UNIVERSITY OF CAPE COAST

SIGN LANGUAGE ACQUISITION AMONG PRESCHOOL CHILDREN WHO ARE DEAF IN GHANA: A PROCESS OF LANGUAGE REORIENTATION WITHIN THE SCHOOL ECOLOGY

BY

GIDEON KWESI OBOSU

Thesis submitted to the Department of Education and Psychology of the Faculty of Educational Foundations, College of Education Studies, University of Cape Coast, in partial fulfilment of the requirements for the award of Doctor of Philosophy degree in Special Education

MARCH 2019

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature……. Date ……

Name: ……..

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature …….. Date ……..…

Name: ……..

Co-Supervisor's Signature …… Date ……

Name: ……..

ABSTRACT

The purpose of this study was to explore how the school setting facilitates sign language acquisition during the early years of children who are deaf in order to theorise the process of sign language development among children who are deaf in Ghana. In line with the purpose, the constructivist grounded theory design was adopted to gather qualitative data using observations and interviews. Both purposive and theoretical sampling procedures were employed to select parents, teachers and head teachers from two homes and six schools for the deaf respectively across Ghana for the study. Constant comparative analysis was used to analyse data during the initial, focused and theoretical coding procedures. The core categories that emerged from the data were language disorientation, language facilitation, language adjustment and language replacement leading to a substantive theory termed as "theory of language reorientation". The theory explains that children who are deaf who come from hearing families and therefore do not acquire sign language from home become language disorientated as they grapple with education at school. Subsequently, teachers, peers and deaf role-models within the school environment facilitate deaf pupils' sign language acquisition through classroom teaching and learning activities, school deaf culture and peer interactions. The study concluded that the schools for the deaf serve as places of last resort to sign language development of children who are deaf. It is therefore recommended that Ghana Education Service in collaboration with the Department of Social Welfare should embark upon public campaign to give parents education on the need to, as a matter of expedience, send their children who are deaf to the schools for the deaf as early as possible.

KEY WORDS

Language acquisition/language development

Sign language

Spoken language

Homemade signs

Language neglect

Accessible language

Language deprivation syndrome

Visual instruction

Manual communication

ACKNOWLEDGEMENTS

Admittedly, this study has been a remarkable task in my academic carrier that has required guidance and support from many people. Hence, I would like to express my profound appreciation to everybody who has contributed in diverse ways towards the success of this study.

Foremost among them are my supervisors, Dr. Irene Vanderpuye and Dr. Kofi Krafona as well as Prof. Nana Afia Opoku-Asare of KNUST for their insight and time they invested into supervising this study. I owe the success of this study to their constructive criticisms, suggestions and guidance. I have learned a lot under their tutelage. I am particularly grateful to Prof. Nana Afia Opoku-Asare for her mentorship and unflinching support and for the time and energy she spent on my work making sure that it merited a Ph.D.

My heartfelt thanks likewise go to Dr. Edem Hiamey of the Department of Hospitality and Tourism Management, UCC for his coaching on grounded theory methodology. I am confident of this methodology because of him.

I am also grateful to all parents, head teachers, and teachers who were selected for this study. I am especially thankful to all preschool teachers at the Cape Coast Schools for the Deaf for their kindness and tolerance. I have learnt a lot from their experiences. Certainly, I would not have completed this study without their unflinching support. To all authors whose books and articles were used in this study, I say thank you.

Finally, my deepest gratitude goes to my family especially my mother for her prayers, encouragements and support throughout my academic journey. To my dear wife, Mrs Dorcas A. O. Obosu, I say thank you for sticking with me throughout these hard times. Indeed, there are better days ahead.

DEDICATION

To all children who are deaf.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS/ACRONYMS

ASL	American Sign Language
BECE	Basic Education Certificate Examination
GES	Ghana Education Service
GNAD	Ghana National Association of the Deaf
GhSL	Ghanaian Sign Language
LAD	Language Acquisition Device
LASS	Language Acquisition Support System
MOE	Ministry of Education
SpED	Special Education Division
TV	Television
USA	United States of America
UNESCO	United Nations Education Scientific and Cultural Organisation

CHAPTER ONE

INTRODUCTION

This chapter discusses the background to the study by focusing on the importance of language development, hence the need for children who are deaf to get exposure to sign language in the early years of their lives which is critical period of language development. The chapter then builds on how linguistic neglect can lead to language deprivation which has cognitive implications for children who are deaf. The problem of the study is placed in context by establishing that in Ghana, most children who are deaf are born to hearing parents who are not literate in sign language, hence the need to explore the process of sign language development for children who are deaf in Ghana during the early years of their lives. The premise is that ability to use language effectively in spoken or visual-gestural modalities is one of the most essential element in life which should be acquired in early years.

Background to the Study

Studies in psychology and education have confirmed that typically, all children are biologically prewired to acquire a natural language at birth and they do so almost effortlessly (Gadagbui, 2014; Santrock, 2011). By age 5 years, all things being equal, children acquire their first language and develop functions of communication such as narrating a story, expressing or explaining an event or making a request (Santrock, 2011). All these linguistic abilities are dependent on a multiple of factors that include a child's own cognitive and physiological maturation, good language model and social interaction (Gadagbui, 2014). This means that apart from the maturation of the brain and the hearing apparatus which

children might be biologically endowed with, the influence of the environment is also crucial to language development in both spoken and signed modalities. With good hearing, selective reinforcement, good social interaction and auditory feedback, typical children are able to acquire spoken language of their mother tongue without much difficulty. At age 5 years, by the time they enter preschool, most typical children become fluent in their first language (Tomaszewski, 2001).

However, not all children develop naturally spoken language by age 5 years and deafness has been implicated in this language development difficulty. According to Humphries et al. (2016), if children are not able to hear the speech of others as well as their own auditory feedback which serves as auto corrective mechanism, their ability to acquire a spoken language becomes almost impossible. This means that children who are deaf, those whose hearing degree falls in the range of 71dB Hearing Level (HL) to over 90dB HL will find it extremely difficult to acquire spoken language naturally. In fact, studies on spoken language proficiency of children who are deaf have shown that it is awfully difficult for them to acquire spoken language normally or that the development process is painfully slow even with hearing aids (Humphries et al., 2016; Humphries, Kushalnagar, Mathur, Napoli, & Padden, 2014; Marschark, 2001). This implies that this group of children who are deaf and cannot acquire naturally spoken language will have to learn sign language.

Although evidence from medical literature are contradictory and inconclusive on the use of sign language as the major alternative language model for the deaf, many educational and linguistic studies have proven beyond doubt that

sign language is a true natural language of the deaf (Humphries et al., 2014; Lederberg, 2006; Oppong, 2006; Stokoe, 2005).

Characterised as a visual-spatial language that has its own grammatical and linguistic properties, sign language has been used for many centuries by deaf people and has been passed on from one generation to another (Tomaszewski, 2001; Groce, 1985). Though differently structured from spoken languages, sign languages can effectively fulfil all the social and cognitive functions of spoken languages (Humphries et al., 2016; Marschark, 1993).

Sign language as a true language has all the five dimensions of spoken languages: phonology, morphology, syntax, semantics and pragmatics which are different in form when compared to spoken language but has the same universal design features of arbitrariness, compositionality, discreteness or combinatory patterning (Stokoe, 2005). Sign language uses gestures and facial expressions that are often used by hearing people to complement their spoken language. However, these facial expressions and gestures that augment spoken language in varying degrees are actually non-manual markers that form the basis for sign language communication (Marschark, 1993). These familiarities of gestures and facial expressions that accompany spoken language but become non-manual markers in sign language make many people assume that sign languages are actually simple gesture systems which are unstructured and unmethodical.

The fact, as indicated by Stokoe (2005), is that sign languages are not idiosyncratic or ancillary systems that go together with speech. They are the primary linguistic system of language communication for the deaf. This in part

supports the fact that sign language is a natural language of the deaf which must be made accessible to children who are deaf at an early age during the critical period of language development; a time when language acquisition is highly facilitated (Stokoe, 2005). This also means that the gestural systems hearing parents develop with their children who are deaf at home, although may serve some communicative purposes, cannot be mistaken for a sign language because they are eccentric and unmethodical.

There is evidence that children who are deaf acquire sign language in similar pattern as hearing children acquire spoken language. (Lederberg, 2006; Stokoe, 2005; Marschark, 1993). For example, Marschark (1993) indicates that both deaf and hearing children produce babblings as reflexes to language development at an early age but the vocal babblings of children who are deaf stop at the 9th month which is followed by early gestures, pointing and early signs. According to Marschark (1993), babies who are deaf begin to notice sign modes by age 3 months although they make their first signs from 10th to 12th months. They then begin to babble with their hands and imitate facial expressions and point to people, objects and places but not at self. By age 12 to 18 months, according to the author, children who are deaf gain at least 10 early signs. They also begin to use pronominal points and acquire new signs but do not make any inflections. By age 24 months, signs of children who are deaf reflect basic handshapes with simple movements such as straight forward, up, or down. Marschark (1993) further indicates that early signs of children who are deaf at this stage of language development are not always produced according to adult conventional forms. They

may combine 2 or 3 signs including pointing to make communication which they are able to do by distinguishing and using simple non-manual markers such as smiles and frowns.

As Marschark (1993) explains, at age 5 years, signs of children who are deaf show order and semantic relations as well as the use of classifiers to represent objects. According to the author, their handshapes begin to take accurate formation and are able to use varied inflected verb forms (directional/agreement, dual, temporal aspect). They attempt more complex signs and substitute basic handshapes for the complex handshapes whereas they use non-manual markers more effectively for yes/no and Wh-questions. They are also able to demonstrate disagreement with headshakes or sign "NO". The use of possessive (your, mine) and plural pronouns also begins to show. Stokoe (2005) believes that this pattern of sign language development increases the repertoire of vocabulary of children who are deaf through adult and peer interactions.

The basic assumption derived from Marschark (1993) is that children who are deaf who are exposed to sign language from infancy can by age 5 years refer to things around them during conversations and tell stories using complete sentence formation through facial articulations and can mimic others in conversations. It also supports Humphries et al.'s (2016) assertion that when children who are deaf are exposed to sign language early in their lives, the language development patterns they produce are similar to those produced by their hearing counterparts.

This stock of information on sign language development proves that deafness does not necessarily result in language deprivation neither is sign language

defective of fulfilling the cognitive and communicative functions of spoken languages. The problem, however, is the lack of exposure to sign language during the sensitive period of early development of children who are deaf that can result in language deprivation. Although, language deprivation in early years of children who are deaf will not automatically lead to death, it definitely will have serious irreversible consequences on the cognitive development of children who are deaf.

When children who are deaf are not exposed to sign language early enough, they risk the chance of developing language deprivation syndrome (Humphries et al., 2016; Humphries et al., 2014; Marschark, 2001). This syndrome could impede the development of executive functions of children who are deaf such as control of cognitive processes that include working memory, reasoning, problem solving, planning and flexibility. It can also make them have restricted understanding of their environment and become limited in their psychosocial and emotional adjustment which can have devastating and sometimes permanent consequences (Humphries et al., 2014). As Humphries et al. (2016) explain, language deprivation correlates with poor cognitive and academic outcomes for the simple reason that all cognitive activities such as reasoning, literacy, and memory and number manipulation depend on a solid first language. This may suggest that children who are deaf who are not exposed to accessible language in the early years of their lives may never be proficient in any language in later years which can have serious inhibitions to cognitive functions.

There is every indication that access to language of children who are deaf, at an early age is a crucial issue that warrants multidisciplinary research approach.

Given the ever importance of language development in the early years of children, there is the need to pay more attention to sign language development of children who are deaf within the critical period. The assumption is that for majority of children who are deaf, it may not be their hearing impairment that deprives them of language acquisition but their lack of exposure to it.

Holmer, Heimann, and Rudner (2016) outline that full exposure to sign language has a lot of positive implication for total development of children who are deaf including school success. Therefore, children who are deaf who get full and prolonged exposure to sign language in the early years of their lives may have better reading abilities than those whose sign language exposure is delayed. This assumption is well supported by Hrastinski and Wilbur (2016) who show that there is strong correlation between better sign language skills and better print literacy. The indication is that sign language development in the early years helps children who are deaf to have good cognitive development without which would constitute a denial of a natural pathway to cognitive development. Like their hearing counterparts, children who are deaf show gains in language development when there is frequent, consistent and accessible communication in the home environment even before they go to school.

Mitchell & Karchmer (2005) believe that deaf parents provide their children who are deaf with sign language at an early age which is accessible to them at home. However, there appears to be little evidence to ascertain the same experience for hearing parents and their children who are deaf. It appears to suggest that globally, majority of hearing parents with children who are deaf are not literate in sign

language thereby denying their children who are deaf early interaction in accessible language.

In the United States of America, for example, the estimate for children who are deaf of hearing parents (DCHP) is 96% while that of children who are deaf of deaf parent (DCDP) is only 4%. The crux of the matter is that whereas the minority 4% of DCDP can get early exposure to sign language and naturally develop it by age 5, the majority (96%) DCHP may not get early exposure to sign language (Moores, 2001) and therefore risk the chance of language deprivation.

Generally, in many countries including Ghana, most children who are deaf have hearing parents who are not literate in sign language (Tomaszewski, 2001) which suggests that the use of accessible language for family interaction with hearing children is not available for children who are deaf. Even if these children who are deaf are addressed at home in modalities such as the use of body language and gestures, such modalities may lack meaning and lose their function as a means of communication when conversations get complex. The pits of the matter is that body language and gestures may not fulfil all the linguistic functions of a language that could address all the language needs of children who are deaf. This may suggest that hearing families may therefore not be able to support the sign language development of their young deaf family members during the early years of their lives.

Ultimately, the school environment becomes the next available opportunity for children who are deaf to learn language. High-quality preschool strategies and experiences support language and literacy development and serve as the vehicle

through which children's language skills are developed and later school success are predicted (Lonigan, Farver, Phillips, & Clancy-Menchetti, 2011; McCabe, Boccia, Bennett, Lyman, & Hagen, 2010). Studies have shown considerable interest in understanding language development in preschool years because preschool years are a time when language abilities emerge and develop (Weigel, Lowman, & Martin, 2007). The schools for the deaf in Ghana can therefore become one of the primary environments where children who are deaf get early exposure to sign language (Gosse, McGinty, Mashburn, Hoffman, & Pianta, 2014), if they missed that from home. The school therefore seems to be a crucial endpoint to the sign language development of children who are deaf. Hence, research such as this study is needed to ascertain this suspicion.

Many of the schools for the deaf in Ghana are boarding schools (Avoke, 2000; Oppong, 2003) which also allow children who are deaf to have a lot of time with their peers and teachers than they may have with their families. The school setting and the type of curricula the school uses as well as the effectiveness of teachers will have bearing on how children who are deaf learn sign language at school. The idea is that language development of children who are deaf is holistic, hence the need to probe into children's ecology such as the school and to explore how it influences the language development process. Focus is placed on the school ecology basically to understand how children who are deaf in Ghana acquire their first language in signed modality when they had missed that from home.

Undoubtedly, language plays an immense role in human learning and development. It is a developmental milestone which typical children achieve almost

effortlessly through regular and meaningful engagement and with the help of their own biological endowment such as good hearing (Santrock, 2011). As Humphries et al. (2016, 2014, 2012) have already indicated, if children do not develop language early in life, they are likely to be at risk of serious cognitive, social, emotional and academic difficulties. Therefore, first language development within the critical period of children's development between 0-5 years is crucial after which time it may become extremely difficult to do so if not impossible (Santrock, 2011).

Statement of the Problem

The absence of auditory feedback in children who are deaf during the early years of their lives is critical and most handicapping during language acquisition (Heward, 2013). Whereas hearing children can hear their own speech and that of others thereby acquiring spoken language, children who are deaf do not have such hearing abilities. They therefore cannot acquire spoken language naturally, hence the need to learn sign language as quickly as possible. However, a large majority of children who are deaf are suspected to come from all-hearing families with no deaf relatives and therefore do not get early exposure to sign language at home (Moores, 2001). This makes access to sign language at home in the early years of their lives uncertain. Typically, the parents and siblings of these children who are deaf may not have the knowledge and experience of communicating in sign language to their younger deaf relatives. This situation seems to deprive children who are deaf of early language acquisition at home, either in sign or spoken languages. Consequently, children who are deaf are suspected to begin preschool with limited language abilities which can impede their academic advancement if

the school ecology does not intervene. Hence, there is the need to focus on the school as a place of last resort to language development of children who are deaf.

The crux of the matter is that currently, although existing literature on deafness addresses issues of language development, it appears to focus mainly on the effect of deafness, sign language neglect and deprivation on children who are deaf (Hao & Su, 2014; Janjua, Woll, & Kyle, 2002; Jones, Gutierrez, & Ludlow, 2015; Goldin-Meadow, Mylander, & Franklin, 2007; Houston & Bergeson, 2014; Preisler, 1999; Humphries et al., 2016, 2014, 2012; Marschark, 2001, 1993). The shortage of literature on how children who are deaf acquire language in the context of their hearing disability and the school environment seems to suggest the absence of a substantive theory that explains the processes that children who are deaf go through to acquire their first visual-gestural language. This situation points to a knowledge gap in the literature on how children who are deaf acquire sign language from their immediate environment.

Purpose of the Study

The purpose of this study is to explore how the school setting facilitates the sign language acquisition of children who are deaf during the early years of their lives in order to theorise the process of sign language development among children who are deaf in Ghana.

Specific Objectives

Specific objectives are to:

1. Ascertain the situational characteristics of children who are deaf at school that influence their sign language acquisition

2. Identify the major role teachers in schools for the deaf play to facilitate sign language acquisition among preschool children who are deaf.
3. Describe how teaching and learning is done in schools for the deaf to facilitate deaf preschoolers sign language acquisition
4. Develop a substantive theory that explains sign language acquisition of Ghanaian deaf preschoolers within the school ecology.

Research Questions

1. What situational characteristics of children who are deaf at school influence their sign language acquisition?
2. What major role do teachers in school for the deaf play to facilitate sign language acquisition among preschool children who are deaf?
3. How is teaching and learning done in schools for the deaf to facilitate deaf preschoolers' sign language acquisition?
4. What substantive theory explains sign language acquisition of Ghanaian deaf preschoolers within the school ecology?

Significance of the Study

The most distinctive significance of the study is to generate a substantive theory that explains how children who are deaf develop their first language in sign modality using the grounded theory research approach. This aspect of the study is critical because of the apparent lack of a theory that explains sign language development of children who are deaf in the context of their hearing disability and socio-cultural environment in Ghana. It is estimated that there are about 110, 626 registered deaf members in Ghana with a lot more deaf individuals who are not

identified nor registered with the Ghana National Association of the Deaf and the social welfare (GNAD, 2018). This situation seems disturbing because if the needed attention is not given to language development of deaf persons, the likely suspicion is that many children who are deaf in Ghana may risk developing language deprivation syndrome which has the effect of impeding control of cognitive processes such as working memory, reasoning, problem solving, planning and flexibility leading to poor academic outcomes.

This apparent lack of attention on language development of children who are deaf may make children who are deaf have restricted understanding of their immediate environment and become limited in psychosocial and emotional adjustment with devastating and sometimes permanent consequences. This study therefore provides information that helps to unravel the process of language development among children who are deaf in Ghana in order to identify an intervention in further studies that can prevent them from the risk of developing sign language deprivation syndrome.

