Sign language is used, I mean that speech should not be added to the signing because I don’t like it and it is confusing.”

(Verbatim expression by a student with deafness)

It could be deduced from the comments of the students that, they were displeased with teachers who speak and sign alongside during classroom instructions. However, a few of the students revealed that they were okay when teachers signed and spoke alongside when they were teaching and they made the following remarks:

One student stated:

“The teachers combine talking and signing while teaching in class. Sometimes when teachers teach using Sign language alone, it confuses me and it does not make me to understand the lessons but if the teacher sign and speak alongside it makes understanding easy for me. I feel bored when teachers sign without speech. I feel that when teachers sign and speak alongside it is the best and it brings understanding, again teachers may forget signs when signing but with the speech added it makes me remember easily. Teachers should sign and add speech while teaching. When teachers sign alone in class it makes me feel so bored but when

teachers sign and speak alongside it creates excitements and interest and that is my preference.” (Verbatim expression by a students with deafness).

Another student emphasized:

“The teachers use both Sign language and speech at the same time when they teach us in class. Sometimes when they teach with the Sign language alone without speech I do not understand them. I always understand teachers who do actions, talk and sign with pictures and materials during teaching in the classroom. Again, I like teachers who sign and move their lips alongside because it helps me to identify the words the teacher is using or mentioning and that helps me to understand the teaching very well. When the teacher does not move the lips alongside signing, it makes it hard for me to understand the lesson.” (Verbatim expression by a student with deafness).

Inferring from the comments of the students, it was clear that students understand lessons better when teachers taught them when they spoke and signed alongside than when teachers used only Sign language to deliver classroom instructions to them.

4.2. Results: Research Question 2

What teaching and learning resources are available for effective use of Sign language as a medium of instruction in the classrooms?

To answer this research question, the interview data collected from the respondents were used. The data analysis was done according to each of the two themes that emerged from the data - teaching and learning resources available to aid teaching in the classroom and Classroom suitability for the use of Sign language used as a medium of instruction were used for the analysis.

4.2.1. Teaching and learning resources available to aid teaching in the classroom

With regards to the teaching and learning resources available for effective use of Sign language a medium of instruction in the classroom, teacher respondents made the following comments:

One teacher had this to say:

“I use drawings on manila cards to teach. Actually, I use only textbooks in my subject area to teach the students but unfortunately the students are not having the textbooks, absence of the textbooks makes it difficult teaching the students because when I give them assignment they do not get any reference book to do the assignment. Then again about teaching and learning resources there is a need for hearing aids for some of the students because some of them are post-linguals and have some residual hearing. I believe that when they have the hearing aid it will be of help to some of the students” (Verbatim expression by a teacher who can hear).

Another teacher remarked:

“Concerning the teaching and learning resources, it depends on the subject one teaches, I prepare teaching and learning materials with manila cards, I use real objects and also use resources in the school environment. I think hearing aid will be very helpful because with some of the students when they use it as I speak they will hear.” (Verbatim expression by a teacher who can hear).

A third teacher indicated:

“In my case as an ICT teachers, I use the computer system, i.e. the personal computer (PC), I use pictures based on the concept I teach to enable the students to observe its use in ICT, students who are deaf like manipulating things, so if there is nothing for them to manipulate, they lose interest in the

lesson and also make teaching become difficult for me the teacher while the students also find it difficult to understand the lesson. Formerly, we were using a projector and screen which was very useful for teaching, but along the line the projector developed faults and it is no longer functioning and therefore making teaching of ICT a challenge nowadays.”(Verbatim expression by a teacher who can hear).

Another teacher emphasized:

“In this our country Ghana teaching resources for English language made for the deaf is not at our disposal, we do not have it at all, we depend solely on the pupils text books during our lessons. We need projectors and computers for our lessons, it will go a long way to help in teaching English to the students. For instance if you are teaching reading the kids need to see what is written on the board, since they cannot hear they use the eyes most before the teacher write the passage on the board for them , the precious time to be used to teach elapsed and we are not able to do a productive work. When projectors are used you will just projects the passage on the board for the kids to watch and read and that makes teaching easy and simple.” (Verbatim expression by a teacher with deafness).

Another teacher expressed his view this way:

“This is a big challenge for us as teachers here. There are not much teaching resources so I develop my own way to communicate with the students. As a maths teacher I will need rulers, white board compasses, board graph and other teaching resources, in fact all the essential materials I will need to teach are inadequate and sometime not available at all. In the advancement of technology, computers and projectors can be provided so we use in teaching that will make the students show interest in the lessons. For example, a topic in maths such as “sets” will be very interactive and understanding, when projected on the screen the

students are going to see the sub sets and the other components of the lesson.” (Verbatim expression by a teacher with deafness).

Another teacher added:

“In this school we lack teaching resources and in some cases they are not enough. I teach BDT and feel if the school can get the real or physical tools to use in teaching, it will help the students a lot to understand lessons better, our lessons has always been showing and drawing of tools on the board and also always showing student pictures in books, I need the concrete or the physical tools to us to teach the students. We need a workshop where all these tools will be there for use. The school should get us computers and projectors so we can use in teaching which we can play videos on the use of some tools. For instance if we talking about types of wood; if we project it the students will see all the types and their features.” (Verbatim expression by a teacher with deafness).

The comments from the teachers indicated that even though there were teaching and learning resources that facilitate their teaching they were inadequate for the various subjects that were taught at the JHS level. Beside the resources they used for teaching were the traditional resources such as textbooks, drawings on manila cards and pictures.

Concerning the teaching and learning resources available to aid teaching in the classroom, the views of students were sought to confirm whether or not their teacher use teaching learning materials during their lesson delivery and the students made the following remarks:

One student indicated:

“No, most of the teachers do not use teaching and learning materials when they are teaching us in the classroom, they use

their hands to sign to describe things to us.” (Verbatim expression by a student with deafness).

A second student commented:

“No, some of the teachers use teaching and learning materials during lesson delivery whereas others do not use at all especially our integrated science teachers.” (Verbatim expression by a student with deafness).

A third student emphasized:

“No, our teachers never teach with teaching and learning materials, they just come to class, teach and leave, if they teach with TLMs we will understand lessons and better.” (Verbatim expression by a student with deafness).

Another student stated:

“Yes there are textbooks but for teachers alone and not for us as students. The students who have the textbooks brought them from their homes, again we do not have textbooks in all the subjects we learn in school.” (Verbatim expression of a student with deafness).

It is evident from the remarks by students that majority of the teachers did not use teaching and learning materials to deliver classroom instructions to them, besides, it seems government textbooks for the various subjects were inadequate.

With regards to the availability of teaching and learning resources that aid teaching in the classroom, the views of the head of the school was sought and she commented as follows:

“Concerning teaching and learning resources, we have been using the usual ones, we provide as much as we will be able to provide but with regards to Sign language. I feel we should have been doing more if we have the resources to do that. The Ghana

Education Service(GES) and for that matter government provide teaching and learning materials almost every term but I feel we still need teaching and learning resources with regards to Sign language. For example, we need model Sign language teaching and learning materials which teachers can study, watch and then use to improve their Sign language skills.”(Verbatim expression by head of school).

The comments made by the head of the school indicated that teachers used the traditional teaching and learning materials such as textbooks, drawings on manila cards, pictures etc. to aid their teaching and that the GES provided them with teaching and learning materials except that those Teaching and Learning Materials (TLMs) were not modelled in the context of Sign language.

4.2.2. Classroom suitability for the use of Sign language as a medium of instruction

Another theme that emerged regarding teaching and learning resources available for effective use of Sign language as a medium of instruction was classroom suitability for Sign language use.

One teacher remarked:

“The classroom is not all that conducive for the use of Sign language as a medium of instruction because the seating arrangement is not all that suitable with the reason being that the classroom size is small and therefore makes it impossible to space out the desks, so we are compelled to manage with the small classroom size.” (Verbatim expression by a teacher who can hear)

Another teacher commented:

“Actually, as to whether the classroom is suitable or not to a very large extent depends on how the desk are arranged for the students to use or sit on in the classroom. Here in this school, the classroom

desks are arranged like it is done in a regular school classroom, thus, the desk are arranged in vertical and horizontal alignment spread across the classroom.”(Verbatim expression by a teacher who can hear)

Remarks by the teachers revealed that the classroom is not suitable for the use of Sign language used as a medium of instruction because the classroom are not spacious. However, other teachers pointed out that the classroom was suitable for the use of Sign language as a medium of instruction. A teacher affirmed this assertion in the following comments:

One teacher intimated:

“Yes the classroom is suitable for the use of Sign language as a medium of instruction because looking at the number of students in the classes and then where the teacher positions him or herself, at least all students in the classroom will be able to look at the teacher as he or she stands in front of the class and sign, so with the required number of students in the class the teacher will be able to reach all students as far as communicating with them in the Sign language is concerned.”(Verbatim expression by a teacher who can hear).

Another teacher remarked this way:

“Yes the classroom is very comfortable for lessons. The classroom environment is good and the chairs are well arranged, things are in order in the classroom, the lighting system in the class too is also good, the students can see the teacher when he or she is teaching, the height of the whiteboard is okay as all students can see from where they sit in the classroom.” (Verbatim expression by a teacher with deafness).

Another teacher emphasized:

“It is very suitable. The students seating arrangement is on point and from where ever student sits the student sees the board and sees the teachers as well when they are delivering classroom instruction.”(Verbatim expression by a teacher with deafness).

Teachers’ comments revealed that the classroom was suitable for the use of Sign language as a medium of instruction to the students.

With regards to the classroom suitability for the use of Sign language as a medium of instruction students views were sought and they made the following comments:

One student opined:

“With the classroom arrangement, it is hard sometimes when you want to communicate with friends, I will have to turn my head before I can talk to a friend during class and when you are answering questions too. I feel students should be made to come in front of the class when they are going to answer questions. I am not comfortable with the seating arrangement anyway.” (Verbatim expression by a student with deafness).

A second student remarked:

“No, I am not comfortable with the seating arrangement, we sit for long hours and the seats are too hard, the light are fixed in front of the classroom while the back of the classroom is dark. I have to turn my neck to see my friends when they are giving answers to the teacher’s questions in class, thus, I find it difficult to see my friends who sit behind me and answer questions in class (Verbatim expression of a student with deafness.”(Verbatim expression by a student with deafness)

A third student emphasized:

“I am not comfortable with the seating arrangement because we sit for long and the chairs too are small and weak. I am tall and suffer when I sit for long. In addition to that when a friend is signing unless the person stands in front of the class I can’t see him or her.”(Verbatim expression by a student with deafness)

Another student remarked:

“Not that comfortable sometimes when my mate is answering question and my student colleague is sitting at the back, I have to turn my neck and see him or her sign, that makes my neck hurt I feel the best way is for the student to come in front and sign so we see clearly.” (Verbatim expression by a student with deafness)

The analysis of student’s comments indicated that they were not comfortable with the classroom seating arrangements and lightening. However, few of the students revealed that they were comfortable with the classroom sitting arrangements.

Some of the students remarked these ways:

“For me, I feel okay, the classroom is not scattered, and everything is in order in the class.” (Verbatim expression by a student with deafness)

Another student added:

“Am comfortable with the classroom seating arrangements, we do most of the studies in the day so we don’t have light issues and in the evening too there is light in the classroom.”(Verbatim expression by a student with deafness).

A third student emphasized:

“Yes, the seating arrangements in the classroom is okay, the desks are fine, with the light issues, its fine during the day and in the evening we do not stay there for long so it is fine.” (Verbatim expression by a student with deafness).

The comments of the students revealed that they were comfortable with the classroom seating arrangements and the lightening system too.

4.3 Results: Research Question 3

What are the challenges affecting the use of Sign language as a medium of instruction in the classroom?

Research question 3 was meant to explore the challenges teachers face in using Sign language as a medium of instruction. Three themes emerged. The themes included views on proficiency in using Sign language as a medium of instruction, views on the challenges of using Sign language as a medium of instruction and workshop on sign language.

4.3.1 Teachers proficiency in Sign language

Concerning teachers’ proficiency in the use of Sign language as a medium of instruction in the classroom, teachers made the following comments:

One teacher indicated:

“Actually, since the language is not my language, I learn it that is why I always use speech and gestures, I am not perfect when it comes to the use of sign language.” (Verbatim expression by a teacher who can hear).

Another teacher remarked:

“In fact to be honest with you, I will say I am not fluent in Sign language even though I have been doing my best to sign what I

know, but when I have problem in signing some concepts I consult my colleague teachers to assist me.”(Verbatim expression by a teacher who can hear).

The analysis of the teachers’ comments indicated that they were not proficient in Sign language but made efforts to communicate with their students during classroom instruction. However, three of the teachers revealed that they were proficient in sign language.

One teacher had this to say:

“I am skilful in signing because I really understand the Deaf and I think they also understand me and even when I give them work after teaching them in class, though I don’t expect every student to get all the answers correct, in terms of communicating with them I know that they understand me and I also understand them.”
(Verbatim expression by a teacher who can hear).

Another teacher remarked:

“I think I am very skillful in the use of Sign language because I am able to communicate well with the students when I teach in class.”
(Verbatim expression by a teacher with deafness).

Another teacher added:

“I am very proficient in the language because I am deaf myself and Sign language is my first language.” (Verbatim expression by a teacher with deafness).

It could be deduced from the comments of the respondents that, they were to a very large extent proficient in using Sign language as a medium of instruction in the classroom. To

verify teachers' proficiency with regards to their use of Sign language as a medium of instruction in the classroom, students' views were sought and they remarked as follows:

One student commented:

“No, there are only two hearing teachers who are skillful the rest when they sign it looks funny to me, when they are teaching using Sign language there are lot of challenges in their signs, for example, when the teachers do not know the signs of certain words they just fingerspell most of the time and this makes understanding difficult with me.” (Verbatim expression by a student with deafness).

A second student added:

“Not all the teachers are skillful in the use of Sign language when they are teaching us, some are skillful while others are not skillful, most of the teachers who can hear are not skillful in the use of Sign language but the deaf teachers can sign better when teaching.” (Verbatim expression by a teacher with deafness)

A third student emphasized:

“The deaf teachers are very skilful but the hearing teachers are not skilful. One of the teachers insults us when he writes on the whiteboard and we do not understand.” (Verbatim expression by a teacher with deafness)

It is evident from the comments of the students that they wanted to be taught by teachers who are deaf themselves because to them the teachers who could hear were not skilful as far as the use of Sign language as a medium of instruction was concerned.

Concerning teachers' proficiency in sign language, students views were sought on how they feel when their teachers are unable to express themselves well in Sign language during classroom instruction and the students commented as follows:

One student remarked:

"I feel bored, some of the teachers have little signing skills and cannot sign well when they are teaching, I feel bored, instead of signing they point on the board to show us what they want to teach us which makes me not to understand the lesson, they do not explain concepts and words to us but just point on the whiteboard." (Verbatim expression by a student with deafness)

Another student commented:

"Some of the teachers are not good in Sign language and their signing are not perfect that also make things hard and understanding difficult, for example, science, is a difficult subject and teacher do not sign well, it makes it hard for me to study." (Verbatim expression by a student with deafness)

Another student had this say:

"I feel bored when the teacher is not able to sign well during teaching it becomes difficulty for me to understand what is taught, in fact I do not get anything in class and do not remember anything they will teach in class." (Verbatim expression by a student with deafness)

A fourth student added:

"When the teacher is not able to sign well it makes the lesson boring so I do not pay attention in class, so it makes me sleep in class sometimes. When they fingerspell I use the dictionary to search for the meaning of the words for understanding but not all

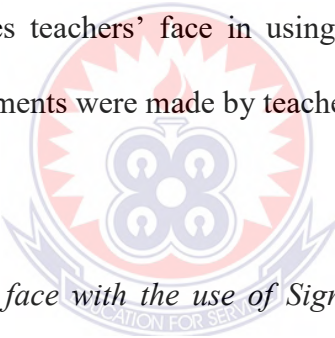
the time that I get the understanding. Sometimes after the lesson I asked one of my friends to better explain to me aspects of the lesson I found it difficult to understand.” (Verbatim expression by a student with deafness)

Students’ comments indicated that they were unable to focus on lessons taught by teachers who were not skilful with the use of Sign language during classroom instruction and that they struggle to understand lessons because of teachers challenges in expressing themselves effectively and efficiently in sign language.

4.3.2 Teachers’ views on the challenges they face in using Sign language as a medium of instruction

With regards to the challenges teachers’ face in using Sign language as a medium of instruction, the following comments were made by teachers:

One teacher remarked:



“The challenges I face with the use of Sign language are many; some of the words or concepts in integrated science do not have corresponding sign and with some of the students, when you fingerspell too, they find it difficult to understand, more so, the Deaf generally have shortcut in signing which I do not know how to sign the shortcut way, when I sometimes call the teachers who are deaf to assist me explain some concepts, they sign the shortcut form and it appears the students understand them better. As for me, I sign exact English which sometimes make the lesson boring.”
(Verbatim expression by a teacher who can hear).

Another teacher had this to say:

“In fact some of the key words in ICT are very difficult to sign and sometimes there are no signs in Sign language to express or explain those concepts, so what happens is that I sometimes consult

some of the teachers who are deaf to help me sign some of the key words in ICT, and at times they confess that they cannot also sign those concepts, so at times when I have difficulty in signing key words or concepts, I fingerspell and try to explain the meaning of the finger-spelt word in context to express the idea to the students.” (Verbatim expression by a teacher who can hear).