For the cognitive implication associated with language development, this study achieves a more comprehensive analysis of the resources available to the Ghanaian deaf child and how such resources can help to identify those who are not getting access to rich and accessible language. In the light of the Salamanca Statement and Framework for Action on Special Needs Education (UNESCO, 1994) and the United Nations Convention on the Rights of Persons with Disabilities, Article 24.3 (b) and Article 24.4 (CRPD, 2006), deaf pupils have the right to sign language communication and information access. This study will

therefore help to throw more light on how the school environment can help to facilitate the sign language acquisition thereby addressing their rights to communication and information access.

Finally, this study will add to the growing body of literature on deaf language development which is essential to close the knowledge gap on the processes of sign language development among children who are deaf in Ghana. It will also serve as a useful reference material for other researchers, stakeholders in the field of deaf education, policy makers, government, and non-governmental agencies as well as world bodies such as UNESCO.

Delimitation

The study focuses on two main variables: sign language development of children who are deaf at the school environment. The study primarily focuses on the preschool department with emphasis on preschool teachers and how they contribute to the sign language development among deaf preschoolers. The study looks into the process of sign language development among children who are deaf and not stages or the milestone of sign language development.

Limitation

The study could not interview children who are deaf directly because they were incapable of telling their own stories about the phenomenon under study hence data were gathered from the perspectives and experiences of preschool teachers and not from children who are deaf who have experienced the phenomenon which could affect the trustworthiness of the information gathered about children who are deaf.

Definition of Terms

Language acquisition/language development: This means the process of gaining language. In this study the two terms have been used interchangeably.

Homemade signs: This means the idiosyncratic gestures children who are deaf develop with their families before they start school.

Language neglect: This means failure to provide basic language need of a child which has adverse effect of their physical health care, emotion and education**.**

Accessible language: This means the language that can easily be learned by frequent and regular exposure naturally without explicit training and exercise.

Language deprivation syndrome: This means a mental health disorder as a result of an early and prolonged lack of human language interaction

Reflexivity: This means the reflective and conscious process researcher uses to avoid being contaminated by existing prior knowledge which have the tendency to disturb the inductive process of interpretation and theory construction.

Caregivers: This means any person who is tasked to take care of children and provides essential care for them. This includes mothers and nannies who have been employed to take up the role of mothers.

Threshold: This means a hearing level at which the quietest sounds are detected. The nominal hearing threshold is situated at 0 - 25dB.

Aphasia: This means a condition where a child losses the ability to speak or to comprehend language due to an injury or developmental abnormality in the brain.

Critical period: This means a period from 0-5during which children develop language rapidly and naturally but slowly or even unsuccessfully afterwards.

Wild children: This means feral children who get deprived or isolated in their early years such that they develop very little or no human traits such as language communication.

Visual instructional strategies: This means teaching strategies that fully incorporate the use of pictures, illustrations, photographs, drawings, paintings, symbols, icons, graphs and other visual representation such as real object, demonstrations, gestures and body language.

Manual communication: This means the use of sign language to communicate

Organisation of the Study

The study is organised in five chapters. This first chapter gives a background to the study; it discusses the statement of the problem and objectives of the study, definition of terms and significance of the study. Chapter two deals with the review of literature related to the research problem. The third chapter describes the methodology used in gathering the data. The major findings of the study as well as the emergent theory are presented and discussed in chapter four. Chapter five ends the research by summarising, concluding, and making recommendations based on the findings.

CHAPTER TWO

LITERATURE REVIEW

This study focuses on exploring the influence of school factors on language development to understand the processes Ghanaian children who are deaf go through to develop sign language at school during the critical period of their development. In this chapter, the review of relevant and related literature on the study are presented to situate the study in context. The review covers theories, concepts and empirical studies on sign language development of children who are deaf. Specifically, the theoretical review focuses on the three classical theories of language development and the Urie Bronfenbrenner's ecological systems. The review covers literature from books and journal articles from both print and electronic media on sign language and sign language development. The following are some of the specific areas of the literature review:

i. Behaviourist Theory of Language Development
ii. Nativist Theory of Language Development
iii. Social Interactionist Theory of Language Development
iv. Ecological Systems Theory
v. Concept of Language Development in Early Childhood
vi. Concept of Deafness
vii. Concept of Sign Language
viii. Concept of Preschool Education in Ghana

Introduction

In most traditional research practices, research problems are derived from an extensive reading of the literature where the theoretical frame and/or conceptual base of the study is declared. However, the position of a comprehensive literature review and theoretical underpinnings of a study is highly contested in grounded theory research (Backman & Kyngäs, 1999). This means that typically, grounded theory research does not begin with a hypothetical theory for which data are collected to test or prove it, which causes a dilemma on the use of theoretical framework in grounded theory research. Rather, grounded theory research begins with data collection which is immediately followed by data analysis to eventually generate a theory (Corbin & Strauss, 2008). For this reason, proponents of grounded theory caution against beginning the research processes with preconceived ideas and a presupposed theory in order to avoid theoretical contamination of the emergent theory (Charmaz, 2017).

This, however, should not be misinterpreted to mean that grounded theory researchers begin the research processes with total ignorance of prior knowledge, existing theories and concepts of the research problem (Goulding, 2017). What it means is that because grounded theory is primarily data induced and inductive in nature, researchers should not allow existing theories and concepts to cloud their perspectives on data collection and independent data analysis. Therefore, related theories and empirical works have been reviewed in this study to position the research problem in context to enhance theoretical sensitivity but not as a guide or framework to be tested or proven by this study.

Theoretical Review

Theories of Language Development

How children acquire language can be explained using the theoretical perspectives of the three major theories of language development in children. The theories include; the behaviourist, the nativist and the social interactionist. While behaviourist theory believes that language development is largely behavioural and borders on environmental factors such as reinforcement and imitation, the nativist theory posits that language development is biological in nature whereas social interactionist theory proposes that language development results from both biological and environmental factors within the social environment of children.

In this theoretical review, all these three major theories of language development have been reviewed together with the bioecological systems to situate the research problem in context. The intention was to identify the gap in the existing theories of language development to enable a substantive theory to be deduced from the empirical data to explain the processes of sign language development among children who are deaf in Ghana.

Behaviourist theory of language development

The behaviourist theory is basically a psychological theory founded by John Broadus Watson and later supported by other theorists such as Burrhus Frederic Skinner who, in modern times, is accredited as the pioneer of the behaviourist theory (Lerner, 2006). Behaviourism as a traditional learning theory uses the principles of imitation and reinforcement to account for language development in children (Leman, Bremner, Parke, & Gauvain, 2012).

According to the behaviourist theory of language development, children learn language through observation and imitation. Children pick up language directly from their immediate environment by observing older family relatives and peers from school and imitate them closely concerning how they speak and what they do to communicate. Children then repeat the experiences they gather from their immediate environment. Hence, children's language development is shaped by environmental influences and behavioural principles (Lerner, 2006). During this process, children go through a period of trial and error as they attempt to use correct adult language many times until they succeed. This practice makes language development a process of habit formation (Bullock, 1983). In principle, this theory explains language development as a learned human behaviour in observable stimulus-response interaction as children imitate, repeat and memorise human language.

However, a critical review of the theory seems to suggest that for language development to occur, the environment must be structured with human role models such as parents and caregivers who must provide guidance in the form of reinforcement to their children. The adult role model in the environment plays a key role by supplying children with the appropriate language behaviour required to adapt to the environment. This chain of reaction from caregivers and their babies begin right from infancy where mothers smile or clap when their babies make vegetative sounds that resemble adult language. Demirezen (1988) explains that in events where the babies' sounds do not resemble any adult language, caregivers ignore such sounds and no attention is given to them. By ignoring or regarding such

sounds, caregivers are invariably informing their children of what is acceptable language behaviour or otherwise. Hence, to the behaviourist, language development is the outcome of response to environmental stimuli and it is also a learned behaviour (Demirezen, 1988; Bandura, 1989; Leman et al., 2012).

If the behaviourist believes that the environment shapes children's language acquisition through reinforcement, then children will have to operate on the environment to bring about language learning through their own biological endowment such as good eyesight and hearing. The ecology must also have agents such as parents, older siblings and peers who are knowledgeable and can provide role model to the children in an accessible medium. Arguably, it appears that the behaviourist theory considers all children to be typical and should have all the necessary apparatuses to develop language in a hearing environment.

Although a remarkable amount of reputation is given to the behaviourist theory of language acquisition, it reveals a huge gap in its application to sign language development of children who are deaf. This is because it does not give details of how children who are deaf will have to interact with the hearing environment to come about a language development which is different in form and structure. The theory is limited in explaining how children who are deaf would observe and imitate their hearing parents or teachers and make manual and non-manual markers such as raising eyebrow, squinting, frowning or head shaking to make communication accessible and meaningful to them. The pits of the situation, however, is that the ecology of most children who are deaf have parents, siblings and teachers who are not knowledgeable in sign language and therefore cannot

provide accessible context for language development within their immediate environment without other interventions and supports.

Nativist theory of language development

The nativist theory which is largely influenced by Noam Chomsky, believes that humans are programmed to develop language naturally. This is because language is inborn and a natural phenomenon that will develop and flourish through maturation (Lerner, 2006). In other words, language development in children is affected mainly by biological factors rather than environment stimuli.

The theory claims that there is a language faculty in the human brain that is responsible for language development naturally. This language faculty contains linguistic information and a set of rules on language. According to the nativist theory, the language faculty is known as the Language Acquisition Device (LAD) while the linguistic information and set of rules it contains are called Universal Grammar. According to Leman et al. (2012), the Universal Grammar contains universal structures common to all languages across all cultures. Therefore, as children get exposed to language, they use their LAD to generate set of rules (Universal Grammar) to understand the language. Hence, as Leman et al. (2012) explain, every child will definitely learn any human language with ease because of this biologically programmed Universal Grammar in their Language Acquisition Device in their brains.

According to the nativists, the LAD enables children to acquire universal grammar which is prewired in their brains. For this reason, children will only have to learn new vocabulary and apply the syntactic structures from the LAD (Universal

Grammar) to form sentences. In view of this, children do not merely learn a set of sentences, but rather integrate them into their in-built total language system.

The nativist theory supports their claim of Universal Grammar with the proof that children are able to apply certain grammatical principles to other words mistakenly. For example, children say in English language "I eated the apple" instead of "I ate the apple". According to the nativist, children who have been exposed to language, for example English, are in this case applying their basic rule of past tense form of regular verbs such as worked, danced and played to irregular verbs such as drank, run and sung. Consequently, children hypothesise in their minds that all past tenses of verbs are formed by adding the /d/ or /ed/ to the base form of the verb which results in an error called overregularisation (Leman et al., 2012). These errors, according to the nativists, are clear indications of the application of Universal Grammar. Therefore, when children go beyond their limited examples supplied to them in the environment and are soon able to understand and produce new sentences of their own, they are, according to the nativists, using their Language Acquisition Device (LAD) which is intrinsic.

The notion that children learn language more quickly during certain critical period of biological development also supports the nativist theory. Even though language is complex even to the native speaker, all children with normal language pattern seem to learn language quickly and become fluent in their native language within the first five or six years of their lives (Leman et al., 2012). Besides, the fact that language learning in children also cuts across all cultures and happens relatively fast and about the same chronological and developmental stage with

relatively limited number of language experiences is a proof that language acquisition is biologically programmed in the human brain (Lerner, 2006).

The implication of this theory to sign language development of children who are deaf is hard to explain. However, Goldin-Meadow and Mylander (1984) as cited in Tomaszewski (2001) seem to support the nativist hypothesis in sign language development by explaining that children who are deaf who are exposed to sign language acquire it quickly providing support to the evidence that children have inborn capacity to acquire language even in visual-spatial modality. The prediction according to Goldin-Meadow and Mylander cited in Tomaszewski (2001) is that children who are deaf may likewise have some natural ability to develop sign language quickly once they are exposed to it. Perhaps for congenitally children who are deaf, it is the visual-spatial language modality that is prewired in their brains. Still, research is needed to validate what goes on in the brains of children who are deaf that supports their language development and whether they have a Language Acquisition Device to generate universal set of rules for sign language.

Certainly, the nativist view on language development is generally acceptable but not without criticisms. As Leman et al. (2012) indicate, although it is clear that children do not learn language only through imitation and reinforcement, the idea that children have an internally built system of language structures is difficult to validate. Besides, the theory seems to explain language development in its typical sense. Sign language uses its own set of grammar rules which have been found to be different from other spoken languages such as English

(Easterbrooks & Stoner, 2006). It is still open to question whether this universal grammar explained by the nativist theory also applies to visual-gestural languages.

Social Interactionist theory of language development

It appears that the inference of both behaviourist and nativist theories results in what has been described by Lev Vygotsky as social interactionist theory of language development (Cooter & Reutzel, 2004). According to Cooter and Reutzel (2004), the theory sees language as a social tool brought about by social interaction. It also believes that language learning is largely influenced by the interaction of biological and social factors.

Basically, the social interactionist theory explains that although language is a social tool, children must be endowed with language acquisition apparatuses such as good hearing and cognition. In other words, children should be biologically mature and ready to learn language. They should have intellectual capacity to make meaning of language provided to them in their social environment (Leman et al., 2012). Hence, according to the social interactionist theory, competence and performance are key to language development in children. Children must also be exposed to accessible language environment in order to gather rich language experiences.

As indicated in Santrock (2011), the social interactionist theory uses Vygotsky's sociocultural model to explain that children observe what adults use to communicate and imitate such behaviours within their cultural contexts. It further explains that through social interactions, the More Knowledgeable Other (MKO), usually parents or more experienced members of a social group teach children, who

are less experienced, the skills of language communication. These knowledgeable members of society offer good language models to children, who at a point in their development would need such help (Gadagbui, 2014).

Santrock (2011, 2004) further uses the Zone of Proximal Development (ZPD) to explain that children will naturally encounter difficulty in their understanding of language as communication from older members of society gets complex. When such situation occurs, older members of society who are more skilled in language help children out of such difficulty through scaffolding (Santrock, 2004) which implies that older members of society are agents to children's language development when they naturally simplify their speech to the level of children's understanding (Bohannon & Bonvillian, 2005). This is seen in cases where caregivers recast into correct pronunciation what children pronounce wrongly. For example, children might say "tanthine" and caregivers might say in reply, "sunshine?" thereby providing what is socially acceptable.

This form of communication with children where caregivers or older members of society are sensitive to how they speak to children in clear simple high-pitched sounds is what is termed as child-directed speech (Fernald & Morikawa, 1993). Likewise, when mothers use child-directed speech with their babies with the intention of making the babies understand them, they practice what is termed as motherese (Bohannon & Bonvillian, 2005). In these instances, according to Bohannon and Bonvillian (2005), mothers in a variety of cultures have been found to make many of the same modifications in their own speech in order to catch their children's attention and to engage them socially.

Bruner (1983) also a social interactionist, theorises children's language development through the use of Language Acquisition Support System (LASS). According to Bruner, LASS exists in the social environment of children where caregivers become facilitators of children's language acquisition in a process called guided communication (Gadagbui, 2014). As indicated by the author, this situation occurs when caregivers engage children in mutual gaze, questions, joint attention and dialogues to support children's own role in the communication process. The supposition of the matter is that all these occur within a context, in an environment where children are functional and language is accessible. Undoubtedly, this theory makes the position of the ecology pivotal in children's language development.

The Ecological Systems Theory

The ecological systems theory was developed by an American psychologist, Urie Bronfenbrenner in his principal study of the ecology of human development in 1979. In his initial work, Bronfenbrenner described the value of social environment of children and how this affects their development. In his perspective, external environments such as home and school affect the welfare of children. Therefore, the key underlying assumption of the ecological systems theory is that society is a factor that exerts influence on children's language development. In fact, the theory's primary contribution to the field of developmental psychology lies in its ability to explain children's development through the influence of their surroundings (Bronfenbrenner, 1994). Hence, it gives a better understanding to the behaviourist's claim that language development is a learned behaviour in response to environmental stimuli. The interaction of a number of agents such as parents,

siblings and other older members of the family occurs within this ecology that children grow to develop language.

Recently, the ecological systems theory has been renamed as Bioecological systems theory (Härkönen, 2007) to take care of yet another important aspect of language development in children; the biological basis. The renaming of the theory is probably to stress the nativist's claim that children's own biological makeup also serve as a primary environment that influences their language development. Therefore, children's own autogenic abilities such as cognitive skills, good hearing and psychomotor and physical competences come into consideration. Perhaps in support of the biological aspect of the ecological theory, Shea and Bauer (1994) propose a system known as the ontogenic system which talks about the personal characteristics of individuals. According to the authors, these personal factors, attributes, skills, abilities and competencies help children to cope with their immediate environment. These autogenic factors are what children bring to bear on societal values and beliefs in the microsystem of the ecological systems (Gadagbui, 2012).

Although the theory has later been modelled in different ways by different authors, it appears that it was initially based on three significant assumptions. First, children are active players exerting influence on their environment. Second, environment compels children to adapt to its conditions and restrictions and third, environment consists of nested systems of different sizes that are interrelated (Bronfenbrenner, 1979b).

The ecological systems theory delineates four types of nested systems which fit inside one another and interacts to influence development in children. These are the microsystem, mesosystem, exosystem, and macrosystem. In 1986, Bronfenbrenner additionally proposed the concept of another system called the chronosystem (Härkönen, 2007). Basically, the ecological systems theory identifies children in their natural living settings as composite units or organisms whose environmental interrelationships influence their development.

The first layer is the microsystem which is the closest layer to children. It serves as the immediate environment to children with patterns of activities, roles and interpersonal relations. At this level, the relationship is bi-directional, in that it happens from within children and toward children. It is the level that has the strongest and most powerful influence on children's development. It is made up by children's closest surroundings such as home, day care centre, school or close relatives (Härkönen, 2007).

Härkönen (2007) opines that the microsystem of home or family is natural to children irrespective of their age and is salient to the study of language development in children. In the microsystem, children are the target and the prime focus is to understand how their interrelationship with mother, father, siblings and other family relatives as well as the school influence their language development. This means that the idea behind microsystems is not geographic but by the degree of interaction and influence. Therefore, all the environments in which children have active participation are microenvironments (Härkönen, 2007).

The second layer is the mesosystems which describes the set of interactions the agents in the microsystem have with each other. Children are not directly involved in such kinds of interactions such as the interactions between parents and day care centres or parents and other older siblings. Although children are not directly involved in the interactions, they are affected directly by these interactions (Bronfenbrenner, 1979b)

The third layer is the exosystem which is wider in context than the mesosystem. It is the broader community or the larger social system in which children live. This includes the extended family, legal services, social welfare services, mass media and workplace politics. Children may not have direct contact or role in them but they influence children's language development and socialisation (Bronfenbrenner, 1979b). For example, if parents are sacked from work because of workplace politics it will invariably affect children as equally as it will affect them if the parents die due to poor healthcare. Basically, the changes in these factors of the exosystem such as in parents' lives impacts on children's lives as well.

The fourth layer is the macrosystem. It is the outermost layer of children's environment and contains the cultural values, customs and laws as well as the attitudes and ideologies of a particular culture or subculture. In the macro system, children are now presumed to be adults and may make some decisions on their own which can bring about change from what they had originally been raised (Gadagbui, 2012).

The recent addition to the originally four layers of the Bioecological systems is the chronosystem. Fundamentally, it is a system that deals with the passage of time over children's development, which includes children's language development within their environment. The chronosystem cuts across the entire layers of the ecological systems from the uterine environment during the prenatal stage up to adulthood in the external ecology (Gadagbui, 2012). The system encompasses all the experiences children gather from their own internal experiences such as physiological changes that occur as they grow from childhood, the fantasies they have with family through to the death of parents. The understanding is that all such experiences come with different reactions and interactions to influence children's development.

In summary, the review of the ecological systems theory gives clear indication that children are not passive agents in society. They impact as well as get impacted by what goes on around them. This makes the components and the interactions in the ecological systems highly complex. The point is that language development of children cannot be discussed without a thorough understanding of their ecology and how that influences them. Even more importantly are children who are deaf who come with their own biological deviations. This means that the normal spoken language that hearing children naturally interact with in their immediate environment in order to acquire it will be impaired in children who are deaf. Hence, there is the need to understand how the school environment in context influences language development of children who are deaf as this study seeks to find.

Implications of the theoretical review

It can be deduced from the theoretical review that no single theory can vividly explain children's language development. It also brings to bear that these theories have been developed originally to explain language development in typical children in ideal situations. It is ambiguous therefore, how such theories that have been developed to explain language development in typical hearing children could be used to explain sign language development in children who are deaf without blunders. Obviously, such attempts would be tainted with inconsistencies, creating a huge knowledge gap such as what this study seeks to fill. The idea is to collect empirical data from diverse sources to generate a theory that explains how children who are deaf develop sign language in the context of their hearing disability within the school environment.

Besides, the existing theories of language development also fail to typically explain the processes of language development for children who are deaf, who are unable to mechanically pick spoken language from their environment due to their hearing disability. The crux of the issue is that all these theories of language development do not vividly explain how factors in the immediate environment of children who are deaf, such as the school influence their sign language development. This situation does not only create doubt about the quality of language development of children who are deaf but also a huge literature gap.

Concept of Language Development in Early Childhood

The review of the theories of language development collectively proves that language development is influenced by a myriad of factors that include children's

own cognitive and physiological maturation, the presence of good language models and social interactions. Essentially, as the nativist theory of language development suggests, the language centres of the brain is prewired for language development in typical children but the auditory system such as the hearing organs and the auditory nerves must be mature to process language. This means that no matter how well children are taught spoken language, they will not acquire it if they do not have good cognition and auditory systems that are functional. This means that to understand language acquisition of children, biological basis of language acquisition must be reviewed.

Biological basis for language development in children

Understandably, good hearing leads to spoken language acquisition which is mainly influenced by biological factors. Santrock (2011), supports the fact that humans are biologically programmed in the brain to learn language within a short period of time. The author believes that some centres of the brain are associated with language. These centres are primary auditory cortex, the Wernicke's area and the Broca's area as shown in Appendix A.

The primary auditory cortex is located at the inferior portion of the lateral fissure and its primary function is to receive information that has been carried from the ear through the auditory nerve to the brain. According to Gleason as cited in Gadagbui (1998a), information that are received at the primary auditory cortex cannot be interpreted until it is processed to the Wernicke's area located at the posterior left temporal lobe of the cerebral cortex. The primary function of the Wernicke's area is to give interpretation and comprehension to the information

from the primary auditory area. The Wernicke's area is also believed to be involved in formulating coherent understanding of written and spoken language (Wood, Wood, & Boyd, 2009).

The implication of these centres to speech and language development is that language spoken by adult members of the society are picked up almost effortlessly by children who have good hearing. The sounds that are heard are first of all registered at the primary auditory cortex and then signalled to the Wernicke's area for decoding and comprehension. According to Wood et al. (2009), damage to the Wernicke's area will result in the inability to understand language meaningfully. Consequently, children with damage to this area will suffer a condition called Wernicke's aphasia. Children suffering from this condition may hear speech sounds but cannot make any meaning out of them. The phonemes may sound strange, inappropriate or even gibberish to them.

Since language and speech are correlated, the Broca's area completes the secondary function of hearing and initiates speech production. The area is found at the frontal lobe of the left hemisphere near the motor cortex of the human brain. It is chiefly involved in speech production. Its primary function is to activate the pattern of muscle movement required in speech production. In simple terms, the Broca's area activates the supralaryngeal vocal tract involving the pharynx, oral and the nasal cavities and the cranial nerves, to work with the auditory system to receive, process and produce sound as a form of auditory feedback (Gadagbui, 1998a).

According to Wood et al. (2009), damage to the Broca's area as a result of head injury or stroke causes a condition known as Broca's aphasia, which is basically an impairment in the physical ability to produce speech sounds. Although children with Broca's aphasia may hear speech sounds correctly and may understand its intent, they find it difficult to make speech even if they want to. If they are forced to speak, they do so very slowly with great effort and mostly inaudibly. The words they say are also usually poorly articulated. This makes it clear that language and speech development is brain work and therefore for children to develop language well, irrespective of the modality, the brain should be functioning well. Physiological and mental maturation of the language centres of the brain and the hearing organs is also required.

According to Gadagbui (2014), the ears, lungs, larynx, pharynx, teeth, lips and jaws as well as the cranial nerves that activate them form the human speech and language apparatus. According to the author, the nerve fibres or the axons send electrical impulses from the brain to the muscles for speech production. Therefore, these articulatory organs must reach maturity to initiate effective coordination of muscles that bring about speech and language development. The idea is that children engage themselves in a wide variety of mental activities that become responsible for speech and language development (Tuckman & Monetti, 2011). These mental processes depend on the maturation of speech and hearing organs as well as the brain neural circuits.

The point is that the process of hearing does not end with the function of the hearing organs. The brain plays a major role in understanding the mechanisms

of hearing and its effects on speech and language development. Children who experience brain malfunction might as well experience problems with hearing and speaking. Children with brain damage or children who experience brain dysfunction such as intellectual disability, autism and cerebral palsy are likely to experience speech and language difficulties (Gadagbui, 2014). However, for the purposes of this study, attention is focused on children who are considered as deaf who have been assessed and diagnosed with hearing problems resulting from physiological or anatomical malfunction of the hearing apparatuses.

Understandably, the physical presence of these natural endowments would not also automatically result in language development in children for the simple reason that language learning does not occur in a vacuum and so children must be exposed to accessible language within a limited time frame in an enabling environment. In such a rich environment, children are able to learn adult language through selective reinforcement and good social interaction. Children are also able to use their good hearing for auditory feedback which serve as auto-corrective mechanism in speech and language acquisition (Gadagbui, 1998b).

Stages of language development in children

According to Santrock (2004, 2011), children acquire language as they go through the developmental milestone for language acquisition which begins from infancy (a period that extends from birth to about 18 to 24 months) through to early and late childhood (a period that extends from end of infancy to about 5 to 6 years) even to adolescence. These milestones, as the author states, are certain skills children gain as they grow such as learning how to say “mama” or “dada” or putting

two words together. Children therefore need to master one milestone before another which might be a means clinicians use to identify children who are at risk of developing language problems.

Several authors have described how children begin language development right from birth (Santrock, 2004, 2011; Heward, 2013; Leman et al., 2012; Gadagbui 1998a, 2014). According to Santrock (2004, 2011), for example, children start to coo around the age of 2 months and babble by the age of 6 months but are able to speak in jargons by 12 months. At age 1-2 years, typical children understand more words than they are able to speak. By age 2 years, many typical children have vocabulary spurt, and start to use two-word phrases. The author implied that language development of children varies such that girls naturally are believed to pick up language much faster than boys. The description of English language development in typical children in early childhood by Santrock (2004, 2011); Heward (2013); Leman et al.(2012); and Gadagbui (1998a, 2014) has been organised into prelinguistic and linguistic stages as explained in the following sections.

1. **Prelinguistic stage (0-12 months)**

At the prelinguistic stage, according to Santrock (2004, 2011); Leman et al. (2012), infants between the ages of 0-2 months experience reflexive crying and vegetative sounds of burping, coughing and sneezing which translate into cooing, laughing and production of throaty sounds such as /koo/, /guh/, /kuh/ at age 2-4 months. These vocal activities continue to advance to vocal play and babbling sounds such as /bah/ /bah/ /ma/ /da/ /ha/ between the ages of 4-9 months. As cited

in Gadagbui (1998a, 2014), children at this stage are able to produce as many as 70 different babbling sounds made up of consonants and vowels in monosyllabic form.

As Santrock (2004, 2011) indicates, infants at age 9-12 months continue to improve upon their vocal activities such that the number of babblings sounds continues to increase to 90 which are characterised by nonsense syllables of consonants and vowel sounds such as /mammam/ /dddada/. At this stage of language development, both Santrock (2004, 2011) and Leman et al. (2012) note that infants are able to turn their heads toward the source of sounds and become steady when their parents' or caregivers' voices are heard whereas they begin to respond to their own names and music. The authors also note that infants' use of gestures at this stage becomes profound and they may begin to recognise the names of others that are common to them.

According to Gadagbui (1998a), the prelinguistic stage of language development in infants is marked by vocal activities which exercise the vocal organs as well as control the breath movements for speech production. As the author indicates, infants at this stage prepare to learn the rules of language as well as the suprasegmentals of speech such as the pitch, intensity, tone, intonation and tempo of their caregivers' voice. The author further expresses that infants at the prelinguistic state begin to use auditory feedback to modulate their own voice and so they make a lot of sounds but discard most of them as they gain more experience.

2. Linguistic stage (1 year to 5 years)

At the linguistic stage, infants between the ages of 1-2 years begin to make sentences of one word accompanied by gestures (Santrock, 2004, 2011; Leman et al., 2012; & Gadagbui, 1998a, 2014). This combination of words and gestures is what Gadagbui (1998a) calls holophrases. By this combination, children show intentional communication marked by pointing, gazing and vocalisation (Santrock, 2004, 2011; Leman et al., 2012; & Gadagbui, 1998a, 2014). According to the authors, infants engage in communication intent where they may hold her mother's hand and point to the kitchen gazing and calling 'food, food' indicating that he/she is hungry and needs to eat. If the infant's needs are not met, the impression is that his/her language was not understood. Gadagbui (2014) says that this misunderstanding could result in crying and tantrums.

As both Santrock (2011, 2004,) and Leman et al. (2012) indicate, infants between the age of 1-2 years tend to make telegraphic speeches which do not have verb inflections such as 'es''s' and '-ing', but contain only critical words as seen in the example; 'Mama toy play'. This is understandable because, as the authors explain, infants' use of grammar at this stage is immature and the use of possessives and auxiliary verbs such as 'am' or 'do' are usually omitted. It is the opinion of the authors that by the end of 2 years, infants must have advanced to two-word and rapidly gained more words; a stage that had been termed as vocabulary spurt (Santrock, 2004, 2011). According to Santrock (2004) infants at this stage can name parts of their body and point to eyes, nose and mouth when asked to. They are also

able to follow two-step commands such as in the example; “Please pick the cup and give it to me”. They can also say ‘no’ to register their protest.

Gadagbui (1998a) further reiterates Santrock's (2004) assertion that at age 3 years, children are able to acquire about 1000 words and use three-word sentences to communicate. Comprehension of language increases rapidly and children are able to fully understand what it means to ‘put it on the table’ or “put it under the bed.” According to the authors, this stage of language development is characterised by generalisation of the rules of language and errors of overregularisation. This stage of language development is also characterised by identification of colours and comprehension of descriptive concepts such as big, little and small. The authors further add that the use of questions becomes persistent at age 4 while they learn to take turns in conversation and by age 5 years, children learn all the consonants and vowel sounds of words and can make grammatically complete sentences of five to ten words. Their repertoire of vocabulary also increases to approximately 8000-14000 words by end of their fifth year (Santrock, 2004, 2011).

In the opinion of Gadagbui (2014), the fastest stage of language learning occurs between ages 2 to 5 years, a stage where children use language very well to express themselves. It is at this critical period of language development that receptive and expressive language skills are acquired. As indicated by the author, the acquisition of receptive language is where children build inner language, understand them and substitute words by pointing to objects or events or persons before they pronounce the words. When children begin to use their vocal organs to say ‘mama’ or ‘dada’ or name their favourite pets, they are said to have developed

their expressive language skills. Gadagbui (2014) asserts that all these developments involve children's exposure to early language, good speech model, good health, maturation of speech organs and good listening skills such that children's own intellectual endowment is complemented with social interaction from parents and siblings to result in proper language development. Nevertheless, not all children have the natural ability to develop spoken language by age 5 years and deafness has been implicated in children's inability to do so. This means that children who are deaf, may have to resort to sign language and follow a pattern of language development which may or may not be similar to that of hearing children.

Sign Language Acquisition among children who are deaf

Studies such as Lederberg (2006); Stokoe (2005) and Marschark (2001) show that children who are deaf acquire sign language in much the same stages and time as hearing children acquire spoken language. For example, Marschark (1993) indicates that both deaf and hearing children produce babblings as reflexes to language development at an early age, but the vocal babblings of children who are deaf stop at the 9th month which is followed by early gestures, pointing and early signs. This assertion has also been well supported by Lederberg (2006) who together with Marschark (1993) observe that deaf babies begin to notice sign modes by age 3 months although they make their first signs from 10 to 12 months. According to Marschark (1993), babies of age 12 months begin to babble with their hands and imitate facial expressions and to point to people, objects and places but not at self. This behaviour is by signs acquisition where according to the author, deaf babies between the ages of 12 and 18 months gain at least 10 early signs. They

also begin to use pronominal points and acquire new signs, but do not make any inflections. Marschark (1993) further indicates that the early signs of children who are deaf at this stage of language development are not always produced according to adult conventional forms but reflect basic handshapes with simple movements such as straight forward, up, or down. They may combine two or three signs including pointing to make communication which they are able to do by distinguishing and using simple non-manual markers such as smiles and frowns.

As Marschark (1993) explains, at age 5 years, signs of children who are deaf show order and semantic relations as well as the use of classifiers to represent objects. According to the author, their handshapes begin to take accurate formation and are able to use varied inflected verb forms indicating direction and agreement. The author further states that children who are deaf attempt more complex signs and substitute basic handshapes for complex ones whereas they use non-manual markers more effectively for yes/no and Wh-questions. This would mean that children who are deaf of about 5 years are able to demonstrate disagreement with headshakes or sign "NO" to show disapproval. They are also able to use possessive pronouns such as "your" and "mine". Stokoe (2005) believes that this pattern of sign language development increases the repertoire of vocabulary of children who are deaf through adult and peer interactions.

The basic assumption derived from Marschark (1993) as well as from other authors such as Lederberg (2006) and Stokoe (2005) indicate that children who are deaf who are exposed to sign language from infancy can by age 5 years refer to things around them and have meaningful conversations using both manual and non-

manual markers of sign language. This assumption corroborates Humphries' et al. (2016) assertion that when there is early exposure of children who are deaf to sign language, it yields a language development patterns similar to those produced by their hearing counterparts. This stock of information reiterates the fact that children who are deaf become language deprived only when they are denied early exposure to sign language which is accessible and able to fulfil the cognitive and communicative functions of spoken languages. This is why this study focuses on the processes children who are deaf go through to develop sign language within the critical period of language development.

The critical period hypothesis

Studies about language development have well established that children acquire language by hearing, listening, seeing, imitating, rehearsing and repeating what they observe in their immediate physical and social environments (Gadagbui, 1998a, 2014) . All of such visual and hearing sensory inputs should occur within a critical period of children's development otherwise language development will be delayed (Santrock, 2004). In developmental psychology, a critical period is a maturational stage in the developmental milestone of an organism during which the nervous system is predominantly sensitive to certain environmental stimuli (Robson, 2002). This means that humans in particular learn certain traits or function needed for survival during a short frame of time in which they must receive fitting stimuli from their environment. When such stimuli are delayed, denied or absent during the critical period, learning of such traits or function may be extremely difficult or even impossible to do so in later years of life.

One of such crucial functions is language. The notion that language is developed or acquired very quickly within a critical period of time and becomes difficult to do so afterward, is believed to be first proposed by neurologists Wilder Penfield and Lamar Roberts in 1959 and later popularised by linguist Eric H. Lenneberg in 1967 (Friedmann & Rusou, 2015). In the Lenneberg studies of the critical period of language development, he hypothesised that language development is a maturational process which falls between ages 24 months (2 years) up to the time of puberty during which first language must be acquired (Lenneberg, 1967 as cited in Santrock, 2004). Lenneberg's studies involved children with brain damage to their left cerebral hemisphere, children who are deaf and children with intellectual disability. The findings of his studies were that children who could not develop language naturally in the critical period of their development found it extremely difficult to do so in later years.

The trademark of Lenneberg's critical period hypothesis was that language development begins at a time of certain maturation of the brain and ends at certain loss of brain plasticity. Categorically, Lenneberg places an onset of age 2 years and offset at puberty for language development (Friedmann & Rusou, 2015). However, later studies on critical period of language development (DeKeyser, 2000; Cormier, Schembri, Vinson, & Orfanidou, 2012) have contested these time frames and refuted it with several behavioural studies that show that a large amount of language is acquired even before age two years. For example, DeKeyser (2000) has described in details that foetuses are able to learn some aspect of language while still in their

mothers' wombs. Similarly, Meisel (2013) has also proven that after age four years, it becomes progressively difficult to natively learn a first language.

DeKeyser (2000) and Meisel (2013) have focused on children who grew in isolation where they were either neglected or deprived of language inputs to support their claims on the theory of critical period of language development. The conclusion is that the time frames for critical period of language development hypothesised by Lenneberg (1967) as cited in Santrock (2004) have been shown by these studies as being too late and undependable. These studies (DeKeyser, 2000; Meisel, 2013) have also pointed to the important role of environmental inputs in language development among children as well as the time frame within which these inputs occur. Similarly, children who were born with significant hearing impairment with less exposure to accessible language during a certain period of time until they received hearing devices have been reported to have language difficulties (Friedmann & Rusou, 2015). The idea is that children who were deprived of language in their early years fail to acquire language in later years even after several efforts are made to teach them.

One of such classical cases of language deprivation that has been cited to support the theory of critical period is the story of Genie, a modern day 'wild child' with stunted language development (Curtiss, 1977; Rymer, 1993). According to Curtiss (1977), Genie was deprived language input and was kept in isolation from about age two until she was about 13 years old. When she was finally discovered by a social worker in the USA after several years of isolation and neglect, Genie had not developed any functional language. After years of extensive rehabilitation

programmes, involving speech and language therapy, Genie never became efficient in the use of language. She only learned to recognise words and her speech was rudimentary. It is believed that Genie might have been denied language inputs even before age 2 which explains her inability to ask questions or develop a language system that allowed her to communicate even when attempts were made to recuperate her language.

This case of Genie in part demonstrates a crucial point in children's first language development. It shows that children who are abandoned, abused, neglected or do not get early exposure to accessible language within early years of their lives will have difficulty developing first language in later years. From Genie's story, it may be assumed that the time frame of the critical period for language development may not be between the ages of 2 years and the time of puberty as Lenneberg (1967) cited in Santrock (2004) had earlier proposed. Therefore, the question of what the actual time frame of the critical period for first language development in children may still be unknown. Perhaps, this may be one of the most intriguing answers to find in the literature that have focused on children with hearing impairment living in all-hearing environment reported by Friedmann and Rusou (2015) .

According to Friedmann and Rusou (2015), children who are deaf born to deaf parents have accessible language input right from birth and therefore experience normal language development. However, children who are deaf born to hearing families who were neither raised with sign language nor fitted with hearing aids early in the first years of their lives showed significant delays in language

development in spoken and signed modalities. Similarly, Szterman and Friedmann (2014) report that many children who were born with significant hearing loss at birth show difficulties in the use of relative clauses in sentences at school. Although such children may be orally trained, lack of language input at birth continues to affect the way they understand sentences in which the word order is not in canonical form. For example, a sentence such as "This is the girl that grandma drew" would be difficult for children who had hearing impairment at birth to comprehend even if they have been orally trained. The conclusion of their study was that when children with hearing impairment are not fitted with hearing aids by age eight months, or if they do not receive language input until after the first year of their lives, they are likely to have language development difficulties. Humphries et al. (2012) specifically state that around age 5 years old, the plasticity of the brain begins to gradually decrease, hence, children who have not acquired a first language by that age will be at risk of not developing fluency in any native language. This results in children who become linguistically deprived.