Another teacher added:

“For me, sometimes it is very challenging to use Sign language because we do not have specific sign for every concept in Sign language. There are some concepts that you have to use gestures because there no signs for them. Sometimes I struggle to explain just one concept to the students because there are no signs for those concepts or words in Basic Design and Technology (BDT). Sometimes I realise that the 35 minutes or the 70 minutes duration allotted for the BDT on the time time-table is not enough because our medium of communication is the biggest challenge ever because unlike students in a regular school who can hear, who are taught with speech.” (Verbatim expression by a teacher who can hear)

Another teacher commented:

“Yes, there are challenges with the use of Sign language as a medium of instruction, sometimes the problem of the multiplicity of the Sign language in that with the Ghanaian Sign Language, the signing varies from school to school and when it comes to the international Sign language too, there are difference in it, for example, American Sign Language, British Sign language etc. and so as the students are exposed to the different forms of Sign languages, it makes the Sign language we use here look strange to them, so with the multiplicity of the sign language, it sometimes confuses the students in their learning because as at now we do not

have a unique or general way of signing concepts across the country not to talk of all over the world.” (Verbatim expression by a teacher who can hear)

Another teacher emphasized:

“My first challenge is word similarity in Sign language, with English language there are meanings to every word but that do not happen with sign language. For example if I sign the concept “authority” the students may mistake it for “mountain”, with such challenge any time the students see those words, they will mistake it for the other, they have the believe that the meaning are the same since is it signed almost the same way, it is difficult to correct them, you will only see it in their writing but when they are communicating with it, they are fine but writing it becomes the challenge. Secondly Sign language does not show the real meaning of words. We sign throwing our hands in the air with lot of gestures but the words in English cannot be found if you put same words in English sentences, the students are not able to understand the words in meaning and in context and I believe it is not in English alone but has influence in the other subjects.” (Verbatim expression of a teacher with deafness)

It is evident from the comments of the teachers’ that they faced challenges with the use of Sign language as a medium of instruction, for example, lack of sign for concepts in the various subjects and using one sign to represent many different concept because of lack of sign for every concept in sign language. However, one teacher pointed out that he had no challenge with the use of Sign language as the medium of instruction and affirmed this assertion through the comment below:

“With the subject I teach I don’t have challenge in signing and vocabulary, we draw, we do practical work and experimenting it

with our hands and lessons are mostly activity-based and not much theory is needed, the instructions I give to students are very simple and easy to understand, we do not use long phrases to ask questions in BDT it is true that we have limited vocabulary in Sign language but with my subject things are clear and simple.”
(Verbatim expression of a teacher with deafness).

Comments by the teacher revealed that he had no difficulty in using Sign language to deliver classroom instruction.

4.3.3 Attempt made by school authorities to organize workshops to improve expressiveness of Sign language proficiency among the teachers

With regards to attempts made by school authorities to organize workshops to improve Sign language proficiency among the staff, the following comments were made by the teachers:

One teacher stated:

“Yes, there are attempts by school authorities to improve Sign language proficiency among the staff especially the teaching staff, here in this school, we have among us adult teachers who are deaf, they organize Sign language workshop for us from time to time with the consent of the head of the school. During those workshops participants i.e. teachers are taught to sign some key concepts or words in the various subjects they teach.” (Verbatim expression by a teacher who can hear).

Another teacher added:

“There is an attempt by the school authorities to improve Sign language among the teachers, that is done by organising in-service training on Sign language on weekly basis i.e. after Wednesday worship service of the school, the teachers are taught how to sign

concepts they found it difficult to sign during classroom instruction.” (Verbatim expression by a teacher who can hear).

It is clear from the comments of the teachers that there were attempts by school authorities to improve expressiveness of Sign language proficiency among the teachers. However, three of the teachers pointed out that little or no attempts were made by school authorities to improve Sign language proficiency among the teachers and they made the following comments:

One teacher remarked:

“Yes, I think the school authorities are making efforts to improve Sign language proficiency among the teachers because when I came to this school, I remember we used to have some Sign language workshop on Wednesdays but I participated in it only once but it was not organized on a regular basis for teachers.”(Verbatim expression by a teacher who can hear)

Another teacher noted:

“Sometime past, the school organized a Sign language class for the staff which was regular for teachers which used to come on weekly, that was very productive and the signing skill for the teachers was improving. I think that should be brought back, it collapsed because the Head teacher who initiated it is no more in the school so the interest and the motivation for it is also not there again and that led to the collapse of the Sign language class for the teachers.”(Verbatim expression by a teacher with deafness)

Another teacher emphasized:

“No, we use to have a Sign language class for teachers but it collapsed along the line, we do not have it anymore. I think the school authorities should make effort by adding Sign language training as part of the schools time table which will help those who have difficulty in signing. Some of the teachers find it difficult to understand students when the students are communicating to them. The teachers who are skillful in signing should also be encouraged to help those who have difficulty in signing by helping them to sign the broken signing or the shortcut signing which the students who are deaf understand well.” (Verbatim expression by a teacher with deafness).

It could be inferred from the comments of the teachers that the school authorities used to organize workshop on Sign language for them but the practice ceased along the line. The analysis of the comments further revealed that teachers wanted workshop on Sign language for them to be started again and intensified.

In terms of the attempts made by the school authorities to improve expressiveness of Sign language proficiency among the teachers, the head of the school of the school commented as follows:

“Yes, I organise in-service training for the teachers from time to time to improve Sign language proficiency among the staff especially teachers, apart from using workshop, it is expected that every teacher should be at each school gathering because that is where we learn the sign language, that is where we use the Sign language for everybody to see and learn something new, so what we normally do is that we have Sign language workshop especially at the beginning of the term when most of the students were still at

home, we use that period for training in sign language.”(Verbatim expression by head of school)

It is obvious from the comments of the head of school that attempts were made to improve expressiveness of Sign language among the teachers through the organisation of in-service training and comments further suggest that all the Sign language workshops teachers attended were done at only the school level.

4.4 Results: Research Question 4

What are the opinions of teachers and students on the use of Sign language as the medium of instruction?

To answer this research question 4, the interview data from the respondents were used. In the analysis of the responses, the themes that emerged were: adequacy of Sign language to express concepts in the subject matter and interest in using Sign language as a medium of instruction.

4.4.1 Adequacy of Sign language to express concepts in the subject matter

In terms of the adequacy of Sign language to express concepts in the subject matter by teachers during classroom instructions and they made the following comments:

One teacher noted:

“In my opinion, Sign language is not adequate to express all concepts in my subject area in the sense that there are no signs to be used to explain all concepts to students in sign language, and as a teacher I become frustrated and confuse when I do not get signs to express myself during teaching. With the use of sign language, there are concepts or words with similar or sometimes same sign, for example, when you talk of the word “s-u-b-j-e-c-t”, i.e. the subject that students learn in school such maths, integrated science

etc. and when it comes to English language, when teaching grammar, i.e. “subject verb agreement”, here the “subject” has a different meaning but students always take the meaning to be the subject they learn in school, so it becomes difficult for them to contextualize meaning of words with the same spelling or same sign.”(Verbatim expression by a teacher who can hear)

A second teacher added:

“I think Sign language is not adequate to express concepts in my subject area that is why I always use total communication, I always use speech because at times when I use sign I could see from the faces of the students that they have not understood my explanation to them well, so when I use speech and some gestures they understand it better and their responses show that they have understood the concept.” (Verbatim expression by a teacher who can hear)

A third teacher commented:

“No, Sign language is not adequate to express ideas or concepts in my subject area, this because as I said earlier, Information and Communication Technology (ICT) is a practical subject, so I need concrete teaching learning materials that the students can see, feel and manipulate and that will facilitate their understanding of lessons. In ICT there are no signs for every concept or word and it makes the use of Sign language for teaching ICT difficult. So when I do not get sign to express an idea in ICT I fingerspell.”(Verbatim expression by a teacher who can hear)

Another teacher had this to say:

“No, Sign language is not adequate to express all concepts in my subject area, this is because using Sign language to express ideas to hearing students is not the same as using English language to express ideas to students who are deaf because in Sign language

we use broken English most at times, like the way we speak “twi” whereas in the regular school they use standard English. For example, if you say “I am going to school” you will not sign “I am going to school but you will sign “I go school” i.e. some words are omitted, that is why students who are deaf have difficulty in expressing ideas in English Language most times, they sign in broken English form to express themselves.” (Verbatim expression by a teacher who can hear).

It can be deduced from the comments made by teachers that they had difficulty to adequately express ideas and concepts in the subject matter using Sign language as the medium of instruction. However, one of the teachers revealed that Sign language was adequate to express concepts in the subject matter and remarked as follows:

One teacher commented:

“Yes, Sign language is adequate to express concepts in my subject area, as I said earlier, with facial expressions, gestures and with the use of appropriate teaching and learning materials I am able to express concepts in the subject matter in Sign language to my students.”(Verbatim expression by a teacher who can hear).

Concerning the adequacy of Sign language to express concepts in the subject matter students views were sought and they made the following comments:

One student remarked:

“No, no, never. There are lot of words that are missing when we are using sign language.” (Verbatim expression by a student with deafness)

A second student noted:

“No, there are lots of omissions. The Sign language does not follow the English language rules, Sign language is a broken language and that is what we the deaf understand. Learning English with Sign language is very difficult.”(Verbatim expression by a student with deafness)

A third student had this to say:

“No, there are inadequate signs for English words in sign language, learning English with Sign language is very hard, for example nouns, verbs adverbs and others are difficult to understand when using sign language. I know some of the words when they are single words but combining it to form sentences is always a challenge for me.”(Verbatim expression by a student with deafness).