These findings from the literature point to the fact that the critical period for first language development in children begin and end earlier than previously assumed. The fact that language develops rapidly and naturally with little effort during the infant years but becomes difficult afterwards prove that the critical period for first language development of children falls between ages 0-5 years (Humphries et al., 2012).

Concept of Deafness

The concept of deafness can be well understood from the basic knowledge of the concept of hearing impairment. The term hearing impairment covers a continuum of a degree of hearing losses ranging from mild to profound (Hardman, Drew, & Egan, 2013; Hallahan, Kauffman, & Pullen, 2014). Basically, it is the audiological experience of a person who lacks hearing either partially or completely. To explain the concept of hearing impairment, Turnbull, Turnbull III, Shank, and Leal (2009) have outlined how the human hearing mechanisms work using the human ear (see Appendix B) which consists of three major sections: the outer, middle and the inner ear.

Turnbull et al. (2009) have explained that in the outer layer, the ear lobe or the pinna traps sound in the form of waves and directs them to the auditory canal. The sound waves then travel through the auditory canal to the tympanic membrane or the ear drum and causes it to vibrate. In the middle ear, the three tiny ossicle bones: malleus, incus and stapes amplify the vibrations. As the amplified sound waves gets to the inner ear, it is received by the cochlear which is filled with fluid. Tiny hair-like cells in the cochlear change the sound waves into electrical impulses which are carried to the hearing centres of the brain through the auditory nerves.

The effective functioning of all the three sections of the ear results in good hearing. Hearing impairment therefore occurs when any of the organs in the sections of the ear are malfunctional. For clearer understanding, hearing loss that results from defective organs of the ear has been classified as either conductive, sensorineural or mixed (Turnbull et al., 2009). Conductive hearing loss occurs

when the organs in the outer and/or the middle ear, involving the ear lobes, auditory canal, tympanic membrane as well as the ossicle bones are faulty such that they prevent sound waves from reaching the inner ear (Turnbull et al., 2009). This means that conductive hearing loss is mainly a problem of sound conduction associated with the outer and/or the middle ear such that even though the inner ear is functional, sound does not reach it. Wax or foreign bodies that block the ear canal, perforation of the tympanic membrane, damage to the ossicle bones and inflammatory diseases such as otitis media are some of the conditions that have been implicated in conductive hearing loss (Gadagbui, 2013). Hopefully, hearing impairment associated with conductive hearing loss can be alleviated through surgical corrections.

Turnbull et al. (2009) further explain that when the cochlear in the inner ear and/or the auditory nerves become damaged or insensitive, it results in a hearing impairment classified as sensorineural hearing loss. This means that congenitally, the cochlear gets damaged such that even when the outer and the middle ears conduct sounds effectively to the inner ear, sound is not received in the cochlear because of the damage to it. In some of the cases, as the authors reveal, it is rather the auditory nerve pathway that gets damaged such that the sound waves that have been converted into electrical impulses in the cochlear do not get into the brain for interpretation as sound.

Humphries et al. (2012), indicate that sensorineural hearing loss which is also known as nerve deafness is much severe and likely to be permanent. According to the authors, sensorineural hearing loss is one of the most common congenital

birth defect globally with an incidence rate of 3 out of 1000 new-borns in developed countries. It is even much higher in underdeveloped countries such as Nigeria with about 28 out of 1000 new-borns in Nigeria alone (Olusanya, Wirz, & Luxon, 2008). Current literature is needed to substantiate these figures to determine its ascendency or decline over the years.

In Ghana however, it appears that there is little or no data on such incidence. Although sensorineural hearing loss is largely congenital, it could also be adventitious such that by the time most children begin school in the developed countries such as United States of America (USA), there is about 7 out of 1000 children who have permanent hearing loss leading to deafness (Bamford, et al., 2007 as cited in Humphries et al., 2012). The argument is that the number of children who are deaf globally is gradually ceasing to be insignificant which calls for careful attention and well informed calculation of risks to address the deficits.

A combination of conductive and sensorineural hearing losses result in mixed hearing loss. In other words, a condition of hearing loss where both outer/middle and inner ears are affected is known as mixed hearing loss (Turnbull et al., 2009).

Other studies have identified that deafness can occur when the hearing centres of the brain are malfunctional. This leads to a type of hearing loss called central hearing loss (Santrock, 2011). In this situation, it is the brain that is not receiving sound signals for interpretation. The hearing organs may be intact and functional yet the hearing centres of the brain may be faulty, hence sound is not acquired or understood.

Martin (1981) as cited in Gadagbui (2013), indicates that the concept of deafness may also be well understood through the quantitative measurement of hearing threshold using the audiometer. These measurements give accurate thresholds of an individual's hearing such that the severity of the hearing loss is easily determined by grading any additional rise recorded above the nominal threshold as hearing loss. Nominal hearing threshold for each country can differ however, a threshold of 0-25 decibel (dB) is commonly accepted and is considered as normal. Any additional increase to this threshold is recorded as being mild, moderate, moderately severe, severe or profound hearing loss as cited in Gadagbui (2013) and presented as follows:

i. 26-40 dB – Mild
ii. 41-55 dB – Moderate
iii. 56-70 dB – Moderately severe
iv. 71-90 dB – Severe
v. 91 dB or greater – Profound

This spectrum of hearing losses clearly indicates two distinctive categories of hearing impairment; hard of hearing and deafness. Hearing losses which are graded as mild, moderate and moderately severe are considered as hard of hearing (Martin, 1981 as cited in Gadagbui, 2013). Individuals who are hard of hearing find it difficult, but not impossible, to detect comprehensible speech sounds through their ears alone with or without amplification (Hallahan et al., 2014). They have defective but still useful hearing skills which can be supported with hearing aids. Their hearing level is personal to them and can range from 26-70dB hearing level.

This means that children who have a hearing level of 26-40dB may be able to hear speech in quiet conversational environments where discussion is known and vocabulary is not far-reaching. Nonetheless, a faint or distant speech becomes difficult to hear even if the environment is quiet.

Children who have a hearing level of 41-55dB can hear conversational speech only at close distance on personal exchange such that group activities such as classroom discussions may pose communication challenges. Likewise, children who have hearing level of 56-70dB may find it difficult to hear speech sounds and/or follow conversation in group situations. They can hear only loud clear sounds. However, those individuals who record a hearing loss graded as severe or profound with a hearing degree ranging from 71dB -91dB and above are referred to as deaf. It is impossible for such individuals to hear speech sounds even with hearing aids. If children are considered deaf, they cannot hear sounds for the ordinary purposes of life. It is this group of children who do not benefit from oral communication even with amplification that suffer high risk of speech and language deprivation (Humphries et al., 2016).

Hallahan et al. (2014) define deafness as a hearing loss in which hearing is insufficient for the process and comprehension of auditory information with or without amplification. It is medically referred to as a physical condition characterised by a lack of sensitivity to sound which impedes the successful processing of linguistic information through the use of the ears with or without hearing aids. This means that individuals are considered as deaf if they are born with significant amount of hearing loss or acquire a hearing loss later in their

development to prevent the spontaneous acquisition of speech and language. Turnbull et al. (2009) posit that this onset of deafness could occur during the early years of life before speech and language are learned or even soon after it such that the learned language becomes practically lost because of lack of auditory feedback Gadagbui (2014).

It is noteworthy that most research on deafness has maintained that "deaf" with small letter "d" is medically defined and refers to audiological status of an individual whereas "Deaf" with block letter "D" refers to any individual belonging to the deaf cultural group (Turnbull et al., 2009). Such individuals might either be medically deaf or otherwise but has linguistic-cultural affiliation with deaf culture. For the purpose of this study however, the concept of deaf is maintained throughout this thesis report with a small "d" except when beginning a sentence to refer to both those of medical audiological status and those of the deaf cultural group. So principally, the term deafness describes the severity of one's hearing loss. It refers to a more restricted group of individuals whose sense of hearing is insensitive to sound or non-functional for the ordinary purposes of life. These definitions, point to the fact that deafness has a profound effect on children's language acquisition and educational performance that makes them eligible for special needs attention (Heward, 2013).

Effect of deafness on spoken language acquisition

Deafness is a form of disability which significantly deviates children from naturally acquiring a spoken language. Even more debilitating is when deafness is not detected early and the appropriate interventions are not put in place to support

children's language development. Since spoken language development is dependent on a number of factors that include children's own biological endowment such as good hearing and favourable environmental agents, children who are deaf do not stand a higher chance of developing spoken language. However, the situation is not always conclusive. The onset of deafness in children also greatly affects children's auditory experiences. Congenital deafness or deafness in early childhood, before exposure to spoken language causes children to be prelingually deaf whereas deafness that occurs after spoken language is acquired causes children to be postlingually deaf (Heward, 2013). Postlingual children who are deaf will have much residual auditory experience than their counterparts who are prelingually deaf who might never in their lives hear sound.

Definitely, deafness sustained in early infancy prior to spoken language acquisition will have serious setbacks for normal language development. The onset of deafness at the time when children are still infants in the processes of developing a native language will certainly affect their ability to perceive and use spoken language for the ordinary purposes of life (Easterbrooks & Stoner, 2006). This means that prelingual children who are deaf will have difficulty in phonological processing of language thereby making it unlikely to employ phonological (speech-based) codes in memory as compared to their postlingual peers who are deaf (Marschark & Mayer, 1998).

Memory and perception are also largely affected by early onset of deafness in children. For example, Marschark and Mayer (1998) find that children who become deaf at age 10 years and are postlinguals may appreciably acquire a

measure of their native language and can formulate and align their thought to it. They may experience improved memory and perceptual abilities than their peers who become deaf at age 2 years and are prelinguals. This shows that prelinguals will have much difficulty employing auditory memory of speech to understand spoken language. They will also have difficulty matching their understanding of spoken language even in written format. The basic explanation to this phenomenon is obvious; first language acquisition begins from early infancy within a limited time frame. It also means that for spoken language to be acquired natively, children must have the biological apparatus of good hearing and cognition to do so. Consequently, children who become deaf in their early years have difficulties in acquiring receptive and expressive spoken language skills (Easterbrooks & Stoner, 2006).

This early onset of deafness is believed to truncate children's ability to pick environmental sounds such that they lack the basis for normal spoken language development. Studies of spoken language development in children with congenital or early onset deafness have found that it takes only very little distractions in hearing to cause difficulties in language development (Marschark, 2001). This observation in part also explains why even postlingual children who are deaf would still experience difficulties in spoken language acquisition if they stopped hearing. The lack of auditory feedback which becomes absent on the event of deafness makes it very difficult for postlinguals to hear their own speech sounds thereby making it difficult to reinforce them and gradually become forgotten over time in the mind. Significantly, this finding does not only occur in children with severe to

profound hearing losses but also children who have mild to moderate hearing losses (Carney & Moeller, 1998; Gregory & Hindley, 1996 as cited in Marschark, 2001), making the ability to hear very critical to spoken language development.

A study by Kindig and Richards (2000) shows that chronic otitis media, which is inflammation of the middle ear due to infection, can lead to significant delays in language acquisition and lower performance in verbal intelligence test and the ability to read. Even children who have received cochlear implant but are believed to have less language input from infancy are reported to experience problems with normal language development and may have to acquire sign language as early as possible (Humphries et al., 2012, 2014, 2016).

Concept of Sign Language

Sign language is not new to the human race and the use of it is well documented. Historical records show that deaf people and deaf communities have existed for centuries at least over 7, 000 years and they have all been reported to use natural sign language (Schick, Marschark, & Spencer, 2006). For example, the authors report that in the 1690s, there was a town called Martha's Vineyard in North America which had almost all of its members being deaf and sign language was a naturally accepted means of communication long before schools were established for the deaf in the USA (Schick et al., 2006).

However, absence of speech in deaf people made many educationists wonder if children who are deaf could be teachable. This was because years before the sixteenth century, many people equated speech to language such that deaf people who could not speak were considered incapable of being educated

(Butterworth & Flodin, 1989). As indicated by Butterworth and Flodin (1989), this misconception locked up the education of deaf people for many years until the sixteenth century. Early efforts to educate the deaf commenced but mainly focused on language learning through reading and writing. Therefore, during the time of the Renaissance, an Italian mathematician and physician called Girolamo Cardano advocated for the education of children who are deaf indicating that they could speak by writing and hear by reading (Schick et al., 2006).

Historical perspective of sign language

According to Schick et al. (2006), historically in Spain, sons of the aristocratic families who could not read and write were denied their fathers' inheritance and so it was important for young children to acquire literacy in order to inherit their fathers' wealth and power. Consequently, a Spanish Benedictine monk, Pedro Ponce de Leon figured out that deaf people could be taught to understand written symbols by associating them with the things they represent. Hence, in 1620, the first book on teaching signs to deaf people which contained manual alphabet drawn in signs was published by Juan Pablo de Bonet (Butterworth & Flodin, 1989). However, it was not until the 1700s that sign language began to emerge. According to Butterworth and Flodin (1989) the works of Abbe Charles Michel de l'Epee of Paris in 1755 supported the development of sign language among deaf people. Abbe de l'Epee capitalised on the natural gestures and signs of deaf people at that time and refined them into communicative sign language. He founded the first free school for children who are deaf and showed that deaf people could develop communication with themselves and their hearing counterparts

through a system of conventional gestures, finger spellings and hand signs (Butterworth & Flodin, 1989).

Abbe de l'Epee studied the natural signs and gestures of his deaf students and developed them into full language system which was capable of expressing abstraction. As expressed by Butterworth and Flodin (1989), it was largely through the effort of Abbe de l'Epee that paved the way for people who are deaf to have exposure to accessible language. According to the authors, after Abbe de l'Epee's death at the beginning of the French Revolution, other teachers of the deaf also contributed to the development of sign language as the true language of deaf people. Oppong (2006) cites Abbe Roch Ambroise Cucurron Sicard, a successor to Abbe de l'Epee, as one of such notable teachers.

Butterworth and Flodin (1989) further document that in the USA for example, sign language came to the lime light during the nineteenth century when, in 1815, a group of men in Hartford, Connecticut in the USA became interested in educating children who are deaf. Subsequently, Dr. Thomas Hopkin Gallaudet, a graduate of Yale University was sent to England and France to investigate the methods of communication for the deaf at that time. England practised oralism while France practised manualism (Butterworth & Flodin, 1989). The oralism philosophy required that deaf people in England learn English as their mode of communication. By that decree, manual sign language was suppressed and deaf people were forced to learn and use spoken English. In converse, France practised manualism which encouraged deaf people to use the French sign language which had emerged from the deaf cultural group at that time and was rapidly developing.

Schick et al. (2006) corroborate Butterworth and Flodin's (1989) assertion that manualism was more accessible to deaf people in France at that time such that while in France, Dr. Gallaudet bought into the manualism philosophy of Abbe Roch Ambroise Cucurron Sicard. As indicated by Schick et al. (2006), Abbe Sicard invited Dr. Gallaudet to study at his school for the deaf in Paris which promoted the use of sign language to teach children who are deaf. After several months of training in France, Dr. Gallaudet returned to USA with one young deaf instructor called Laurent Clerc. In 1817, Dr. Gallaudet and Laurent Clerc established a school for the deaf called the Connecticut Asylum for the Education and Instruction of Deaf and Dumb which made it possible for sign language to flourish in USA. The sign language Dr. Gallaudet and Laurent Clerc brought to USA in 1817 was advanced by the French priest Abbe Sicard. Therefore, the linguistic structures of American Sign Language (ASL) follow that of French and not English. This means that ASL is not a form of signed English although such a sign system exists (Schick et al., 2006).

The struggle for acceptance

Although sign language flourishes in most deaf communities across the world today, it was ironically considered to be inferior to speech in conveying abstract thought, hence its use in classroom teaching and learning was queried (Schick et al., 2006). Although spoken language was not accessible to children who are deaf to function cognitively at an abstract level, many philosophers and educators thought otherwise and continued to agitate for vocal articulation and spoken language for children who are deaf (Schick et al., 2006). They feared that

without speech, children who are deaf would not understand higher order abstraction required for education (Preyer, 1882 as cited in Schick et al., 2006). The oral approach to schooling children who are deaf was therefore adopted in the USA and children who are deaf were forbidden to use sign language in schools although some of them secretly used sign language at home with their deaf parents.

The debate about the utility of sign language in classroom education of the deaf lingered on for several years and in between those years several attempts were made to suppress the use of sign language by children who are deaf, at least in the school setting (Schick et al., 2006). Some educational programmes consequently called for the use of the combined system where attempts were made to join the oral and manual approaches (Schick et al., 2006).

However, after some demonstrated years of using the oral approach, many proponents of oralism realised that their efforts did very little to improve the overall academic performance of children who are deaf (Schick et al., 2006). Therefore, in support of manualism, some educators and philosophers who believed that sign language was a way to unlock the minds of children who are deaf and an avenue for appropriate education continued to be troubled about how children who are deaf would master spoken language hence they opposed the oralism philosophy (Schick et al., 2006).

As expected, the deaf communities also reacted to the lack of sign language in schools for children who are deaf and although they had no substantive role in the management of schools at that time, they fought by lobbying with state legislation and school boards to adopt sign language (Stokoe, 2005). Perhaps it

took, in addition, the civil rights movements in the USA to finally allow sign language a place in the lives of children who are deaf both at home and at school.

Educators and philosophers at that time who later saw the need for sign language in schools also advocated for bilingualism which required children who are deaf to use sign language skilfully and develop competencies in print literacy so that they will be able to participate in the larger hearing society and deaf communities, what has been described by LaSasso and Lollis (2003) as the bilingualism-biculturalism approach.

Emergence of sign language in Ghana

It appears that very little documentation has been done about how sign language emerged as a true language of deaf people in Ghana (Runnels, 2017). This assertion by Runnels is congruent with Kiyaga and Moores (2003) who found no records of any known programmes, schools or teachers for the deaf until 1957 when Dr. Jackson Andrew Foster made contributions to that effect. Dr. Andrew Foster was deaf and a graduate of the Gallaudet University who came to Ghana as a missionary of the Christian Mission of Deaf Africans on invitation from the Presbyterian Church of Ghana (Adu-Bediako, 1982; Osae-Owusu, 1982; Tetteh-Aryee, 1982; Tettey-Ocloo, 1996 as cited in Oppong, 2006).

Okyere and Addo (1999) cited in Runnels (2017) point out that in 1957 when Dr. Foster arrived in Ghana, there were a number of children who are deaf who were illiterate and without language. According to Oppong (2006), many Ghanaians were ignorant about deaf people and thus attributed the causes of deafness to retribution of the gods. Consequently, many families who had children

who are deaf were seen as accursed and were therefore ostracised from communities. This situation forced many parents to hide their children who are deaf from the public, denying them social language communication and acceptance. Largely due to this negative perspective, when Dr. Foster arrived in Ghana shortly after independence from colonial rule, he found cultures so oppressive of deaf people (Runnels, 2017). Nevertheless, he made a rigorous search for deaf individuals and enquired about their education from the Ministry of Education, Department of Social Welfare as well as the municipal and district education offices in order to establish schools for them (Runnels, 2017).

Kusters (2014, 2012) however, recently provides evidence that before the arrival of Dr. Andrew Foster, a small village in Ghana's Eastern region called Adamorobe had all of its members as deaf and used a form of sign language communication now termed as Adamorobe Sign Language. Although unpopular at that time, Kusters reports that the Adamorobe sign language was used in communication with Dr. Foster who also taught them the American Sign Language.