Another student added:

“I am deaf and Sign language is my language but using Sign language to learn is difficult for me, we do not have signs for some words in the subjects we learn and that makes learning difficult.”
(Verbatim expression by a student with deafness).

Another student added:

“No, Sign language is not deep it lacks lots of vocabulary, there are more words in English but we have few signs for the English words in sign language. Sign language summarizes lot of things and it is a broken language too, that is what I think.” (Verbatim expression by a student with deafness).

It is evidently clear from the comments of the students that even though Sign language is their language, they were of the view that there were inadequate signs in Sign language to express ideas in English and other subjects that they learn in school

The views of the head of school was sought concerning the adequacy of Sign language to express concepts in the subject matter during classroom instruction and commented as follows:

“We cannot say that using Sign language as a medium of instruction is not adequate because it is the language the deaf use to express themselves and to learn, however, the inadequacy comes in because of the inadequate vocabulary and sign for concepts that are needed to express ideas to students during teaching and learning in the classroom. More so, because there are inadequate vocabulary and signs in sign language, the acquisition of language by the learners also become inadequate, i.e. majority and for that matter almost all the children who are admitted to this school lack the basis in Sign language but rather the learners come to the school to acquire the Sign language unlike their hearing counterparts who have at least the basis of language when they are enrolled in school. Thus the deaf learners come to school with few gestures learnt from home and then at the same time as the teacher was supposed to be teaching the content of the syllabi, she or he is at the same time teaching the child sign language.”(Verbatim expression by the head of school)

It can be inferred from the comments of the head of school that as much as Sign language could be used to adequately express concepts in the subject matter, there were challenges with adequacy of vocabulary or signs in Sign language to express concepts during classroom instruction

4.4.2. Interest in the use of Sign language as a medium of instruction

As regards to the interest respondents have in using Sign language as a medium of instruction, they made the following comments:

One teacher intimated:

“Yes, I am interested in using Sign language as a medium of instruction in this school because that is what I have been trained for, besides Sign language is the main mode of communication for the deaf so I have nothing to do but to show interest in it to communicate with them so that they can understand whatever lesson I will teach them.”(Verbatim expression by a teacher who can hear).

Another teacher remarked this way:

“Over here in this school, the Sign language is the only medium of communicating to the students, you can’t use only speech to teach them, the only way you can teach is to use the sign language, so I have to adopt the Sign language or sometimes I have to add speech or gestures so that the students will understand me better during classroom instruction.” (Verbatim expression by a teacher who can hear)

Another teacher added:

“Yes, I am interested in using Sign language as a medium of instruction in the school because that is the medium of communication that the students understand. Once they are deaf, I know they cannot hear or perceive sound so how then will I stand to speak when teaching them, so for me I know that using Sign language to teach them is the best way for them to get the understanding of what they are taught.”(Verbatim expression by a teacher who can hear).

Another teacher also commented:

“Yes, I was born deaf and Sign language is my first language and it is through the use of Sign language that students who are deaf too can understand lessons better.” (Verbatim expression by a teacher with deafness).

Another teacher emphasized:

“Yes, because the students are deaf and Sign language is the language they understand, I am deaf myself so I am interested in using Sign language as medium for teaching.” (Verbatim expression by a teacher with deafness).

Teachers’ comments revealed that Sign language was indeed the language through which they could communicate with their students during classroom instruction and therefore had to show interest in it for the purpose of teaching the deaf. Analysis of the findings further indicated that teachers with deafness showed more interest in the use of Sign language as a medium of instruction than the teachers who could hear.

With regards to the interest in the use of Sign language as a medium of instruction, the views of students were sought and they gave their accounts as follows:

One student indicated:

“Yes, I like to be taught in Sign language because it is helpful, I am deaf and when the Sign language is used in teaching it makes me understand lessons better.” (Verbatim expression by a student with deafness).

Another student added :

“Yes, because Sign language is perfect, I am deaf and Sign language is my language and I understand it, Sign language should

be used to teach us, I get confused when teachers speak while teaching.” (Verbatim expression by a student with deafness).

A third student opined:

“Yes, I understand lessons better when teachers use the Sign language skillfully especially the deaf teachers’, I am deaf and I don’t like the speech so I like sign language.” (Verbatim expression by a student with deafness).

It seems clear from the analysis of comments from students that they had interest in Sign language and also because it was their language. The analysis of the findings further revealed that students preferred being taught by deaf teachers because they were skillful with the use of the Sign language as against hearing teachers’ who spoke while teaching them.

Concerning the interest in the use of Sign language as a medium of instruction the views of the head of school was sought and commented as follows:

“Yes, I have interest in using Sign language because Sign language is the major mode of communication with which one can reach the students, and apart from that nothing can be done to communicate with them.” (Verbatim expression by the head of the school).

Based on the comments made by the head of school it could be inferred that Sign language could not be substituted with any other language as a medium of instruction as far as teaching students who are deaf is concerned.

4.5. Analysis of Observation Data

4.5.1 Communication approach (es) to Deaf education employed in the classroom

To confirm the responses to the interview conducted in the study the researcher made observations on the communication approaches employed in the classroom as a medium of instruction:

The classroom observations confirmed the responses of the interview data that some of the teachers had difficulty in communicating the curriculum content to the students using Sign language. It was observed that majority of the teachers who can hear used speech, writing, gestures, pictures and facial expressions to communicate with the students when they delivered classroom instruction. It was also observed that majority of the teachers employed fingerspelling to present concepts without corresponding signs for them. Some of the teachers also spoke in Exact English and signed alongside while delivering classroom instructions. The data drawn from the classroom observations evidenced that majority of the hearing teachers expressed themselves in exact English and signed alongside simultaneously following the structural and grammatical rules of Ghanaian Sign Language.

It was observed that majority of the hearing teachers struggled to express themselves in the exact English and signed alongside in Ghanaian Sign language because the two languages are not one and the same, so they couldn't have identical structures and grammatical compositions. That meant that majority of the teachers found it difficult to match every English word and utterances. Speaking in the exact English and sign alongside in Ghanaian Sign Language simultaneously could either make the sign concepts underrepresented or overrepresented and could also distort the meaning of the concepts

signed and in the end it could affect students understanding of the lessons and the curriculum content being delivered to them. Generally, the mismatches were observed in a number of the sentences since it was very difficult to use two languages at a time equivalently. Above all the structural and grammatical differences that existed between the exact English and the Ghanaian Sign language was compromised. It appeared the students were not taught in their mother tongue and were taught lessons in a language medium they hardly understood.

4.5.2 Availability of teaching and learning resources for the effective use of Sign language during classroom instruction

With regards to the availability of teaching and learning resources for the effective use of Sign language for delivery of classroom instruction, the researcher observed as follows:

The researcher observed that there were insufficient visual materials in the classrooms that could be used by the teachers to facilitate or enhance the teaching and learning of students.

Visual materials such as pictures, charts, videos modelled in Sign language, motion pictures were rarely used by the teachers. It was observed that the learning resource majority of the teachers used were textbooks which were in short supply in all the subjects the students study. There were no projector and a screen in the ICT laboratory and inadequate teaching resources for the teaching of Mathematics and Integrated Science. Absence of visual materials could hamper the effective delivery of classroom instruction and could also make the use of sign language to convey ideas, concepts and information to the students very difficult since students are visual learners.

The researcher observed that the seating arrangement was not suitable, the classroom size was small, especially the ICT Laboratory and therefore made it impossible to space out the

desks, so students had no option than to manage with the small classroom size. The desks in the classroom were arranged in rows and columns, students seated in front did not see their colleagues seated behind when they took their turn to answer questions in class. The small classroom size restricted the movement of both teachers and students. It was also observed that a portion of the classroom did not have light and therefore there was poor lighting. Some of the desk were weak. Seating arrangements like placing the desk in a U-shape or semi-circle, with the teacher at the open end were not functional. Classrooms environment that are not conducive might not promote effective teaching and learning and in the end will negatively affect students learning outcomes.

4.5.3 Challenges affecting the use Sign language as a medium of instruction in the classroom.

To confirm the responses to the interviews conducted in the study the researcher made observations in the classroom on challenges affecting the use Sign language as a medium of instruction. The researcher observed teachers while they taught some lessons and the observations made revealed that majority of the hearing teachers struggled to express themselves in the official language which is sign language to deliver classroom instructions, majority of the hearing teachers virtually used speech as the medium of instruction to teach the students and are not able to sustain students' attention throughout the lesson. On the other hand the teachers who are deaf communicated effectively using Sign language as the medium of in delivering classroom instruction. Teachers who struggled to communicate in Sign language not were able to arouse and sustain the attention of students throughout the lessons that the researcher observed. Classroom observations also showed that teachers could not sign every concepts to express themselves during classroom instruction because there were no known signs for every concept in all the subjects the students study in school. That phenomenon made majority

of the teachers to struggle to communicate effectively with the students during teaching and learning. It was also observed that in the absence of a known sign for a particular concept or vocabulary, majority of the teachers employed fingerspelling even though fingerspelling a concept does not in any way convey meaning to the students. This phenomenon could have negative effect on the learning outcomes of the students.



CHAPTER FIVE

DISCUSSION OF FINDINGS

5.0 Introduction

This chapter presents the discussion of findings. The discussion highlighted the major findings of the research and inferences made from respondents in view of findings from related previous studies. The discussion was guided by the research questions that were raised to guide the study.

5.1 Research Question 1

Which Communication approach (es) to Deaf Education is used in the classroom?

Regarding research question 1 that focused on finding which Communication approach (es) to Deaf education that teachers use in the classroom at the Junior High School Department of Koforidua School for the Deaf.

The results of the study revealed that either Sign language alone or Simultaneous Communication (SimCom) which were Sign language, speech, gestures and facial expressions are employed in the classroom for teaching and learning. Majority of the teacher respondents indicated that they spoke, signed and used gestures and facial expressions while teaching the learners in the classroom. However, some of the teachers revealed that they used Sign language alone, thus, they signed without speech when delivering classroom instructions. The comments from the head of the school confirmed that majority of the teachers used speech, sign, facial expressions and gestures when teaching whereas few of the teachers especially those who were deaf themselves indicated that they used Sign language alone, i.e. they did not speak and sign alongside when teaching. This findings corroborate studies by Poelane (2017) and Moores (2018) and Spencer and Marshark (2010) who concluded that Simultaneous Communication approach to Deaf education are employed or used by teachers who cannot communicate effectively

in Sign language. The findings of this study also confirms another research conducted in Ethiopia-Addis Ababa by Demissie (2011) who found that, the communication approach dominantly employed is Simultaneous communication (SimCom) which is considered the method used by hearing teachers with limited Sign language skills.

The researcher's observation in the classroom confirmed the findings of the interview of the respondents that majority of the teachers struggled to sign and speak alongside while delivering classroom instruction. These findings on the Communication approaches to Deaf education used in the classroom support studies by Poelane (2017) and Moores (2018) and Spencer and Marschark (2010) who contended that Simultaneous Communication which is commonly referred to as Total Communication (TC) are the Communication approaches to Deaf education that are employed by teachers who cannot communicate effectively in Sign language to deliver classroom instructions to students who are deaf. They added that SimCom and the TC are varied communication patterns and different strategies used in the context of classroom teaching and learning to meet the needs of individuals' learners with special educational needs such as the deaf.

The findings further corroborate that of Kimani (2012) which revealed that in a Kenyan school settings, teachers are free to use any or all of the varied communications patterns. However, the findings of this study is inconsistent with that of Kimani (2012) which revealed that whereas teachers' in Kenya tend to use Simultaneous Communication (SimCom) the use of the system has been controversial in some countries with some people arguing that Sign language should not be accompanied with speech and others arguing that speech would benefit only those learners in the classroom with residual hearing.

The findings of the study agree with findings of Sleger (2010) and Padden and Humphries (2005) whose research demonstrated that deaf children struggle to make sense of spoken language when it is the medium of instruction rather than the use of Sign language alone which is the first and natural language of individuals who are deaf. Furthermore, the findings of this study are in agreement with another research conducted in Ethiopia-Addis Ababa by Demissie (2011) who examined Sign language use as a medium of instruction at Mekanissa School for the Deaf, where the results revealed that the Communication approach to Deaf education dominantly employed in the school is Simultaneous Communication (SimCom) which is considered the method used by hearing teachers with limited Sign language skills.

Interview data from student respondents revealed that they preferred to be taught in Sign language alone rather than the use of the SimCom. The findings of this study is in line with a study conducted by Cokley (2013) which sought to compare the use of SimCom to the use of Sign language alone as a medium of instruction to see which one was the most effective for classroom instruction to students who are deaf. The results of the study is consistent with the findings of this study in that the comparison showed that Signing alone to deliver classroom instructions to students who are deaf by teachers was considered as the most effective and that Simultaneous Communication medium of instruction was the least effective means of delivering lessons to students.

The findings of the study revealed that overall, using Sign language alone as medium of instruction was in all areas of the test proved that SimCom was a struggle for teachers and students alike. In addition, the findings of the study further corroborate that of Cokley (2013) who found out that when professionals such as teachers are working with two separate modes of communication, the one that comes naturally for signing and speaking

at the same time results in slower approach to instruction than if just one modality like Signing alone was used to express language.

Moore (2019) showed a powerful evidence that Sign language and English language are structurally different and therefore there is no possibility of translating a Sign language for a word into English or translating an English language word for a sign into Sign language because the two languages have entirely different grammatical structures and processes.

Mandyata (2018) in a study reported about teachers of the deaf who sign alongside oral language/speech to deliver classroom instructions and indicated that most teachers of the deaf did not use Sign language as a medium of instruction, instead teachers favoured the use of Simultaneous Communication (SimCom).

Mandyata (2018) also found out that learners with hearing impairment including students who are deaf disapproved of the use of combination of communicative approaches in lesson delivery because the use of different communication approaches confuses them than when Sign language alone is used to deliver instructions to them in the classroom. Similarly, Starczewska et al. (2010) posited that most teachers of the deaf use oral language alongside signing as their modes of instruction because of their limitations in the use of Sign language and that that phenomenon raises concern about the appropriateness of language of instruction available in schools as well as the low achievement levels of the deaf in comparison with that of their hearing peers.

The findings of the study is supported by Chomsky's (1977) Innateness theory on language acquisition. According to Chomsky (1977) innateness theory, language is natural, inborn and intuitive to the individual and in this context students who are deaf. This implies that students who are deaf should be taught in the language that is natural to them or the language they are familiar with i.e. Sign language, because language has effect

on thinking and thinking also has effect on academic achievements of learners who are Deaf. This means that when students who are deaf are instructed in the Standard Sign language it will facilitate their understanding of lessons and will improve their overall learning outcomes.

Similarly, Cummins (2000) contended that learners who understand the language they are instructed in are more likely to engage meaningfully with content, question what they do not understand and even enjoy the challenge of new things during the teaching and learning process.

5.2 Research Question 2

What teaching and learning resources are available for effective use of Sign language as a medium of instruction in the classrooms?

Research question 2 inquired from respondents which learning resources are available for effective use of Sign language as a medium of instruction in the classroom. The findings of the study revealed that Traditional Teaching and learning Resources are available for use by the teachers for delivery classroom instructions though insufficient. The traditional teaching and learning materials such as textbooks, drawings on manila cards and pictures.

The findings of the study confirms studies by Pflapsen and Pallangyo (2019) who concluded that the availability of appropriate, high quality resources is a pre-requisite for the effective teaching and learning of a subject or curricular content. The findings of this study also supports studies by Sheeya (2018) who concluded that for effective use of sign language for classroom instruction, resources should be available to facilitate teaching and learning. Nyaywal (2018) and Mapolisa and Tshabala (2013) found that limited resources and facilities used in teaching Hearing Impaired and the Deaf affects quality of teaching and learning.

Furthermore, Pflepsen and Pallangyo (2019) have observed that students and their teachers need language-appropriate textbooks and other materials to both support language learning and to learn content across the curriculum. Similarly, Mpofu and Chimhenga (2013) have also found that teachers of students who are deaf can use different equipment including overhead projectors, bulletin board, computer graphic, slides, pictures, films with captions for classroom instruction.

On the issue of the importance of using appropriate teaching aids for lesson delivery to students with hearing impairment including students who are Deaf, Sheeya (2018) reported that the use of overhead projectors, smart boards and other visuals aids provide supplement to what is taught by the teacher and in effect help learners with hearing impairment and for that matter students who are deaf to recall fast, the information learned.

Findings of the study is in agreement with that of Obosu (2012) who revealed that visual aids are the channel of communication that employs the eye-gate to reach the mind and that the use of visual aids such as computers and overhead projectors can support teachers in lesson presentations and also help learners who are deaf to receive alternative support to acquire the needed education.

Regarding the classroom suitability for the use of Sign language as medium of instruction, the findings of the study corroborate that of Sheeya (2018) and Marschark and Spencer (2009) who posited that the physical environment of the classroom is an important factor in facilitating access to education for learners with hearing impairment and in this context students who are Deaf.

Sheeya (2018) further posited that for effective use of Sign language as a language of instruction, resources should be available to facilitate teaching and learning. According to

Sheeya (2018) the physical environment includes factors such as classroom infrastructure and arrangement of furniture, class size and classroom displays. Sheeya observed that education of the deaf is often compromised due to inadequate and appropriate teaching and learning resources such as support staff and other needed resources.