According to Okyere and Addo (1999) cited in Runnels (2017 p. 247), Dr. Foster upon arrival in Accra, Ghana in 1957 "introduced himself to the Ghanaian Ministry of Education and then traversed Ghana to promote the introduction of deaf education". He found, registered and enrolled 13 children who are deaf and 11 deaf adults in a foundation school he had established at Osu in Accra on 10th September, 1957 in a classroom he had borrowed from the Osu Presbyterian Middle School for Boys. He named his school Ghana Mission School for the Deaf. It is through this

intervention that sign language began to flourish in Ghana (Aina, 2015 as cited in Runnels, 2017).

The enrolment of the school rose to over 50 students by 1958 which perhaps made it necessary to move the school from Osu in the Greater Accra region to Akuapem-Mampong in the Eastern region of Ghana. Kiyaga and Moores (2003) suggest that this early school may have been the first school for the deaf in West and Central Africa to use sign language. It was the foundation school that taught deaf pupils how to read, write and communicate in American Sign Language (Oppong, 2006). Importantly, the school taught deaf people how to communicate using the ASL. In time, the American Sign Language was acculturated and adapted to suit local and cultural context and needs. These adaptations evolved into what is now known as the Ghanaian Sign Language (GhSL). Oppong (2006) asserts that the phonology, morphology, syntax, semantics and pragmatics of GhSL are similar to ASL.

Presently in Ghana, there is still an apparent lack of proper records on how deaf people utilised sign language before the 1950s which seems to suggest that sign language was disregarded during the precolonial and colonial years. Consequently, sign language continued to struggle for acceptance even after Ghana's independence in the educational setting. For example, Gadagbui (1998b) believes that until 1990, the use of sign language in all schools for the deaf in Ghana was abolished. The oralism-manualism controversy that occurred in USA at that time had a great influence on Ghana's system of education for children who are deaf and so most schools for the deaf at that time practised oralism.

During that time, deaf students were taught speech and every effort was made to make them speak in order to be integrated in mainstream society that found sign language either strange or difficult to understand. Later, schools for the deaf became divided on philosophies to educate children who are deaf after the death of Dr Andrew Foster in 1987. Hence, some schools for the deaf such as the Volta School for the Deaf and Sekondi School for the Deaf practised oralism while others such as Cape Coast School for the Deaf and Demonstration Schools for the Deaf practised manualism where deaf students were taught sign language.

Eventually, the Ghana National Association of the Deaf (GNAD) stood strong and expressed their displeasure about the lack of sign language in some schools for the deaf and put pressure on the Special Education Division (SpED) of the Ghana Education Service (GES) to make it acceptable to use sign language in all the schools for the deaf in Ghana (Gadagbui, 1998b). The impasse of the utility of sign language in schools however, continued until 1990 when it was finally accepted as a medium of communication in Ghana schools for the deaf (Gadagbui, 1998b). This stalemate undoubtedly hindered the progress of sign language in the lives of children who are deaf in Ghana. Even now the review of literature seems to suggest that not much has been done to promote sign language in Ghana. There is still no evidence of a standardised curriculum for the study of sign language in schools.

The implication of this situation is obvious; it denies children who are deaf of a language to be proud of with likely ramifications on their academic progress. The simple conclusion therefore is that development of sign language still seems to

be shrouded in uncertainty such that the need for it to be acquired in early years of children who are deaf has not received the needed research attention in Ghana. This situation creates a likely doom for deaf education and social development of children who are deaf in Ghana. This is because there are severe effects of sign language neglect to children who are deaf. Hence, this study seeks to address the utility of sign language by developing a theory that explains its acquisition process among children who are deaf in Ghana. The intention is also to help promote sign language in Ghana which appears to be understudied.

Components of Sign Language

Possibly, one of the reasons why sign language has struggled over the centuries and continues to struggle in some parts of the world has to do with how it is perceived as a language. What then makes a system of communication a language is perhaps a question of interest to many linguists and the answers are found to be intriguing. Language basically is defined as a code or vehicle through which meaningful messages are transmitted and understood between two or more people (Gadagbui, 2014). It encompasses every means of communication in which thoughts and feelings are symbolised in order to convey meaning to others (Gadagbui, 2014). It is also defined as non-instinctive means of communicating ideas through symbols (Owu-Ewie, 2012).

This means that even though other primates such as chimpanzees make sounds and gestures to communicate, such sounds cannot be considered as language because it is instinctive. Hence, it is only humans who have attained the most highly developed system of using language to communicate (Santrock, 2004). This makes

language purely a human method of communication, a code whereby ideas about the world are expressed through a conventional system of arbitrary signals for communication. In other words, language is a form of communication, whether spoken, written or signed, which is based on a system of codes and symbols consisting of words used by a community and the rules that underlie them (Heward, 2013; Santrock, 2011).

The basis of all these assertions is that language is a system of complex structures that are highly ordered and organised and with characteristics such as infinite generativity and organisational rule (Santrock, 2011). The ability of human language to produce an endless number of meaningful sentences using a finite set of words has been termed as Infinite generativity whereas the organisational rule involves the components of language such as the phonology, morphology, syntax, semantic and pragmatics. The organisational rule of all languages has been organised into five components but sub grouped into three categories (Heward, 2013; Santrock, 2011) as explained in the following sections.

1. Language Rule Systems (Form)

i. *Phonology:* This language system is concerned with the sound system of a language and the rules that govern the sound combinations. For instance, tone (rising and falling of voice), length or duration of the sounds. The sound elements in the English language are called phonemes. Only the initial phoneme prevents the words “pear” and “bear” from being identical.

ii. *Morphology:* This language system is concerned with the system of rules that govern the structure of words and the construction of word forms from

the basic elements of meaning. For example, the word "friend" can take one or two morphemes to construct new word forms such as friend*ly*, *un*friend*ly,* friend*less*, friend*liness* and friend*ship*.

iii. *Syntax:* This language system is concerned with the system of rules that govern the order and combination of words to form sentences and the relationships among elements within the sentence. Syntax rules determine where words are placed in a sentence. For example the same words used in different combinations may be meaningless. For example, "The boy hit the ball" becomes meaningless in "the hit the boy ball".

2**.** Content of language. This refers to the intent and meaning of language and its rule system. Semantics is considered when discussing content of language.

iv. *Semantics*: This language system is concerned with the system of rules that govern the meanings of words and sentences. Different arrangements can mean very different things: "The boy hit the ball" is not the same as "the ball hit the boy".

The inability to produce correct phonology, morphology and syntax will definitely result in semantic problems so that the content will be lost.

3. Function of language: Pragmatics of language is when language is used in various social contexts. It mainly describes the function of language in society.

v. *Pragmatics:* It is the combination of language components (phonology, morphology, syntax and semantics) in functionally and socially appropriate communication. Pragmatics talks about how language is used. The purpose, setting and recipients of communication determine the language to use. The

use of idiomatic expressions and speeches that are kind and polite involve pragmatics of language.

These five components distinguish a language from other means of communication. Stokoe (2005) establishes that sign language, which is a visual-gestural language that employs the use of the hands, face and body to convey feelings and emotions also have these basic characteristics of language. These unique characteristics make many linguists believe that sign languages are similar to spoken languages in many significant ways. In 1960, Stokoe conducted his ground-breaking study on the structure of sign languages as a visual communication system of the American deaf. The study helped to appreciate sign language as a natural language as it fulfils the communicative competency of phonology, morphology, syntax, semantic and pragmatic systems.

According to Stokoe (2005), phonology in sign language deals with handshapes which are not only gestural but also iconic. Handshape refers to the acceptable hand formation of the dominant hand in the production of a particular sign. Sign modes made by handshapes in sign languages are units that combine to create words of the language and serve as phonemes in spoken languages. Stokoe (2005) establishes three major phonological categories comprising handshape, location and movement with a recent addition called orientation. For instance, the handshape of spread hand as in the numeral figure "5" is a phoneme that combines with location and movement to form different words. Therefore, the handshape "5" will form the word "father" if located on the forehead and "mother" when it is located on the chin (see Appendix C).

Stokoe (2005) further demonstrates that sign language has complex morphology. Sign language has affixes just like spoken language. It has derivational negative affix for instance "dis" which is similar in meaning to English language. For example, the word "dislike" in sign language has the base form "like" and the negative affix "dis" which forms the morpheme. The "like" is signed and is followed by the "dis" indicating negation (see Appendix D). Stokoe says that no description of sign language morphology would be complete without the use of classifiers. This classifier subsystem has the characteristic of expressing potential objects using the two hands. Classifiers are used to show movement, appearance and location (Emmorey, 2003). After a signer indicates a person or thing, a classifier can be used in place to indicate the behaviour of that person or thing thereby serving as antecedent to nouns and pronouns.

Sign language classifiers are a set of handshapes which classify referents with respect to their size and shape, semantic properties or other characteristics that are reminiscent of verbal classifiers found in a variety of spoken languages (Senft, 2002). An example of a classifier in GhSL is the "V" involving the index finger and the middle finger facing downward which depicts any two legged creature (see Appendix E).

Syntax in sign languages is broad and complex and depicts a large number of characteristics found universally in spoken languages. A key example is its generativity which has the potential of creating sentences of ever increasing complexity which is an essential linguistic property believed to set sign language apart from all visual communication systems (Hausser, Chomsky, & Fitch, 2002).

Syntax in sign language is a field of study on its own, too exhaustive to be covered in this literature review. However, one example worth mentioning is the use of copulas. In English, the use of copula verb "to be" and "to have" makes sentences grammatical. For example "what is your name?" is grammatical in Standard English Language (SEL) because of the use of copula verb. In sign language such as ASL which has been studied extensively, the use of copulas is absent which makes sentences in sign language telegraphic in style but grammatical in nature. Therefore, syntactically the statement "your name what?" is grammatical in sign language (Stokoe, 2005).

Facial grammar in sign language

Unlike spoken languages that are restricted to manipulations of the vocal tract and are perceived auditorily, sign languages use parts of the body that are capable of rapid, variegated articulations that are easily perceived and processed visually. The facial expressions and hand and body postures that accompany handshapes are considered as non-manual markers that are grammatical in sign language (Stokoe, 2005). Basically, non-manual markers are portions of linguistically meaningful bodies of activities that precede, follow or accompany signing such as raising eyebrows, widening eyes, frowning, smiling, raising shoulders and head nodding (Wilbur, 1979; Slike, 1997 cited in Oppong, 2006). These non-manual markers are fully conventionalised and systematic such that they are syntactical in sign language.

Stokoe (2005), has shown that certain facial articulations involving the mount and lower face function as adjectives and adverbs of manner are used to

express relaxation, satisfaction or joy. Powers (cited in Oppong, 2006) likewise asserts that non manual markers are often used to portray questions, surprise, anger, and warning in sign language communication. Similarly, Reilly, McIntire, and Bellugi (1990) express that non manual markers of facial articulations typically of the upper face and head are used in specific construction of yes/no questions, Wh-questions and relative clauses in ASL and in many other established sign languages.

It is therefore, predictable to raise eyebrows or widen eyes when constructing yes/no questions in sign language. While some of these facial articulations may be common across sign languages especially those accompanying yes/no and Wh questions, Reilly et al. (1990) say these expressions are not iconic and may mean differently from one sign language to another. Nonetheless, all non-manual are grammatical and are formally distinguishable from other kinds of affective expressions hence it will be grammatically wrong for sign mode indicating anger to accompany a facial expression of broad smile that expresses happiness.

Wilbur (2000) points out that facial grammatical articulations convey many different kinds of information which are not only syntactic but also semantic in nature. The semantics of sign language exist in the intent of the sign modes as well as the facial expressions that are combined to form meaning of words, phrases, clauses and sentences. The meaning expressed using sign language is composite and are hardly isolated. Therefore, a sign mode alone may not convey the desired meaning until it is combined with non-manual makers of facial, head and body articulations.

Pragmatics of sign language is found in its function. For example the study by Mirus, Fisher, and Jo (2012) on taboo expressions in ASL helps to understand that lexical items that are strongly prohibited because they are considered either as rude or vulgar in given social contexts show the pragmatics of sign language. The authors express that taboo nature in sign language is a pragmatic status that is culturally constructed such that certain topics are figurative, offensive or forbidden to talk about within a given context.

The review of literature on structure of sign language attributes the essential linguistic properties of phonology, morphology, syntax, semantics and pragmatics found in spoken languages to sign languages. However, the modality takes a different form in sign language because it is visual-gestural and utilises handshapes, space, direction, location, orientation, classifiers and non-manual makers of facial grammatical articulations (Stokoe, 2005).

The gestures and facial expressions which augment spoken language are also found in sign languages. Perhaps, it is because of these similarities of gestures and facial expressions in both spoken and signed languages that make many people assume that sign languages are just simple gestural systems that are unmethodical and unstructured. However, although gestures accompany spoken languages in varying degrees, in sign language, such gestures are grammatical and lexical elements that form the basis of the language (Marschark, 1993, 2001). They are not simplistic idiosyncratic or ancillary systems like the ones that accompany speech making but are the primary linguistic systems that give sign language many of the properties found in spoken languages.

However, just like spoken languages, sign languages are not universal. A deaf person who uses Israeli Sign Language (ISL) would not automatically understand a conversation between two deaf persons using ASL although there are some specific linguistic similarities that exist in all sign languages (Newport & Supalla, 2000). For instance, GhSL has many similarities with ASL such that Ghanaian deaf people should be comfortable in USA. This review supports the fact that sign language is a true language for deaf people hence the need to expose children who are deaf to it at early infancy, at the time when their brains are prewired to develop a natural language.

Effects of Sign Language Neglect

Potential success of children who are deaf in academic achievement is dependent on competencies in first language skills in signed modality (Rowh, 2006). Children who are deaf who do not acquire sign language as their first language early enough will have serious disruptions in cognitive development (Humphries et al., 2014) and suffer serious academic challenges (Bowe, 1998; Marschark, 2001; Heward, 2013). They will also lag behind in several academic areas such as reading, spelling and writing (Turnbull et al., 2009). They may experience reading problems in three general areas; vocabulary, syntactic and figurative written language. The explanation to this difficulty is that poor and delayed language base of children who are deaf make their written spoken language output typically weak. They also do not have the same access to rules of spoken language as do children with normal hearing (Easterbrooks & Stoner, 2006).

Marschark, one of the leading researchers in deaf education and communication has several reports that explain the long history of academic underachievement of children who are deaf. In one of such reports, Marschark, Morrison, Lukomski, Borgna, and Convertino (2013) report that reading comprehension and mathematics pose a lot of difficulties in children who are deaf as compared to their hearing counterparts. The authors further state that in the USA, performance of children who are deaf in English and mathematics on standardised educational testing have shown little improvement over the past 30 years. Median scores on the Standardised Achievement Test Reading Comprehension subtest for 18 year old deaf students showed less improvement and were far below the expected outcome.

Similarly, Humphries et al. (2012) also report that when children who are deaf do not develop a firm first language, foundation for mathematics and the organisation of memory will be disordered or disrupted. Smith (1995) also explains that children who are deaf often use the same descriptors to explain varied items and lack the nuances of similar items such that they often describe or narrate stories in English language in the same way they did when they were younger.

Even though there are no statistics to substantiate this argument in Ghana, there have been countless anecdotal reports of poor performance of children who are deaf at the external examinations where performance in English language paper has been abysmal. According to such reports from head teachers as well as from the Special Education Division (SpED) of the Ghana Education Service (GES), Performance reports from 2013 to 2017 indicate that out of 467 deaf students that

have been presented for the West African Senior Secondary School Certificate Examination (WASSCE), only 16 students have obtained the required passes between grade B2 and C6. This situation supports the fact that basic literacy of reading and English language acquisition continue to be the primary issues of concern among children who are deaf in Ghana (Obosu, Opoku-Asare, & Deku, 2016).

The limited language input that children who are deaf are able to access, as well as the limitations in technology developed for them in developing countries such as Ghana, seems to show serious setbacks in the academic advancement of the average deaf pupil. This is because, as Easterbrooks and Stoner (2006) indicate, deaf pupils complete basic education functionally illiterate with considerable delays in written English language output as compared to their hearing counterparts.

Effects of language deprivation on society

Humphries et al. (2014) show how the effects of language deprivation among children who are deaf translate into harm on the larger society. The authors report that mainly due to language deprivation, the deaf population across the world suffer a higher rate of illiteracy, imprisonment and unemployment largely due to lack of access to information and communication about good health practices and lifestyle choices. Deaf people are also found to suffer a higher incidence of poor health which correlates with illiteracy, unemployment and poverty. For example, Morrison and McDonald (2010) found that although poverty impacts negatively on all children whether hearing or deaf, the effects are compounded when the children

are language deprived making them even less likely to have any meaningful contribution to society. This situation also means that it is worse off for children who are deaf in society if they fail to develop language.

Language deprivation also makes children who are deaf vulnerable to abuse and maltreatment resulting in mental health disorders whose treatments exert financial pressure on society's coffers. Their vulnerability also predicts that deaf people would have a higher incidence of imprisonment either because they are coerced into wrong doing or that they cannot defend themselves well enough against accusations (Humphries et al., 2014). All these factors of illiteracy, imprisonment, poor health, mental health disorders, and unemployment burden society. Even more worrying is the amount of potential human resources that are lost in society due to language deprivation. Certainly, the harms of language deprivation on individual children who are deaf and the society at large is overwhelming. That is why it is imperative to find alternative means of mitigating the effect of language delay by focusing on how the school environment facilitates the sign language acquisition of preschool children who are deaf in Ghana such as this study seeks to achieve.

Concept of Preschool Education in Ghana

Miles and Browne (2004) describe early childhood education to be a form of education provided for children in the period from birth to eight years of age. Their view is consistent with Grotewell and Burton (2008) who believe that early childhood education involves education provided for children up to the age of eight years. It is a form of education specially designed to provide education for children

from infancy to the end of lower primary education which includes preschool education (UNESCO, 2010).

Evidently, before 2002, preschool education was not part of the formal education system in Ghana until the President's Committee on Review of Education Reforms in October, 2002 made recommendations to that effect (MOE, 2002). According to the report, preschool education refers to the type of education given to children from ages 0-5 years after which they enrol in the formal primary school. Hence, all forms of teaching and learning that take place in different kinds of settings which include crèche (0-2 years) day care (2-3), nursery (3-4 years) and kindergarten (4-5 years) before primary education begins constitute preschool education. It is the form of education which begins at age 4 years in Ghana and commonly provided in kindergarten 1 and 2 of all public schools in Ghana today (MOE, 2002) .

One of the aims of preschool education is to predispose children to conditions of formal schooling (MOE, 2002) in order to inculcate in them the desire for learning as well as provide opportunities for them to develop cognitively, socially and physically even before they begin formal education at class one. It is also to promote healthy mind and body of all children at preschool level. It means that all children at preschool level are expected to be fully immunised against all the six childhood killer diseases whereas making sure that efforts are put in place to ensure that preschool environments are safe and equipped with needed learning materials. In other words, public preschools established under Ghana Education

Service (GES) of the Ministry of Education have the mandate to prepare children to begin class one.