The findings of the study again endorse findings of Mapolisa and Tshabalala (2013) and Nyaywa (2018) who found that limited resources and facilities to cater for the educational needs of learners with hearing impairment or students who are Deaf affects the quality of teaching and learning. The researchers proposed that equipment such as overhead projectors, bulletin boards, computers and televisions showing captions on the screen can be used by teachers who teach the deaf to facilitate their teaching.

More so regarding classroom suitability for the use of Sign language as a medium of instruction, some of the respondents of this study revealed that the classroom seating arrangement was not all that conducive. The reason being that the classroom size was small and therefore it made it impossible to space out the desks and students were compelled to manage with the small classroom size specifically at the ICT laboratory at the Junior High School Department of the research site. Furthermore, some of the participants indicated that the desks in the classroom were arranged like it is done in a regular school classroom, thus, the desk were arranged in vertical and horizontal alignment spread across the classroom. This arrangements of the desks in the classrooms does not make other students who are seated in front in the class see the sign of those who sit behind in class when they answer questions.

These findings on classroom suitability for the use of Sign language as medium of instruction specifically on classroom seating arrangement is inconsistent with studies by Glaser and Lorenzo (2006) who found out that U-shape seating arrangements of tables and

chairs, with the teacher and / or interpreter at the open end , are also an important seating structure that enables all students in the classroom to see clearly what both the teacher and other students in the classroom communicate through Sign language during teaching and learning.

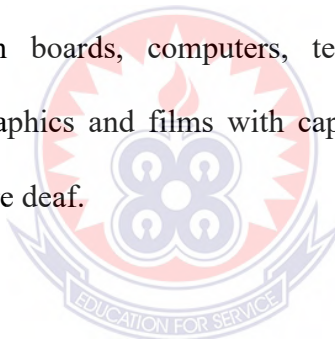
These findings on the teaching and learning resources for effective use of Sign language as a medium of instruction in the classroom are supported by Chingos and West (2010), Mandillah (2019), Matimbe (2014), Tety (2016), Adeogun (2001), Fuller and Clark(1994), Momoh (2010) and Adegbija (2008) who found out in their studies that inadequate teaching and learning resources if not addressed will hinder transmission of content in the languages of instruction in the classroom and that the availability of teaching and learning resources such as textbooks, laboratories and other equipment is vital for effective teaching and learning. Similarly, Adegbija (2008) indicated that lack of such materials compromises quality teaching, which affects quality learning in educational institutions. Tety (2016) also contented that instructional materials have been observed as a powerful strategy to bring about effective teaching and learning and also make learning more interesting and memorable. Tety (2016) further stated that absence of teaching and learning resources make teachers handle subjects they teach in an abstract manner portraying it as dry and non-exciting concepts and ideas.

Adeogun (2001) found out that there is a strong positive link between instructional resources and academic performance. According to Adeogun, schools that possess more instructional resources performed better than schools that have less instructional resources. The findings of Adeogun (2001) is authenticated by the findings of the study by Babayomi (1999) who found out that private schools performed better than public schools because of the availability and adequacy of teaching and learning resources. Adeogun (2001)

revealed that effective teaching and learning cannot occur in the classroom environment if essential instructional resources are not available.

Fuller and Clark (1994) also found out that the quality of instructional processes experienced by a learner determines quality education and therefore suggested that the use of quality instructional materials by teachers to teach learners will enable them to receive quality learning experience.

Then again, Luckner, Browen and Carter (2001) in their study found out that to enhance communication and instruction with students who are deaf there is the need for the instructor to establish visually rich learning environments and that in such environments, the teacher would have to use the following instructional aids or equipment such as overhead projectors, bulletin boards, computers, televisions, pictures, illustrations, artefacts, slides, computer graphics and films with captions when delivering classroom instructions to students who are deaf.



5.3 Research Question 3

What are the challenges affecting the use of Sign language as a medium of instruction in the classroom?

Research question 3 focused on the challenges affecting the use of Sign language as a medium of instruction. With regards to the challenges teachers faced in using Sign language as a medium of instruction in the classrooms, the analysis of the interview data revealed majority of the teachers especially the hearing teachers are not proficient in the use of Sign Language for delivering lessons. However, the teachers who are deaf are proficient in using Sign language for delivering instructions in the classroom.

The findings of the study support studies by Amoako-Gyimah(2015) and Siyanda(2015) and Pflapsen and Pallangyo(2019) who found that majority of teachers who teach students

who are deaf are not proficient in the use of Sign Language and as a result are unable to effectively teach students or learners. They maintained that if the teacher is not proficient in the communication mode he or she has to use in teaching the students, the teacher will find it extremely difficult in making any positive impact as far as the teacher's delivery of lessons in the classroom is concerned and for that matter proficiency in Sign language is important. In addition, learning of students who are deaf is compromised due to lack of effective communication between teachers and learners.

The findings of the study further confirmed studies by Long et al. (1999). They study concluded that teachers with strong skills in Sign language maintained a strong and positive relationship with students who are deaf and were well able to foster interactive communication to provide a safe and healthy learning environment which helps to improve learning outcomes of students. By inference teachers with weak Sign language skills will have negative relationship with students and will hinder interactive communication which will not facilitate conducive learning atmosphere and in the end will lead to poor learning outcomes of students.

Asfaw (2017) also found out that majority of teachers who taught students who are deaf never underwent comprehensive training in Sign Language. The point is that since Sign language is the natural and first language for learners who are deaf, failure by teachers to use their preferred mode of communication in delivery classroom instruction to them will negatively affect their learning outcomes.

More so, on the issue on teachers' views on the challenges they face in using Sign language as a medium of instruction, the analysis of the interview data evidenced that majority of the teachers face challenges with the use of Sign language as a medium of instruction even though few teachers pointed out that they had no challenge using Sign

language as a language of instruction. A few of the teacher respondents of this study indicated that their major challenge in using Sign language as a medium of instruction was that there were no specific Signs for every concept in Sign language and that cut across in all subjects especially in English Language, Mathematics, Integrated Science and Social Studies.

The findings support that of Wakumelo and Miti (2010), Wakumelo (2009) and Smith (2000), they reported that the question of limited vocabulary when it comes to delivering classroom instruction to students who are deaf is not new to deaf education. They commented that teachers have to go through challenges when they use Sign language to teach technical subjects like English Language, Mathematics and Science. The researchers further indicated that the problem of lack of vocabulary when it comes to the teaching of English, Science and Mathematics at high school level becomes more acute. They further observed that the problem of limited vocabulary in Sign language for delivery of classroom instruction is compounded by the fact that few teachers who are knowledgeable in Sign language only know the basic Signs and they are not able to sign technical concepts because there are no known signs for those concepts. This phenomenon delays teaching and slows learning and get both the teacher and learners frustrated when there is language barrier due to absence of signs for concepts needed to communicate to students during teaching and learning.

Wakumelo (2009) observed that when teachers fail to formulate appropriate concepts they resort to speech which confuses the learners who are deaf. Johnson and Seaton (2012) noted that teachers who face the challenge of limited vocabulary in Sign language to teach become frustrated and their learners become bored as they repeat the same materials and that make students lag behind in their academic pursuit when compared with their hearing

peers. The problem of limited vocabulary in Sign language to express ideas, concepts and thoughts make the use of Sign language as a medium of instruction difficult for both the teacher and learners, and the overall effect is that it negatively affect the learning outcome of students who are deaf.

Furthermore, Mavhunduste (2014), Smith (2000) and Wakumelo and Miti (2010) also commented that for effective teaching and learning to take place, teachers need to possess some sufficient degree of experience and skills. The researchers were of the view that experience and skills are some of the major factors that contribute to effective teaching. The observation done by the researchers confirmed that majority of the teachers, especially the hearing teachers struggle to effectively communicate in Sign language when delivery classroom instructions to students. The researchers further observed that teachers who are deaf themselves did not struggle in expressing themselves in Sign language when teaching the students. In addition, it was observed that students' participation in class was interactive in classes where they were taught by teachers who are also deaf.

These findings on challenges affecting the use of Sign language as a medium of instruction in the classroom are supported by Chomsky's (1977) Innateness theory on language acquisition which emphasizes on everyone having an inborn faculty for first language acquisition. Chomsky indicated that at birth children always had brains whose neutral circuits had linguistic information. Chomsky also emphasized that children and for that matter learners think in their first language and therefore they should be exposed to a rich linguistic environments that enhance their language early in life. This implies that when students who are deaf are taught in their first language, i.e.in Sign language it will facilitate their understanding of what they are taught in the classroom setting. By applying Chomsky's (1977) theory to this study, it also implies that students who are deaf should be

taught based on the most familiar language i.e. Sign language. As the findings of this study revealed, teachers faced challenges in using Sign language to deliver classroom instruction and this phenomenon is likely to lead to low or poor learning outcome of students.

5.4 Research Question 4

What are the opinions of teachers and students on the use of Sign language as the medium of instruction?