According to the report of the President's Committee on Review of Education Reforms in October, 2002, preschool education which includes kindergarten education should be able to nurture children in safe and caring environments with appropriate infrastructure, which will allow them to become healthy, alert, secure and able to learn. The Committee makes recommendations to this effect on page 25 of its report as follows:

i. Kindergarten 1 and 2 should be made part of the formal educational system. Every primary school should therefore have a kindergarten attached to it.
ii. Admission should be open to all children including the physically challenged. No special examinations/interviews should be conducted for the purposes of selecting children into kindergartens. Birth certificates, health cards and immunisation records however should be inspected. Those without the necessary records should be advised or assisted to obtain them.
iii. Class size for kindergarten 1 and 2 should be a maximum of 30 children. School hours should be from 6 to 8 hours.
iv. The curriculum content of kindergartens should include: Language Development, Drawing and Writing, Number work, Music, Drama and Dance, Hygiene (Health and Sanitation) and Games (including Computer Games)

v. At kindergarten, rigidly structured methods of teaching should be avoided. Play methods should be used and an integrated method of delivering the above curriculum should be paramount

According to the report, the facilities at the kindergarten such as the classroom should be well ventilated and spacious enough to accommodate the preschoolers. There should also be well-equipped playground with shady trees and a well-stocked school library. There should also be adequate toilet facilities for boys and girls; litterbins, well-equipped and staffed sickbay; electricity supply and good source of drinking water (MOE, 2002). All these recommendations reiterate the need to have a preschool department that has all the basic amenities which include teaching and learning materials such as toys as well as other technologies for learning that are capable of enhancing children's language abilities.

Another inference, according to the report, is that preschool teachers should build on children's natural playfulness and curiosity to explore their environment thereby making the school environment critical to children's development. This natural tendency of children to interact with their immediate environment should as a matter of expediency form the basis of designing teaching and learning programme for children that will develop their language skills. Thus, teaching and learning programme at the preschool should not follow rigidly structured methods of teaching but rather, a curriculum that is flexible to allow for play methods to be integrated in lesson delivery. Consequently, how teaching and learning is carried out among preschoolers is of great essence to understanding how they acquire language in the classroom.

Teaching has been conceptualised in a variety of descriptions and definitions. Generally, it has been described as an art of persuading students to behave in ways that are assumed to lead to learning. Tamakloe, Amedahe, and Atta (2005) define teaching as an activity that imparts knowledge, skills, attitude and values to learners. Teaching also means giving information and imparting knowledge and the means by which society trains the young in a selected environment (Reddy, 2004). In the opinion of Reddy, teaching is closely defined to be the casual impartation of knowledge from the teacher to the learner.

Melby (1963) as cited in Tamakloe et al. (2005) signifies that the teacher does not consider him/herself as a storehouse of wisdom and knowledge where the students enter and assimilate wisdom. In the lens of Melby, teachers serve as guides to learners. They stimulate learners' mental faculties to acquire knowledge without any pretention on their part as being the only sure way of knowing. It is therefore, not logical to conclude that teaching is merely neither lesson-having nor merely information giving. It is a knowledge construction process between the teacher and the learner. This notion also suggests that learners must be engaged in their own learning process, analyse, synthesise and evaluate information to solve life problems. Teaching is thus regarded as a process of bringing about learning.

Teaching and learning are the opposite sides of the same coin; they are complementary (Farrant, 1995 as cited in Tamakloe et al., 2005). In this sense, an experience that is learned well is the one that is taught well. Learning therefore becomes an active construction of meaning rather than a passive acceptance and memorisation. Gagne (1985) as cited in Tamakloe et al. (2005) also states, for

example, that language learning is a change in human disposition or capacity that persists over a period of time. It is a change children acquire as a result of gathering experiences through actions, observations and perceptions.

Subsequently, preschool education should be resourced to have trained teachers and attendants who have knowledge about child care. In order to ensure that preschools are equipped with trained personnel, the National Nursery Teacher's Centre was set up by the government to issue certificate to teachers and nursery attendants who want to specialise in preschool education (MOE, 2002). In addition to the National Nursery Teachers' Training Centre, the University of Education, Winneba and University of Cape Coast have programmes in Early Childhood Education that train teachers for preschools. Teachers with such requisite training are expected to organise activities such as role-plays, sports and games to facilitate their language acquisition. For this reason, the use of local Ghanaian languages such as sign language for the deaf is highly recommended at the preschool level (MOE, 2002).

The quality of preschool education to a large extent determines the literacy and numeracy levels as well as their learning outcomes in language proficiency of pupils in later years at the basic school level (Global Monitoring Report, 2006). The report mentions that children's success in life begins in preschool thereby emphasising the need to study its ecology to understand how it impacts on children's language development such as what this study seeks to do.

Preschool education for the deaf

Education for children is provided in two parallel systems at the preschool level in Ghana (Ministry of Education, 2015). Those without visible sensory and intellectual disabilities are enrolled in regular schools while those with visible sensory and intellectual disabilities are enrolled in segregated special schools. About 2% of Ghana's population of school age is believed to have some form of disability (Ministry of Education, 2015). Among this population are children who are deaf and therefore deviate significantly from what is considered normal in terms of language acquisition. The hearing impairment of children who are deaf significantly interferes with ordinary language acquisition and educational advancement which warrants special education. There are already 13 schools for the deaf across Ghana running the basic education programme which includes preschool education for children who are deaf (Oppong, 2003).

Admittedly, the government of Ghana recognises that education is a universal human right and extends such right to all individuals including children with disabilities. Even though preschool education had not been part of the formal education programme until 2002, Ocloo et al. (2004) note that children who are deaf were given preschool education in the various special schools before they started class one. According to the authors, the preschool for the deaf started around 1970 at Akuapem Mampong in the Eastern region of Ghana. The preschools were attached to residential schools for the deaf and admitted children who are deaf who were below the age of 3 years. The practice, according to the authors, was that parents and caregivers accompanied their deaf wards to the preschools once a

month until they were mature enough to be left alone in the residential schools for the deaf. This practice undoubtedly provided the formal exposure needed to start primary school to children who are deaf. It also provided them with the opportunity to be taught the rudiments of sign language as their first language if they missed that from home. Research, such as this study is needed to confirm such practice in preschools for the deaf in order to establish its significance in supporting sign language development of children who are deaf within the school ecology.

Summary of the Literature Review

The literature reviewed focused on the three major theories that explain how typical children acquire language which indicates that the existing behaviourist, nativist and social interactionist theories of language development do not comprehensively explain how children who are deaf develop sign language as their native language. The literature review also reveals that the Bioecological systems theory which highlights how children develop within a nested ecology has reactive effects on all aspects of their development. This stresses the influence of the ecology of home and school on children's language development which creates the background for investigating school characteristics of children who are deaf in order to understand how these impact on their sign language development.

The literature review defends the fact that sign language is a true language for children who are deaf and has the ability to nourish the brains of children who are deaf and serve the same cognitive and communication functions as spoken languages. The review directs attention to the fact that children who are deaf would have to be exposed to sign language at home and in school early enough to avert

the many harms of language deprivation syndrome. The literature review on the effect of language deprivation in children who are deaf also points to the need to provide children who are deaf with an accessible visual-gestural language which is sign language.

However, the core of the literature review points to gaps in the existing literature on sign language development of children who are deaf. Although literature explains the timelines for sign language development of children who are deaf in general, the processes fail to describe the factors and practices at schools of children who are deaf (including those in Ghana) that influence their sign language development. Hence, the literature review creates a gap on local content with regard to sign language development that could explain the relevant processes.

There is the need therefore to explore how the variables at school for the deaf influence sign language development of children who are deaf in Ghana. This will fill the literature gap on a substantive theory that locally and fittingly describes the process of sign language development of children who are deaf in Ghana.

CHAPTER THREE

RESEARCH METHODS

The main purpose of the study was to find out how the school setting facilitates sign language acquisition of children who are deaf during the early years of their lives in order to develop a substantive theory that will explain the process of sign language development among children who are deaf in Ghana. In line with the main purpose of the study, four specific objectives guided data collection (see chapter one, pages 11, 12). In this chapter, the methodology for the study has been presented to provide details of how the entire study was conducted. It reports on the epistemological and theoretical underpinnings as well as the type of qualitative research design chosen to guide the study. The grounded theory which serves as the methodology for the study has well been described in this chapter. The chapter also discusses how population for the study was sampled, which data collection instruments were used and how the data collection and analysis were done.

Research Paradigm

A paradigm according to Creswell (2012) is a worldview of a basic set of beliefs that guides action. It is also seen as the framework of generally accepted viewpoints about a subject or conventions about what direction research should take and how it should be conducted (Grove, Gray, & Burns, 2015; Koul, 2013). The paradigm for this study was the constructivist research paradigm which assumes a relativist ontological position that claims that concepts such as rationality, truth, reality, right or good consists of multiple individual realities influenced by context (Bernstein, 1983 as cited in Mills & Francis, 2006).

The constructivist research paradigm hinges on the assumption that there is no single reality or truth and that reality is subjectively constructed. Although constructivism aligns with the notion that knowledge is constructed, it highlights an individually constructed version of reality. This notion is in stark contrast with the positivist epistemology which believes that reality is objectively observable, fixed, predictable and generalizable (Ward & Hoare, 2015). Therefore, according to Crotty (2003), what people hold as reality is based on their own interpretation of the world. Epistemologically, constructivism denies the existence of an objective reality and rather believes that realities are multiple social constructions of the mind (Mills & Francis, 2006). It believes that reality needs to be interpreted to discover the underlying meaning of events and activities. The constructivist research paradigm is also regarded as interpretive in nature (Creswell, 2012).

In line with the constructivist research paradigm, this study situated itself within a theoretical perspective described as symbolic interactionism which holds the perspective that reality is a negotiation between people, always changing and evolving constantly (Richards & Morse, 2007). Symbolic interactionism is defined as a theoretical perspective that addresses how society is created and maintained through repeated interactions among individuals (Carter & Fuller, 2015). One central idea of symbolic interactionism that met the purpose of this study is its focus on how individuals use language and significant symbols in their communication with others. Consequently in this study, emphasis was placed on how classroom communication between teachers and pupils influenced deaf preschoolers' sign language acquisition.

According to Blumer (1969), a research underpinned by symbolic interactionism uses more subjective methodology that attempts to measure and understand an actor's experience through "sympathetic introspection" (as cited in Carter & Fuller, 2015, p. 3). In this case, as Carter and Fuller (2015) further indicate, the researcher takes the standpoint of the participant whose behaviour or phenomenon is under study and attempts to use the participant's own categories in capturing the meanings the participant makes during social interactions. The symbolic interactionism, according to Blumer (1969), uses a methodological approach that makes inquiries about social life by understanding the processes individuals use to interpret situations and experiences and how they construct their meaning in the context of their society.

The constructivist paradigm was appropriate for this study for two reasons. First, this paradigm is congruent with my beliefs as a researcher about the nature of reality. My own view of nature of truth and reality is heavily influenced by the notion that reality is multiple and should not be viewed from a positivist lens which is based on the assumption of single measureable reality. In line with this notion, I explored how children who are deaf in their early years acquire their first language in sign modality by interacting with teachers of the deaf to get insight into their experiences and how that influence sign language acquisition of children who are deaf. In an attempt to understand this phenomenon, multiple realities were explored and key actors of the phenomenon within the school ecology such as teachers and peers were observed and interviewed.

Second, the constructivist paradigm is in line with qualitative inquiry which inherently opposes the idea that positivity is the only true vehicle for discovering truth. As Blumer (1969) indicates, knowledge of social situations, such as the study of interactions in a school ecology that influence language development of children who are deaf are qualitative and therefore should not be gathered through the use of statistical techniques or hypothesis testing. Rather, a study of this nature should examine the school setting directly, focusing on each distinct interaction among deaf individuals and their teachers such as this study investigated (Carter & Fuller, 2015). Hence, the vehicle for discovering truth was inherent with the people who had been involved in the phenomenon such as teachers of the deaf as well as other agents of the immediate environment of children who are deaf. This implied an active participation and construction of their experiences, hence the importance of the constructivist research paradigm to this study.

Methodology

This study adopted the qualitative research approach which is in line with the constructivist research paradigm and symbolic interactionism. Generally, qualitative research involves the collection, analysis and comprehensive interpretation of non-numerical data to gain insights into a particular phenomenon of interest (Grove, Gray, & Burns, 2015; Koul, 2013; Gay, Mills, & Airasian, 2009). It therefore sets researchers close to reality and allows them to employ flexible research design in the data collection process (Saratakos, 2013). Hence, this study adopted the qualitative methodology to focus on how children who are deaf acquire sign language in early years of their lives in the context of their school

ecology using the grounded theory which made it possible to incorporate other research designs and data collection methods.

According to Creswell (2012), qualitative researchers state the purpose and research questions in a general and broad way; collect data based on words from a small number of individuals so that the participants' views are obtained. One notable feature of qualitative research is that rather than rely on statistical procedure as in quantitative research methodology, the qualitative researcher analyses the word transcription of participants from the interviews or images of photographs or memos from observations and groups them into larger meanings of understanding, such as codes, categories or themes (Creswell, 2012). This means that qualitative researchers study things in their natural settings, attempt to make sense of context and interpret phenomena in terms of the meanings people bring to them.

Some of the advantages of qualitative methodology according to Koul (2013, p. 90) are that:

1. Qualitative research is suitable in the study of human behaviour which is fluid, dynamic, situational, social, contextual and personal.
2. It utilises qualitative data which are detailed and descriptive. These data indicate what people have said in their own words about their experiences and interactions in natural setting and after careful analysis the data provide useful and depth answers to the research questions of decision makers and information users.
3. It does not start with the advance formulation of specific deductive hypotheses as is the case with quantitative research. The researcher uses

inductive analysis for generating new hypotheses from the details and specifics of the data during field work. The researcher begins by exploring genuinely open questions rather than testing theoretically derived deductive hypothesis.

Irrespective of the many advantages of the qualitative methodology, some critics have censured the use of it in scientific research. For example Koul (2013, pp.90-91) outlines that:

1. Subjective bias is a constant threat to objective data gathering tools and analysis techniques. For example, an individual may intentionally attempt to exhibit an artificial behaviour when he knows that he is being observed during observation. Similarly, during an interview, the interviewee may not respond freely, frankly and accurately. There is a constant danger of subjectivity on the part of an observer/interviewer during observation/interview.
2. The findings of qualitative research lack generalisations because of the nature and size of samples used for data collection. The samples are small in size and mostly purposive. Pure subjectivity in the selection of such samples undermines their credibility.
3. Qualitative research utilises a variety of methodologies in studying a phenomenon in holistic perspective. In certain cases, it is difficult to focus on complex interdependencies of its parts and understand the meaning of the phenomenon as a whole.

However, qualitative methodology was found to be the best approach for this study because it gave a more detailed description of the phenomenon of language development which is composite and requires the use of qualitative approach to study how children who are deaf in their early years acquire sign language. This allowed the researcher to use flexible strategies such as interviews, personal observations and field notes to understand the phenomenon under study. It also made it possible to ask questions about the quality of experiences preschool teachers of children who are deaf hold about teaching sign language to children who are deaf which may not have been possible using the quantitative approach. With qualitative methodology, the participants told their own stories which I analysed into categories to explain how they view the world around them in terms of language development of children who are deaf within the school ecology. Admittedly, this is a phenomenon that warrants the use of the qualitative methodology.

Research Design

Generally, the set of guidelines and instructions of a research are described as research design (Koul, 2013; Cohen, Manion, & Morrison, 2011). Considering the nature of this study which looked at children who are deaf and how they develop sign language in the context of their school ecology, it was crucial to find and apply a qualitative approach that was appropriate and suitable for theory generation. Therefore, constructivist grounded theory methodology was adopted as the research design for the study. The prime reason for this choice of design was to theorise the

process of sign language development of children who are deaf within the school context.

Overview of the grounded theory

Generally, the grounded theory methodology is a well-established mode of inquiry within the social sciences but has recently been used more readily in other fields of study such as psychology and education (Getaneh, Stevens, Ross, & Chandler, 2015; Jones & Alony, 2011; Martı, Mubanga, & Bagnol, 2015; Richards & Farrokhnia, 2016). Since its inception, grounded theory has evolved and been altered into several versions which include the constructivist grounded theory. Like many of the qualitative research designs such as ethnography, phenomenology and case study which interpret the meaning of an experience or an event, grounded theory goes beyond description of experience to generate a more abstract analytic outline of a process or phenomenon (Corbin & Strauss, 2008). Basically, grounded theory is a systematic method consisting of several flexible strategies for constructing theory through analysing qualitative data (Glaser & Strauss, 1967). It is a qualitative research design in which the inquirer generates a general explanation of a process, phenomenon, or an event in a form of a theory shaped by the views from multiple primary sources of data (Charmaz, 2015; 2017).

Grounded theory as a qualitative design was developed by sociologists Barney Glaser and Anselm Strauss through their ground-breaking research which drew attention to the complexities of everyday life experience as illustrated in their first book titled "Discovery of Grounded Theory" in 1967 (Glaser & Strauss, 1967). The authors felt that theories used in research to study participants were

inappropriate and unsuitable hence, theories should be grounded in the data generated from the participants. This means that participants in the study might have experienced a process or a phenomenon which a theory generated from them comes to explain or provide a framework for further research. Corbin and Strauss (2008) caution that theory development must not come off the shelf but rather it must be generated or discovered from the empirical data collected from participants who have experienced the phenomenon. Thus, the process of research in grounded theory begins with inductive data, uses comparative data analysis, and involves simultaneous data collection and analysis that leads to theory generation.

Types of grounded theory

It is generally accepted that there are about three versions of grounded theory, each with its own distinctive ontological foundations (Goulding, 2017). The three main versions are identified as classic grounded theory which is associated with Barney Glaser; systematic grounded theory which is a revision of the original methodology and associated with Strauss and Corbin; and the constructivist grounded theory that is associated with Kathy Charmaz. These versions of grounded theory have further been grouped into two popular types classified as systematic procedures of Strauss and Corbin and the constructivist approach of Kathy Charmaz (Creswell, 2006).

In the more systematic analytic procedure of Strauss and Corbin, the researcher seeks to follow a systematic procedure involving data collection and analysis to explain a process or an action. In the process, the researcher does open coding which is followed by axial coding and then selective coding (Creswell,

2006). In the open coding, the researcher forms categories and subcategories of information about the phenomenon under investigation. The research further finds several properties to show connections with the categories. In axial coding, the researcher assembles all initial coding and identifies a central or core code that explores casual, context and intervening conditions with the central phenomenon. In the final coding called the selective coding, the researcher then begins to form connections among the categories which usually develops into a story line (Creswell, 2006). Alternatively, the researcher formulates propositions or hypotheses that state the predicted relationships.

Unlike the systematic procedure of Strauss and Corbin, the constructivist grounded theory of Kathy Charmaz embraces a more social constructivist perspective to data collection that places emphasis on diverse local domains, multiple realities and the intricacies of particular views, worlds and actions (Creswell, 2006). This means that the researcher finds multiple means of data and diverse interpretation of data.

The constructivist grounded theory

In this study, the constructivist grounded theory was used to guide the study in the development of a theory that explains how children who are deaf develop sign language at school. Constructivist grounded theory falls in line with the interpretive/constructivist approach to qualitative research with flexible research guidelines and focuses on theory development that are discovered from the experiences and worldview of both the researcher and the participants (Charmaz, 2015; Creswell, 2006; Charmaz, 2006). Therefore, in this study, importance was

placed on the role of the researcher in the research process which allowed for more active interviews that involved dialogues thereby supporting the notion that both the interviewer and the respondents co-construct meaning (Charmaz, 2017; Goulding, 2017). Thus, the study respondents were not seen as mere vessels for answers but as part of an active process of knowledge construction.

Furthermore, according to Charmaz (2006), in constructivist grounded theory, more emphasis is placed on the ideologies of individuals rather than on the methods of research such that individuals' views, values, beliefs, feelings and assumptions are highlighted. Although this makes the constructivist grounded theory flexible, it does stress the practice of gathering rich data, coding the data, writing memos and using theoretical sampling in the process of theory development. In the data analysis process, the constructivist grounded theory advocates for the use of active codes such as gerund-based phrases. It also maximises the role of the researcher in the data collection and analysis process of a study.

In constructivist grounded theory, participants are chosen theoretically through a process called theoretical sampling and data collection is iterative where the research continues to collect and analyse data simultaneously until saturation is reached (Charmaz, 2015; Creswell, 2006; Charmaz, 2006). This type of grounded theory has the tendency to foster an empathetic understanding of participants' actions and the meaning they ascribe to certain actions that have the potential to transform practice.

Justification for the use of grounded theory

According to Creswell (2006), grounded theory is a good design to use when a theory is not available to explain a process or a phenomenon. Creswell (2006) is of the opinion that sometimes there may be models available in the literature but they may have been developed or tested on samples and populations other than those of interest to the qualitative researcher. Additionally, theories that may be present may be incomplete because they do not address potentially valuable variables of interest to the researcher (Creswell, 2006). Therefore, a substantive theory may be needed to explain how people are experiencing a particular phenomenon using the grounded theory design.

In the case of this study, current literature is replete with quantitative studies about deafness and language acquisition (Velonaki et al., 2015; Marschark et al., 2013; Cormier et al., 2012; MacSweeney, Waters, Brammer, Woll, & Goswami, 2008; Hao, Su, & Chan, 2010; Henner, Caldwell-harris, Novogrodsky, William, & Dye, 2016; Humphries et al., 2012). However, none of these studies have focused qualitatively on how and what happens within the school ecology of children who are deaf that influence their language acquisition with the aim of developing a theory that explains that phenomenon.

Although other qualitative approaches such as phenomenology, case study, ethnographic and narrative designs have viable possibilities of providing detailed description of events (Creswell, 2012), they do not generate a theory which can be used to explain a process of development such as this study attempted. Hence, the constructivist grounded theory was used in this study to develop a theory grounded

in data to explain the process of sign language development among children who are deaf in Ghana's schools for the deaf.

Population

The target population for the study comprised parents, siblings, and peers of children who are deaf and preschool teachers in the 13 schools for the deaf found in Ghana (Oppong, 2003). As indicated by Oppong (2003), these schools are boarding schools which are segregated and located in some of the 16 regions of the country. Generally, for the purpose of this study, every individual who held information on language acquisition of children who are deaf fitted into the population. This included teachers who had in the past or were currently teaching deaf pupils, head teachers, special education experts, sign language interpreters, special education coordinators, parents and siblings of children who are deaf, older deaf adults, peers of children who are deaf, past and current school programmes, school records, deaf associations and deaf culture.

Generally, in grounded theory, data are collected from several combination of data sources including interviews, observation, diaries and other written documents. This means that population for a grounded theory research would be wide and varied such that any group of elements who carry information which is of interest to the study could be considered as part of the population (Backman & Kyngäs, 1999). This description of population in grounded theory is in line with the views of Cohen, Manion, and Morrison (2011) who refer to the population of a study as a group of elements or cases, whether individuals, objects or events, that conform to specific criteria and to whom the researcher intends to generalise the

study. Similarly, Creswell (2012) describe population as the sum total of phenomena which interest a researcher and may include people, objects and institutions which become the objects of the study.

Study Site

Cape Coast School for the Deaf was chosen as the main study site for the first phase of the study. The first phase of the study was used as the extreme sample to generate a tentative theory for which further sample was sought using theoretical sampling. Using a particular area as a study site rather than canvassing for respondents throughout a destination or a country is not new to qualitative research especially where the research focus is on a particular phenomenon (Hitchcock & Hughes, 1995). In this case, the researcher locates the situation of a certain aspect of social behaviour in the setting and focuses on the factors that influence the social behaviour (Hitchcock & Hughes, 1995). Similarly, in this study, I explored the key variable of sign language acquisition among children who are deaf in the Cape Coast School for the Deaf.

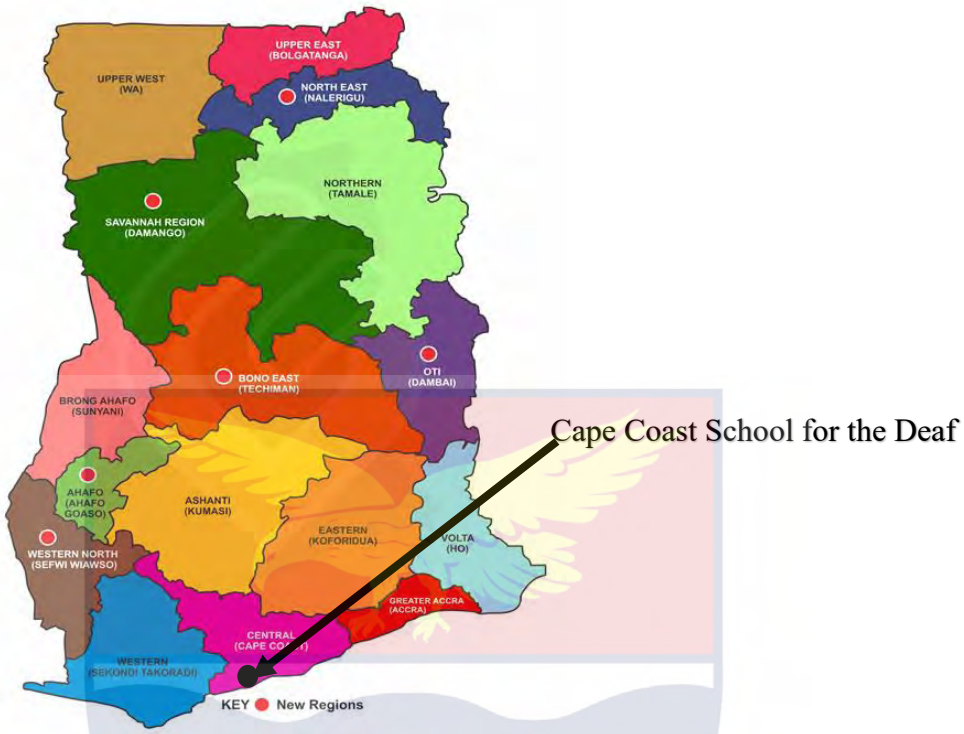


Figure 1: Map of Ghana Indicating the Location of the Study Site.
Source: Map of Ghana, 2018.

Brief history of Cape Coast School for the Deaf

Cape Coast School for the Deaf is located at the outskirt of Cape Coast in the Central region of Ghana as shown in Figure 1. According to school records, Cape Coast School for the Deaf was established on 9th November, 1970 by GES in collaboration with Madam Florence W. Addison, a retired educationist, to provide formal education to children who are deaf of school age at that time. The school started with only 15 pupils made up of 10 boys and five girls from the Cape Coast metropolis. At the start of the school, there were only two resource teachers; Mr. Isaac Kwesi Nkum and Mr. Anbyn who later became the headmaster and assistant headmaster of the school respectively. They provided specialised services to the deaf students. It was the time when oralism and manualism controversy in deaf

education was widespread so it is uncertain which mode of communication was practiced at the school's inception before 1990 when sign language became accepted as the language of instruction for all students in schools for the deaf in Ghana.

School records show that in the 2001/2002 academic year, as part of Ghana Education Service's policy on inclusive education, a unit for the blind was attached to the school on a pilot basis to educate the pupils with visual impairment in braille literacy, mobility and orientation and mathematics for two years after which they enrol at the Ghana National Basic School for Inclusive Education. As of the 2015/2016 academic year, Cape Coast School for the Deaf had a student population of 473 made up of 278 boys and 192 girls. It had staff strength of 41 teachers.

Since Cape Coast School for the Deaf serves the entire southern part of the Central region, anecdotal information gathered from the head teacher indicates that the students come from several districts across the country with similar characteristics. This situation justified the need for the study to focus on Cape Coast School for the Deaf during the first phase of the study to understand the precise phenomenon about sign language development of children who are deaf. Since the aim of the study was to discover how children who are deaf acquire sign language in the context of their hearing disability, the strategy to focus on one particular study site was ideal.

The Setting of Cape Coast School for the Deaf

Cape Coast School for the Deaf is situated within the Cape Coast metropolis (as shown in Figure 2) which is about 144 kilometres away from Accra, the

administrative capital of Ghana. The metropolis is bounded to the South by the Gulf of Guinea, to the West by the Komenda Edina Eguafo Abrem Municipality to the East by the Abura Asebu Kwamankese District, and to the North by the Twifu Heman Lower Denkyira District. It is located on longitude 1° 15'W and latitude 5°06'N. It occupies an area of approximately 122 square kilometres, with the farthest point at Brabedze located about 17 kilometres from Cape Coast, the Central Regional capital (Ghana Statistical Service, 2012).

As indicated by the 2010 population and census, Cape Coast metropolis has a population of 169,894 representing 7.7 percent of the region's total population. Twenty three percent of the population live in rural localities (Ghana Statistical Service, 2012). Cape Coast is endowed with many schools across the length and breadth of the metropolis, ranging from basic to tertiary institutions. These schools attract people from all over the country (Ghana Statistical Service, 2010).

Figure 2: Map of Cape Coast Area.
Source: Google map Data, 2018.

According to the Ghana Statistical Service (2010), about 2.5 percent of the total population in Cape Coast has one form of disability or the other which was of interest to the study. The proportion of the male population with disability is slightly lower (2.4%) than females (2.6%). The types of disability include vision, hearing, speech, physical, intellect, and emotion disorders. Persons with sensory disability recorded the highest of 46.2 percent followed by physical disability (26.9%). About 82.6 percent of the population with disability are in the urban localities of Cape Coast metropolis. Of the population that have a form of disability, 24.9 percent have not received any form of formal education.

This metropolis has two major special schools/units for placing children with severe disability which are the Cape Coast School for the Deaf/Blind and Aboom Methodist Primary 'A' which is a unit for children with intellectual disability. The Cape Coast School for the Deaf, which was the study site for the first phase of the study is the second school for the deaf in the Central region. It has a student population of over 400 students with various degrees of deafness that require sign language intervention.

Sample and Sampling Technique

The nature of the study lent itself to non-probability sampling techniques. Sampling in grounded theory methodology can involve the use of multiple sampling strategies such as convenience, purposive and theoretical sampling techniques although the theoretical sampling dominates (Idrees, Vasconcelos, & Cox, 2018). This is crucial to the entire grounded theory research because it enables the researcher to identify the confines of the study and to focus on the variables of

research interest. Consequently, the convenience sampling was used at the field exploration stage to select Cape Coast School for the Deaf as a setup for the initial phase of this study.

Further, purposive sampling was used to select three preschool teachers and one head teacher in the study site during the initial phase of the study as the extreme sample whereas 10 preschool teachers and one head teacher from five other schools for the deaf across Ghana were sampled using theoretical sampling to confirm data gathered from the initial sample based on the following two criteria:

a. Participants must be preschool teachers currently teaching deaf preschoolers at the time of the data collection.
b. Participants must have taught deaf preschoolers for at least two years by the time of data collection.

Leedy and Ormrod (2010) refer to purposive sampling as a technique where a unit of a population is chosen for a study based on purpose such that a researcher selects participants of a study with a specific purpose in mind. The selection is based on judgement of the researcher about those who hold vital information to the study. The participants for this study were intentionally sampled because they all had some characteristics and experiences that were relevant to the study. The participants were all teaching at the preschool level and had taught at their current classes, on the average, for two years. Additionally, being teachers at preschool, they possessed knowledge about language learning activities that could facilitate sign language acquisition among deaf preschoolers.The use of purposive sampling

in grounded theory research was to maximise the variation of meaning that could determine the scope of the phenomenon or concept.

Theoretical sampling

The next stage of the sampling procedure for this study was the theoretical sampling prompted by the use of grounded theory methodology to further pursue emergent categories that were essential for theory development (Charmaz, 2015). According to Charmaz (2008), theoretical sampling involves collecting further data with regard to categories that have emerged from earlier stages of data analysis. This means that the researcher must check the emerging categories and the theory the categories are directing against the actual situation on the ground by sampling specific incidents and informants who may challenge or elaborate earlier assertions of the theory. Therefore, the theoretical sampling guided further data collection until saturation was reached. With growing understanding of the data that were collected as well as the concepts and categories that emerged during the data analysis, there was the need to further select participants who held additional information to either confirm or challenge the emerging categories.

Although most of the specific objectives were answered using the extreme sample data, some of the emerging issues needed confirmation. In response to that I sought data to straighten up inconsistencies with what pertains in classroom teaching and learning and how teachers across the various schools for the deaf adapted the regular curriculum to suit the language learning needs of deaf preschoolers. Subsequently, 10 kindergarten teachers were furthermore

interviewed. The interview led to another data gathering phase where one head teacher of a school for the deaf was interviewed.

There were other variations about sign language development of children who are deaf that were sought through school records, medical history, age, and whether or not they developed a system of communication with their parents at home before their admission to school. As expected, two parents were also sampled and interviewed to gain a holistic ecological assessment of language development at home of children who are deaf. The data gathered from all these interviews helped to probe the emergent categories and to direct the generation of the theory.

Theoretical sensitivity

Corbin and Strauss (2008) describe theoretical sensitivity as a multidimensional concept that includes the researcher's level of insight into the research area. This means that the researcher must be sensitive to the nuances and complexity of the participants' words and actions and have the ability to reconstruct meaning from the data generated with the participants in order to separate the pertinent from the irrelevant. It also means that the researcher must discover the relationships between the categories emerging from the data by looking at the data "from multiple vantage points" and make comparisons to build on ideas found in the data (Charmaz, 2006, p.135). According to Glaser and Strauss (1967), one way to foster theoretical sensitivity is to delay literature review up until the emergent categories. This is to keep the researcher from theoretical contamination by forcing data into pre-existing frame which may distort the emergent theory and become irrelevant to the substantive area (Quartaroli, Riemer, & Lapan, 2011).

Consequently, I stayed away from the concepts of language development found in the literature and stayed close to the data in order to move from descriptive to analytic level of the emerging categories. I interacted with the data by asking questions about the data to find answers that helped to modify the emerging categories. I also made comparisons between data and categories and looked out for negative cases. This process involved going forth and back to the data and emergent categories.

To avoid theoretical contamination in order to engage in theoretical sensitivity, I bracketed my personal biases about teachers of the deaf and about the challenges children who are deaf grapple with to access education provided for them in English language. This required identifying and suspending what was already known about the experience being studied and approaching the data without preconceptions (Charmaz, 2015). Therefore, I began this study with few predetermined thoughts which enabled me to remain sensitive to the data I collected from the various schools of the deaf.

Theoretical saturation

Data collection and data analysis continued until there was theoretical saturation. Theoretical saturation is a process where the researcher continues to sample and code data until no new categories can be identified (Glaser & Strauss, 1967). Hence, Glaser and Strauss believe that the success of theoretical sampling is achieved at theoretical saturation, a stage where a set of categories and subcategories explain the emergent theory.

Usually, theoretical saturation is reached when the researcher gathers similar data that yield no additional information repeatedly. As Glaser and Strauss have explained, saturation is determined by how widely or diversely the researcher samples to reach adequacy. Therefore, in generating grounded theory, it was important that I reach saturation otherwise the emergent theory would be shallow and open to doubt.

Reflexivity

An important aspect of constructivist grounded theory is the role of the researcher in the research process. Whereas the role of the researcher is independent in the Classic grounded theory, the Constructivist grounded theory of Charmaz calls for an active pivotal involvement of the researcher in the research process (Charmaz, 2017). Thus, it becomes imperative for the researcher to become aware of his/her own biases and to take steps to ameliorate them. A key factor that helps to moderate a researcher's biases and maintain openness in grounded theory research is reflexivity (McGhee, Marland, & Atkinson, 2007). The authors argue that the role of researcher must be noted by the researcher, acknowledged, explored, and even "shared with readers" (p. 335). Hence, reflexivity requires the researcher to declare his past experiences and the influences such experiences may have on data collection and development of the theory.

As an institutional requirement, I completed a research proposal with a short literature review before the start of the study. This meant that I read around the research problem to familiarise myself with the existing theories on language development and so I was fully aware of the theories of language development well

before I began to collect data for the study. Exposure to the literature about language development suggested an apparent lack of a theory that explains sign language development of children who are deaf in Ghana. This situation conflicted with the grounded theory prescription of delayed literature review in order to avoid "theoretical contamination" (Glaser & Strauss, 1967). To bracket this contamination, I identified and suspended any preconceived ideas I had about language development in hearing children that could work for children who are deaf. Since it was impossible to completely rid my mind of the knowledge I acquired from the literature review, I rather became theoretically sensitive during the data collection. During the interview sessions, I carefully directed interactions to focus on language development in the school setting when I realised that the focus was shifting to parents of children who are deaf.

The start of the data collection called for a conjunction of my multiple self. These were my own experiences with the Ghanaian deaf culture in terms of being a Bible teacher for the deaf, a sign language interpreter and a teacher of sign language for over 10 years. All of these experiences contributed to this study which highlights my identity, subjectivity and the role I played in the research process (Hollway, 2009). My continuous use of Ghanaian sign language and interactions with deaf people for over 10 years reflected heavily in this study.

When I became literate in sign language and got involved in deaf culture, I identified many issues in the education of children who are deaf and the use of language in classroom teaching and learning processes that quickly became my research interest. For instance, in my final year undergraduate project, I researched

on the topic: "Communication with the deaf- A challenge for the Contemporary Publisher". The findings of the research was that deaf pupils undergo a measure of frustration when accessing formal education in their classrooms and through the textbooks they use mainly because of the phonetic based literacy approach practised in their schools, which also pose a challenge for textbook writers. Subsequently, my MPhil thesis investigated how teachers use classroom teaching and learning activities and visual teaching strategies to facilitate sign language acquisition in the classroom, which further influenced the conduct of this present study on deaf preschoolers' sign language acquisition processes.

My research background as well as my experiences with children who are deaf required that I continuously reflect on myself throughout the research process. Thus, I constantly reflected on my observations and interactions with preschool teachers of the deaf such that during the conduct of interviews, I became conscious of how to use intonations, stress and humour to draw the inner feelings of the study participants. It also enabled me to give multiple interpretations of the realities the data revealed. For example, when a respondent made gestures of signs during interviews, I understood what those gestures meant in relation to sign language development.

My personal beliefs, biases, values and experiences as a sign language teacher at the university gave me deeper understanding of the phenomenon being studied. From the beginning of the study through to the finish, I spent much time pondering how the data collection process had affected my understanding of what goes on in the early lives of children who are deaf, both at home and at school. This

included my appreciation of the struggles children who are deaf inherit from home and the language emptiness with which they begin school. At a point in the data analysis, I was concerned about how I had been affected emotionally by the realities of sign language acquisition challenges of children who are deaf such that I had to be extra sensitive to the data by sticking to the transcriptions and the field notes. I went back and forth through a process of listening to the recorded voices of the study respondents over and over again in co-constructing meaning out of them. Thus, the theory that emerged from the study is a co-construction of meaning by the study respondents and my background at the conceptual level.

Perhaps, the most important issue about reflexivity in grounded theory is not about exposure to literature or the otherwise but the ability of the researcher to identify, modify and use his/her background experiences to direct the generation of a theory which is data-driven, open and logical. This means that the researcher must be open-minded, reflexive and loyal to the rigorous process of data analysis (McGhee et al., 2007) and that was exactly what I did.