Findings on the opinions of teachers and students on the use of Sign language as a medium of instruction revealed that majority of the teacher respondents felt Sign language was inadequate in terms of expressing concepts in the subject matter. Similarly, the interview data on the opinions of student respondents concerning the adequacy of Sign language to express concepts in the subject matter revealed that even though Sign language was students natural and first language, they felt there were inadequate signs in Sign language to express ideas in the subject matter especially in English Language. In addition, the interview data from the head of the school regarding whether or not Sign language is adequate to express concepts in the subject matter indicated that even though Sign language was the language the deaf used to communicate and learn, the inadequacy of Sign language come in because of the inadequate vocabulary and signs for concepts that might be needed to express ideas to students during teaching and learning.

With regards to the interest teachers have concerning the use of Sign language as a medium of instruction results revealed that teachers had no option not to use Sign language as the medium of instruction and therefore had to show interest in it for the purpose of using it to teach students who were deaf. On the other hand, interview data from student respondents concerning the interest they show towards that the use of Sign

language as a medium of instruction revealed that they had interest in Sign language and wanted to be taught in Sign language because they indicated that it was their first language or mother tongue and also their language for communication in and outside the classroom. Analysis of the interview data provided by the head of the school with regards to the interest shown towards the use of Sign language as a medium of instruction indicated that Sign language could not be substituted with any other language as medium of instruction as far as teaching students who were deaf was concerned.

The finding on the opinions of teachers and students that Sign language is inadequate in terms of expressing concepts in the subject is supported by Tameru (2014), Burns, Matthews, and Nolan-Conroy (2001), Demissie (2011) and Mweri (2014) who found out that if the attitude of teachers towards the language of instruction is positive, the attitude of the learners is most likely to be positive, on the other hand, if the attitude of teachers is negative, it is more likely that learners will develop negative attitudes towards the whole education system in general and the language in particular.

Burns, Matthews and Nolan-Convoy (2001) commented that the attitudes teachers and students have towards a certain language is crucial in the context of teaching and learning in the classroom. Slegers (2010) reported that educational research has contributed to changing attitudes towards the use of Sign language as a language of instruction. Slegers found out that there is growing body of international research over the past three decades that supports the notion that children who are deaf achieve better academically in a bilingual classroom setting. Slegers (2010) maintained that an environment with Sign language as the language of instruction has been shown to better teach subject matter that facilitate learning to read and write English Language (Komesaroff, 1996; Branson & Miller, 2002).

Tameru (2014) citing Million (2006) submitted that teachers with negative attitude are not only potential drops outs, but they are likely to be transmitters of negative values about teaching to pupils they teach. Khejeri (2014) pointed out that attitudes of teachers towards the language of instruction is an indispensable fact for those who are engaged in implementing the language.



CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

This chapter presents the summary of findings, conclusions and recommendations for the study. The purpose of this study was to explore the current practices and challenges of using Sign language as a medium of instruction at Koforidua School for the Deaf. Four research questions were formulated from the objectives to guide the study.

A descriptive case study research design was adopted for the study. Fifteen (15) participants were purposively and randomly selected from a population of 63 which was made up of six (6) hearing teachers, three (3) teachers who were deaf, five (5) final year students and one head teacher. Data were gathered through a semi-structured interview and observation guides. Data from teachers, students and the head teacher's interview were analysed using themes that emerged.

6.1 Summary of Findings

Research Question 1

Communication approach (es) to Deaf Education used in the classroom.

From the analyses of the interview data and the observation made by the researcher on research question 1 revealed that either Sign language alone or Simultaneous Communication which are Sign language, speech, gestures and facial expressions are employed in the classroom. However, the study also showed that some of the teachers specifically the teachers who are deaf use Sign language alone as a medium of instruction. Results of the study also revealed that majority of the student respondents were displeased with teachers who spoke and signed alongside when delivering classroom instructions, to such students speaking and signing alongside confused them. However, a few of the

students indicated that they were okay when teachers spoke and signed alongside during teaching and learning in the classroom.

The researcher's observation in the classroom confirmed the findings of the interview of the respondents that majority of the teachers struggled as they spoke and signed alongside while they delivered classroom instruction to students.

Research Question 2

Teaching and Learning resources available for effective use of Sign language as a medium of instruction in the classroom.

The analyses of the interview and the observation data on research question 2 revealed that teaching and learning resources used in the classroom were insufficient and those available were the traditional teaching and learning resources include textbooks, teacher-made learning materials such as; drawings or sketches on manilla cards, diagrams and pictures. The student respondents indicated that majority of the teachers who taught them rarely used teaching and learning materials.

The classroom observation made the researcher confirm that majority of the teachers taught lessons without using teaching and learning materials. Results of the study further revealed that the classrooms were not suitable to facilitate the use of Sign language as a medium of instruction. However, few of the students indicated that the classrooms were suitable for the use of Sign language for teaching and learning. Observation made concerning the classroom suitability in terms of seating arrangements revealed that the desks are arranged in rows and columns like that of regular school settings.

Research Question 3

Challenges affecting the use of Sign language as a medium of instruction in the classroom.

The following emerged from the analyses of the interview data and the observations made by the researcher with regards to challenges affecting the use of Sign language as a medium of instruction.

Findings of the study revealed that majority of the teachers were not proficient in the use of Sign language for delivering classroom instructions even though few teachers indicated that they are proficient in it and those teachers were deaf themselves. Results of the study further revealed that students preferred to be taught by deaf teachers as against hearing teachers. The students further indicated that majority of the hearing teachers were not skilful as far as the use of Sign language as a medium of instruction is concerned.

Again, the findings revealed that there were no specific Signs for every concept in Sign language and that phenomenon cut across all subjects especially in English Language, Mathematics and Integrated Science.

Research Question 4

Opinions of teachers and students on the use of Sign language as a medium of instruction.

With regards to opinions of teachers and students on the use of Sign language as a medium of instruction, results that majority of the teachers felt that Sign language was inadequate in terms of using it to express ideas and concepts in the subject matter but had no option not to use it as a medium of instruction because it was the language of their students who are deaf.

The findings also revealed that students felt that Sign language was inadequate to express ideas and concepts in the subject matter especially in English Language but still wanted to be taught using Sign language because it was their first language or mother tongue.

6.2 Conclusion

The study concluded that the Communication approach (es) to Deaf education employed in the classroom were either Sign language alone or Simultaneous Communication (SimCom) which were Sign language, speech, gestures and facial expressions. Specifically, majority of the teacher respondents indicated that they spoke, signed and used gestures and facial expressions while teaching the learners in the classroom. However, the study also revealed that some of the teachers i.e. the teachers who are deaf used Sign language alone, thus, they signed without speech when delivering classroom instructions. The comments from the head of the school confirmed that majority of the teachers i.e. the hearing teachers used speech, sign, facial expressions and gestures when teaching whereas few of the teachers especially those who were deaf themselves indicated that they used Sign language alone, that is, they did not sign and speak alongside when teaching.

Additionally, the findings of the study revealed that Traditional Teaching and learning Resources are available for use by the teachers for delivery classroom instructions though insufficient. The traditional teaching and learning materials were textbooks, drawings on manila cards and pictures.

Furthermore, from the findings of the study, teachers, especially, the hearing teachers face challenges in using Sign language as a medium of instruction in the classrooms, the analysis of the interview data revealed that majority of the hearing teachers are not proficient in the use of Sign Language for delivering lessons. They, the hearing teachers,

virtually use speech to communicate with the students as though they are teaching hearing students.

Lastly, findings on the opinions of teachers and students on the use of Sign language as a medium of instruction revealed that majority of the teacher respondents felt Sign language was inadequate in terms of expressing concepts in the subject matter. Similarly, opinions of student respondents concerning the adequacy of Sign language to express concepts in the subject matter revealed that even though Sign language was their natural and first language, they felt there were inadequate signs in Sign language to express ideas in the subject matter especially in English Language.

6.3 Recommendations

Based on the findings of the study, the following recommendations were made:

- a. The Co-ordinator for Special Education at the Municipal Directorate of the Ghana Education Service should appeal to the Municipal Director of Education to organize workshops and seminars for teachers in the school to sharpen their Sign language skills in order to communicate effectively during classroom instructions.
- b. The Co-ordinator for Special Education should appeal to the Municipal Director of Education to provide textbooks, interactive video clips that have been modelled in Sign language to suit the learning needs of the students who are deaf, such textbooks, for the various subjects should be produced for use by teachers and students for teaching and learning. That is, students who are deaf are visual learners and therefore varieties of adequate, appropriate and modern technological equipment such as computers, projectors and screens that teachers can use to deliver classroom instructions should be provided.

- c. The Co-ordinator for Special Education should appeal to the Municipal Director of Education to produce Sign language Dictionary in the various subjects to help curb the problem of lack of signs for concepts or vocabulary for the various subjects taught at the Junior High School.
- d. The Co-ordinator for Special Education should appeal to the Municipal Director of Education to recruit and post teachers who have interest in Sign language to the school.

6.4 Suggestion for Further Research

The study has revealed that there are challenges of using Sign language as a medium of instruction at Koforidua School for the Deaf. Further research should be conducted on the topic “Using Sign language and its impact on academic performance of the students in the school”. For replication of findings, another research can be carried out on a larger sample from selected Basic Special Schools for the Deaf in Ghana.

6.5 Contributions of this current study to Knowledge

Teachers inadequacies and weaknesses in the use of Sign Language, challenges affecting the use of using Sign language as a medium of instruction, inadequate Teaching and Learning Resources that hinders the effective use of Sign language for delivery classroom instruction , opinions of teachers and students on the use of Sign language as medium of instruction have been exposed by the study but all have been addressed in the recommendations and therefore it can be said that this current study has strengthened and confirmed existing knowledge.

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APPENDICES

APPENDIX – ‘A’

SEMI-STRUCTURED INTERVIEW GUIDE FOR TEACHERS

SECTION ONE

DEMOGRAPHIC INFORMATION OF RESPONDENTS

1. Gender: A. Male..... B. Female.....
2. Age: A. 20 -30 years B. 31-40 years C. 41-50 years
D. 51 years and above.....
3. Experience (how many years) in educating the deaf
4. Which subject do you teach?.....
5. Qualification. A. Below Certificate... B. Certificate...C. Diploma..... D.
B.Ed. (SPED)..... E. MPhil (SPED)..... M.Ed.
(SPED).....
6. Area of speciality EHI..... EVI..... EMH/E1D.....
7. Status: A. Deaf B Hearing

SECTION TWO

Communication approach (es) to Deaf education employed in the classroom

- a. What language do you use as a medium of instruction in the classroom?
- b. Which communication approach (es) to Deaf education do you use to deliver classroom instruction? Probe: a. Explain further b. What do you mean?

Availability of teaching and learning resources for the effective use of Sign language during instruction

- a. What teaching and learning resources are available to aid your teaching in the classroom? Probe: a. Explain further b. What do you mean?

SECTION ONE

Is the classroom suitable for the use of Sign language as a medium of instruction?

Probe: a. Explain further b. What do you mean?

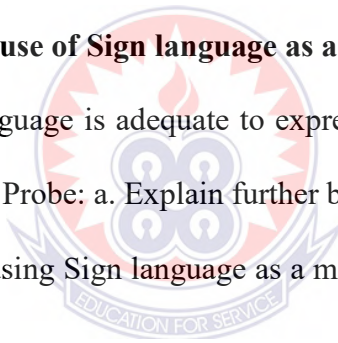
Challenges affecting the use of Sign language as a medium of instruction.

- a. How proficient do you think you are in using Sign language to deliver classroom instruction? Probe: a. Explain further b. What do you mean?
- b. What challenges do you face in using Sign language as a medium of instruction in the classroom? Probe: a. Explain further b. What do you mean?
- c. Has school authorities made attempts to improve expressiveness of Sign language proficiency among the teachers? Probe: a. Explain further b. What do you mean?

Opinions of teachers on the use of Sign language as a medium of instruction.

- a. Do you think Sign language is adequate to express concepts in the subject during classroom instruction? Probe: a. Explain further b. What do you mean?
- b. Are you interested in using Sign language as a medium of teaching and learning in the school?

Probe: a. Explain further b. What do you mean?



APPENDIX-B

SEMI-STRUCTURED INTERVIEW GUIDE FOR STUDENTS

BIOGRAPHICAL CHARACTERISTICS OF RESPONDENTS

1. Gender, Male..... Female.....
2. Age
3. Class
4. Number of years of schooling.....

SECTION TWO

Communication approach (es) to Deaf Education employed in the classroom

- a. What language do your teachers use to teach you in the classroom?
Probe: a. Explain further b. What do you mean?
- b. Do your teachers sign and talk at the same time during classroom instruction? How do you feel when your teachers Sign and talk alongside during teaching and learning in the classroom? Probe: a. Explain further b. What do you mean?

Availability of teaching and learning resources for the effective use of Sign language during classroom instruction

- a. What teaching and learning resources do your teachers use to deliver classroom instructions? Probe: a. Explain further b. What do you mean?
- b. Is the classroom suitable for your general learning in the school? Are you comfortable with the seating arrangement? Probe: a. Explain further b. What do you mean?

Challenges affecting the use of Sign language as a medium of instruction

- a. Are your subject teachers skillful in the use of Sign language as a medium of instruction in the classroom? Probe: a. Explain further b. What do you mean?

What challenges do you face in using Sign language as a medium of instruction? Probe:

- a. Explain further b. What do you mean?

Opinions of students on the use of sign language as a medium of instruction

- a. Do you think Ghanaian Sign language (GhSL) is adequate to express every concept and idea in the subjects you learn in class or school? Probe: a. Explain further b. What do you mean?
- b. Do you prefer that Sign language be used to teach you during teaching and learning in the classroom? Probe: a. Explain further b. What do you mean?



APPENDIX- 'C'
SEMI-STRUCTURED INTERVIEW GUIDE FOR HEAD TEACHER
DEMOGRAPHIC INFORMATION OF RESPONDENT

1. Gender: A. Male..... B. Female.....
2. Age: A. 20 -30 years B. 31-40 years C. 41-50 years.....
D. 51 years and above.....
3. Experience (how many years) in educating the deaf
4. Qualification. A. Below Certificate..... B. Certificate.....
C. Diploma..... D. B.Ed. (SPED)..... E. MPhil (SPED)..... M.Ed.
(SPED).....
5. Status: A. Deaf B. Hearing

SECTION TWO

Communication approach (es) to Deaf education employed in the classroom.

- a. What language do teachers use as a medium of instruction in the classroom?
- b. Which communication approach (es) to Deaf education is employed in this school?

Probe: a. Explain further b. What do you mean?

Availability of teaching and learning resources for the effective use of Sign language during instruction

- a. What teaching and learning resources are available for teachers to use to deliver classroom instructions? Probe: a. Explain further b. What do you mean?

Challenges affecting the use of Sign language as a medium of instruction

- a. Are the teachers proficient when it comes to the use of Sign language as a medium of instruction in the classroom? Probe: a. Explain further b. What do you mean?

What challenges do teachers encounter in using Sign language as a medium of instruction in the classroom? Probe: a. Explain further b. What do you mean?

Opinions of the head teacher on the use of Sign language as a medium of instruction

- a. Do you think Sign language is adequate to express concepts and ideas in the subject matter during classroom instructions? Probe: a. Explain further b. What do you mean?
- b. Are you interested in using Sign language as a medium of instruction for students who are deaf in this school? Probe: a. Explain further b. What do you mean?



APPENDIX- 'D'

OBSERVATION GUIDE

GENERAL INFORMATION

1. Date
2. Subject.....
3. Class or Form.....
4. Number of students', Male..... Female

SECTION TWO

Specific Areas of Observation

Communication approach (es) to Deaf education employed in the classroom

- a. How do teachers communicate with their students to deliver classroom instructions?
- b. Do teachers sign and speak alongside, do they sign only, or do they use all other means to communicate with the students do classroom instruction?

Availability of teaching and learning resources for the effective use of Sign language during instruction.

- a. What teaching aids are available for use by teachers do deliver classroom instruction to students?
- b. How are the classroom seating arrangements done?

Challenges affecting the use Sign language as a medium of instruction in the classroom.

- a. Are teacher proficient in the use of Sign language for delivery classroom instructions to student?

What challenges do teachers face in using Sign language as a medium of instruction in the classroom?



APPENDIX 'E'
LETTER OF INTRODUCTION FROM UNIVERSITY OF EDUCATION ,
WINNEBA



APPENDIX 'F'


LETTER OF INTRODUCTION FROM EASTERN REGIONAL EDUCATION OFFICE

GHANA EDUCATION SERVICE

In case of reply the number and date of this letter should be quoted!

My Ref. No. GES/ER/SS 363/ _____

Your Ref No _____


REPUBLIC OF GHANA

REGIONAL EDUCATION OFFICE,
P. O. BOX 99,
KOFORIDUA.
2ND DECEMBER, 2020

THE HEADMISTRESS
KOFORIDUA UNIT SCHOOL FOR THE DEAF
KOFORIDUA

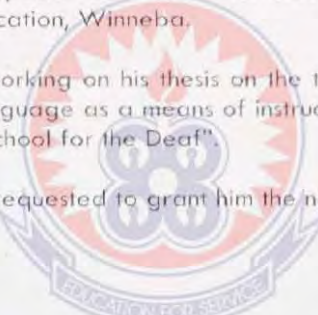
**LETTER OF INTRODUCTION
MR. OFORI ATTA ASARE**

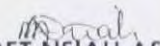
I write to introduce to you, MR. OFORI ATTA ASARE an M.Phil Student of the Department of Special Education with index number 200026655 at the University of Education, Winneba.

He is currently working on his thesis on the topic: "Practices and Challenges of using Sign Language as a means of instruction in your Junior High School, Koforidua Unit School for the Deaf".

You are hereby requested to grant him the needed assistance to enable him collect the data.

Thank you.




MARGARET NSIAH-ASAMOAH (MRS)
REGIONAL DIRECTOR (E)

Cc: Mr. Ofori Atta Asare, University of Education, Winneba