Data Collection Instrument

Rigour in data collection in grounded theory require triangulating the data to ascertain the authenticity of the research (Gay et al., 2009). According to Cohen et al. (2011), triangulation is a systematic process of looking across multiple data sources to validate evidence to generate key findings. Hence, a two-tier data collection instrument was used for the study which involved interview and observation. These instruments were carefully planned and well implemented to yield maximum results. The instruments were used to obtain the needed

information from the various respondents concerning how teachers use the preschool classroom teaching and learning to facilitate sign language acquisition among deaf preschoolers. In grounded theory, conducting in-depth interview is a requisite (Charmaz, 2008).

Interview guide

Lisa (2008) indicates that any person-to-person interaction between two or more individuals with a specific purpose in mind is called an interview. Fraenkel and Wallen (1996) are also of the view that interviews are used to find out from people, things that cannot directly be observed nor noticed. Both authors point to the fact that there are some things such as thoughts, reasoning, intentions and feelings of participants that researchers cannot observe, hence the use of interviews. The in-depth interview took the form of active interviewing (Silverman, 1993) in this study where the participants were engaged in directed conversation that yielded the required data. Active interviews according to Holstein and Gubrium (1997, p.112) is "a form of interpretive practice involving respondent and interviewer as they articulate ongoing interpretive structures, resources and orientations with practical reasoning". This means that this type of interviewing is far more engaging than is traditionally conceived of. It is an occasion for constructing meaning and not merely discovering or conveying information.

Similarly, Sunstein and Chiseri-Strater (2012) believe that a good interview is researching people and not merely asking questions and recording answers. It involves listening attentively and asking thought-provoking questions for clarification and delving into deeper discussions and explanation. It practically

involves a situation where the interviewer moves into the respondent's world in order to view matters from the respondent's perspective.

In this study, I personally conducted face-to-face interviews using the semi-structured interview guide (see Appendix F) as a framework to elicit open-ended answers from respondents. The interview guide was necessary because it enabled me to attend to the focus of the interviews and to watch out for any potential intrusiveness of the questions (Charmaz, 2015). The semi-structured interview guide had five major questions that were specific but not rigid. The major questions were grouped into three sections. The first section contained questions that sought demographic information from the respondents. The second section had five main questions with prompts and probes on issues about classroom teaching, language development and language teaching strategies. The third section had only one question which required participants to provide additional information that would complement their responses (see Appendix F). For example, interview with the extreme sample from the Cape Coast School for the Deaf solicited questions such as:

1. How do you personally teach sign language to your pupils who are deaf?
2. What are the characteristics of your pupils who are deaf when they first begin school?
3. Can you describe how children who are deaf acquire sign language at school?
4. What is the process of sign language acquisition among preschool children who are deaf?

5. What role do you as a preschool teacher play in facilitating the sign language acquisition of your preschool children who are deaf?

These questions culminated into conversation that were directed to gather rich data for the study.

Observation guide

Lisa (2008) explains observation to involve the use of one's senses to look and listen in a systematic and purposeful way to learn about a phenomenon of interest which is holistic in its approach. This indicates that the researcher takes data from many aspects of a research setting and its participants where certain practices, beliefs, values and classroom phenomena cannot easily be studied by survey or experiment.

In this study, I used the non-participant observation approach to ascertain information from the preschool department of the Cape Coast School for the Deaf which was used as a case study. Three different classrooms made up of KG 1A, KG 1B and KG 2 were observed using the guide shown in Appendix G. The observation guide had three columns. The first column described the angle of observation which bordered on the main variable designed in a question form. The second column looked at the attributes of the question posed in the first column. The third column made room for me to describe the major finding in the form of remarks and memos. The three major angles of observations were:

1. What is the classroom teaching and learning environment?
2. How is the teaching and learning done to facilitate sign language acquisition?

3. How do teachers use other strategies to facilitate sign language acquisition?

These major angles had two, five and 10 attributes respectively, in a form of questions that collectively answer the objectives of the study (see Appendix G).

Data Collection Procedures

The data collection procedure for this study involved two different phases: an initial phase (first phase) and a final phase. I used the initial phase which occurred between 2016 and 2017 as an extreme sample to understand the scope of the situation under study. During this time, I used the case study approach within the grounded theory methodology (Mills & Francis, 2006) to gather rich data to develop a tentative theory into the subject of sign language development of children who are deaf. Hence, I further conducted a literature review to put the emerging issues of this study into perspective. Subsequently, the three major theories of language development and Urie Bronfenbrenner's bioecological systems were reviewed again to identify a gap in the current literature on sign language development of children who are deaf within the school ecology which pointed to a seeming lack of a theory that explains sign language acquisition of children who are deaf at school.

Consequently, Cape Coast School for the Deaf, which was a convenience sample for the case study for a period of about one year was mainly to understand the processes of sign language development in the school setting. The entire data collection process was iterative. In the following paragraphs, I have described the steps and processes I adopted to collect data in summary. The data collection and analysis procedures overlapped each other as data were simultaneously analysed

using the constant comparative analysis method. I moved back and forth until the substantive theory emerged. Hence, the processes involved were not clear cut although they have been grouped and reported linearly in this thesis. The entire data collection took one year in each of the phases.

Initial phase

The initial data collection which involved over 20 observation sessions in three different KG classrooms of deaf preschoolers yielded rich data that were simultaneously analysed. In the initial data collection, I began by interviewing a small sample of teachers who were purposively selected and used as the extreme sample. During the 2015/2016 academic year, I personally collected data using interviews and observations at the preschool department of the Cape Coast School for the Deaf which had three kindergarten classrooms comprising KG 1A, KG 1B and KG 2. Prior to the data collection, I made several visits to the study site to familiarise myself with the school environment and to establish rapport with the teachers and the pupils. These preliminary visits put the teachers and the pupils at ease especially during the interviews such that there were fewer distractions for the entire duration of the data collection. Perhaps, the letter of introduction which I obtained from the Head of Department (see Appendix H) to assure respondents of confidentiality and anonymity also helped to straighten out to the teachers the intent of the data collection.

The initial phase of the data collection occurred between June and July, 2017 during the one year period. I first carried out observation at KG 1A, KG 1B and KG 2. Eleven different days were randomly selected for the observations and

on each day, an average of two observations for 30 minutes were made in the classrooms as shown in Table 1.

Table 1- *The Schedule of Observations for the Study.*

Months	JUNE						JULY				
Days	5th	6th	12th	14th	15th	16th	6th	18th	19th	20th	21st
Classrooms	KG 1A	KG 1B	KG 1A	KG 2	KG 1B	KG 2	KG 1A	KG 1B	KG 2	KG 1A	KG 2
Number of observation	3	1	2	3	3	1	2	2	3	1	1

In each of the observation sessions, I sat by the teacher's table at the back of the classroom quietly and made unadulterated video recordings of the teaching and learning activities using my mobile phone (Infinix Note 2) which had quality video and audio recording features with very little distractions. This was to minimise the possibility of disrupting the pupils' attention and thereby maintaining the purity of the classroom environment.

However, I noted that although the teachers had granted permission for the video recordings during classroom teaching and learning activities, they looked visibly distracted at my presence during the initial recordings so I kept reassuring them of confidentiality but watched out for Hawthorne effect, also known as observers' effect which is described by Monahan and Fisher (2010) as the effect of the presence of the researcher on the behaviour of those being observed. As Spano (2006) indicates, the Hawthorne effect could make the teachers who knew they were being observed, forge their behaviour in the classroom which could create

biases in the data collection process and consequently invalidate the findings. For this reason, recordings were made only when I was convinced that the teachers were relaxed and unconcerned about the recordings. During that period, I also made sure that the teachers were not made aware of the specific days and times I would make recordings of their activities which helped to control some of the effects my presence posed in the classroom (Monahan & Fisher, 2010).

The purpose of the observation was to study how teaching and learning takes place in the classrooms of deaf preschoolers in order to understand communication between deaf preschoolers and their teachers; how feedback is given as well as how responses are shared between teachers and pupils. Particularly, I was interested in how teachers engage their deaf pupils in joint attention and use classroom instruction to facilitate sign language development of deaf preschoolers. As a non-participant observer, I made no effort whatsoever to manipulate or to control the classroom teaching and learning activities.

Apart from the classroom observations, I also observed the preschoolers at the playground, during snack time and on break as well as during morning assembly and dining. I also took opportunity of formal gathering such as Parent-Teacher Association (PTA) meetings and official programmes to observe interactions among peers and how such interactions culminate into sign language acquisition among deaf preschoolers. The focus of the observations at the playground was to understand the social network that emerges among deaf preschoolers when they are not with their teachers and how such social networks aid sign language acquisition.

I also had the opportunity to witness two cases of admission where I observed and documented in my field notes the interactions between children who are deaf and their parents. During this time of data collection, I wrote a number of memos using my field notes to describe the observations made and to give a detailed picture of the phenomenon (see Appendix I).

The observations were quickly followed by interviews in some cases. The interviews assumed the form of conversations. However, to keep the interview sessions on track while allowing respondents to talk freely and spontaneously, I used an interview guide which served as a road map that kept the discussions on track (Silverman, 1993). Although I asked the major questions and followed them up with prompts and probe questions, I made no effort to dominate the conversations. The number of items in the guide was kept to a minimum of 5 questions (see Appendix F) and focused on the four main objectives of the study to allow enough time for in-depth discussions and responses from the respondents who were made to express themselves freely.

I used the interview sessions to also confirm some of the observations I made from the classrooms. With permission, I recorded respondents' responses using my mobile phone (Infinix Note 2). One of the interviews was conducted in Ghanaian Sign Language because the teacher involved was deaf. Hence, I recorded the teacher's responses in a video format which was later transcribed and analysed (see Appendix J for the transcription). This was possible because I am literate in sign language and a member of the Association of Ghanaian Sign Language Interpreters (AGSLI) in good standing.

The next stage of the data collection involved further investigation to confirm some of the responses gathered from the teachers. The purpose was to get a vivid picture of the situation and to understand how children who are deaf acquire sign language during the first few years at school. In line with this purpose, I examined the teaching and learning materials used in the classroom and how they impacted on language learning. In each of the classrooms, I inspected the kind of teaching and learning materials that were available and how often the teachers incorporated them in classroom teaching and learning; the effect it had on lessons and how it influenced the acquisition of sign language in the classroom.

During this same time, I conducted a portfolio analysis of pupils' literacy development, examined their exercise/work books and conducted error analysis in them to check for patterns of error in their language development. I also examined the kindergarten curriculum to understand the current pattern of teaching and learning for children who are deaf. The initial phase acted as the foundation where literature review, preliminary data collection and analysis interacted to warrant further data collection (see Figure 3).

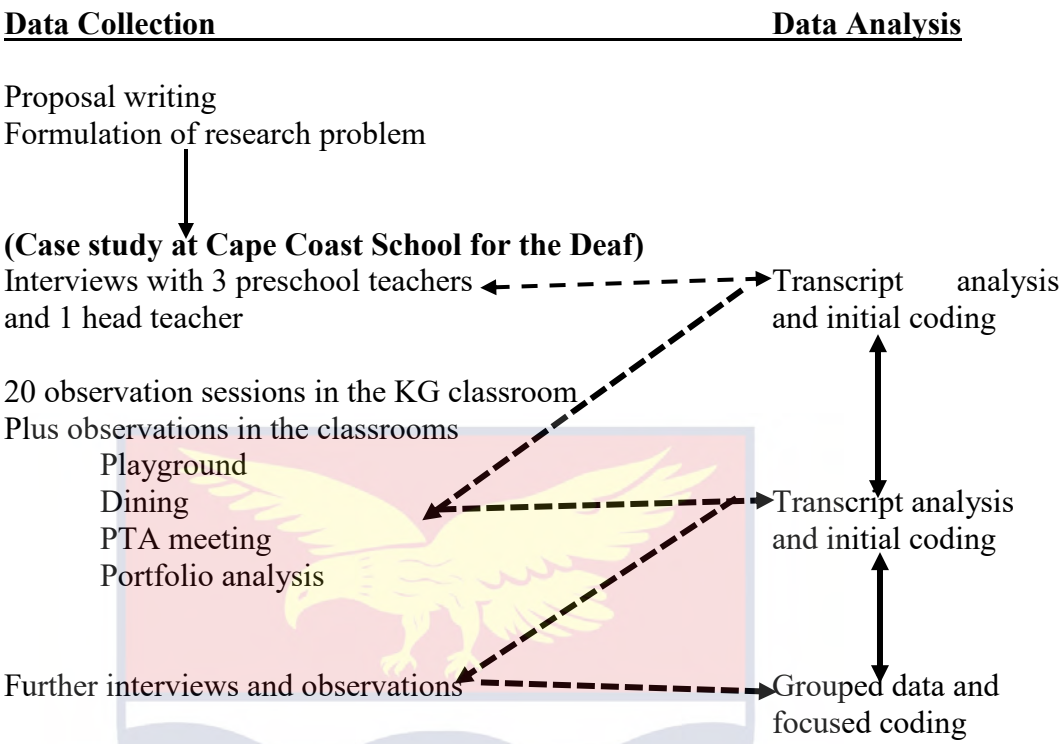


Figure 3: Initial Data Collection Procedure.
Source: Researcher's own construct, 2019.

Final phase

The final phase of the data collection was driven by theoretical sampling which continued from August, 2017 through to the end of December, 2018. The data collection period was intentionally kept open in order to continue data gathering until theoretical saturation was achieved. During the final phase of the study, my understanding of the data, and the emergent concepts gave rise to the need to collect further data in relation to which participants to select and areas to sample. Consequently, five additional schools namely Sekondi School for the Deaf in the Western region; Tetteh-Ocloo State School for the Deaf in the Greater Accra region; Savelugu School for the Deaf in the Northern region; Wa School for the

Deaf in the Upper West region and Gbeogo School for the Deaf in the Upper East region of Ghana were sampled for further interviews and observations.

In each of the schools, two teachers were actively interviewed. The interview guide developed for the study was used to interview the teachers on specificities such as what they basically do in the classroom to facilitate sign language acquisition of deaf preschoolers. I was particularly interested in the ideas they held about their responsibility towards the language development of children who are deaf. The interviews with the teachers across the selected schools warranted further interviews. For instance, one of the core categories that demanded additional sampling was *language disorientation* which brought out issues from the home environment and refocused attention on hearing parents of children who are deaf.

I paid visits to the homes of two children who are deaf to observe the interactions between them and their immediate families. I spent ample time with the children who are deaf and their families to ascertain the environmental characteristics that supported their sign language development. In that way, I understood the family network that existed among them which also deepened my appreciation of the background of most children who are deaf at school. Since data collection was driven by the emergent categories, I sought information from places I could find. Thus, I also asked from friends and family who had some knowledge about sign language development of children who are deaf.

As I gathered data to fill up some of the properties of the emergent core categories, I constantly kept a field note in which I developed memos and made

cases for follow ups. I also wrote down how each interview session had been conducted, how the respondents felt, their mood and emotions as they spoke about their deaf pupils which became very useful during the data analysis (see Figure 4)

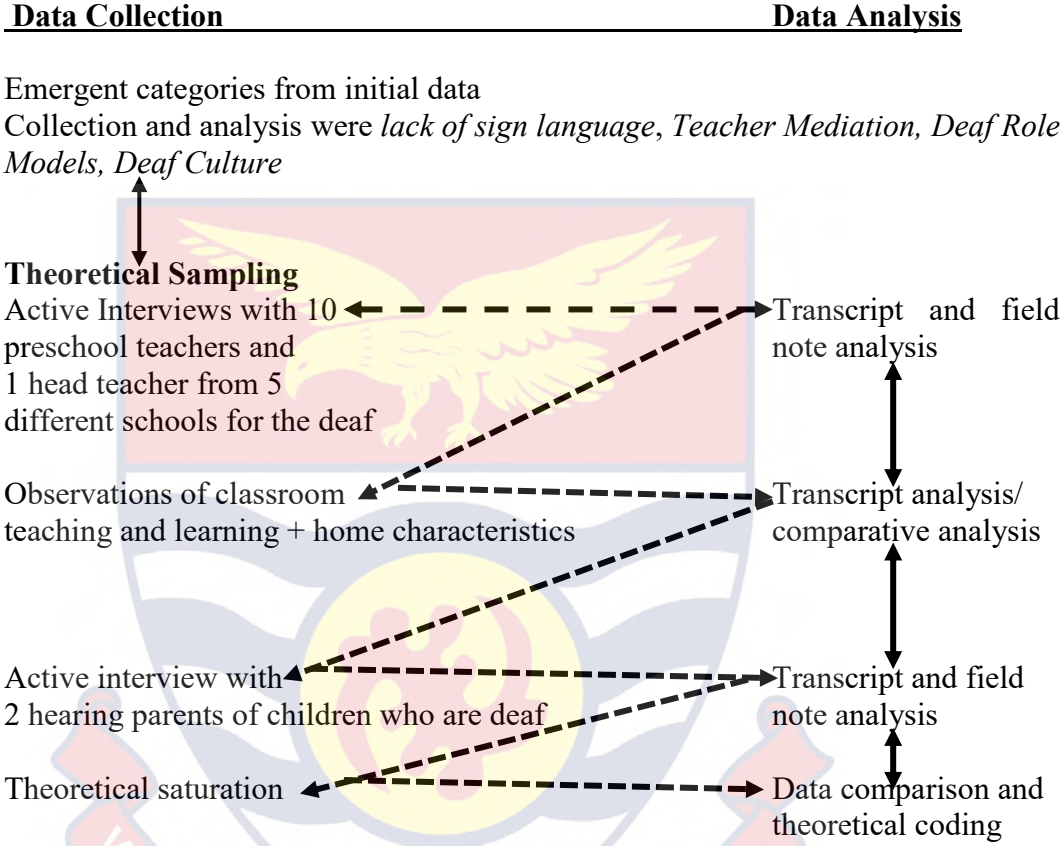


Figure 4: Final Data Collection Procedure.
Source: Researcher's own construct, 2019.

Data Analysis

Unlike many qualitative research designs, grounded theory prescribes well defined strategies for analysing data to generate a theory. This involves the use of constant comparative analysis during the coding process where analytic properties of codes are identified to illuminate actions, processes and potential theoretical meanings. Although Glaserian grounded theory insists on doing the analysis uncontaminated by prior disciplinary knowledge, constructivist grounded theory accepts the use of prior knowledge and disciplinary perspective into

conceptualising issues at the beginning and later use of new theoretical interpretations while interrogating the data for emerging analyses (Charmaz, 2008). Thus, the data I collected were transcribed simultaneously and comprehensively (see Appendix K) to follow the suggestions made by Charmaz (2008).

This process allowed me to familiarise myself with the content of the data. The recordings of the data were played and checked against the transcripts for accuracy and to ensure a fundamental understanding of the processes that were taking place within the data. Errors that were found in the transcriptions were immediately corrected. I also checked for the completeness of data and assigned pseudonyms to the responses. I have incorporated some of these verbatim responses of the study participants in reporting the analysis of the data in the chapter four of this thesis to give evidence of inductiveness of the emergent theory. These verbatim responses have been presented in italics.

I did not alter the responses of the participants, so all the grammatical errors in the participants' responses remained unchanged. However, for clarity of the context, I have made some insertions to complete some of the responses in order to maintain the major ideas. These have been indicated using parenthesis [ ]. Some of the respondents' gestures and mannerisms during the interviews have been put in brackets ( ) to maintain the inherent ideas. Ellipsis … have also been used to indicate omission of some reported speech. The data analysis process involved the adoption of the constant comparison analysis method (Goulding, 2017) during the initial, selective and theoretical coding stages in order to arrive at the substantive theory of the study.

Constant comparative analysis

Grounded theory is iterative which means that data is moved back and forth during the research process. I used the constant comparative analysis method to facilitate the emergence of concepts and to ensure that the coding process maintained its momentum (Goulding, 2017). This involved comparing data with data and labelling data with active verbs. After grouping and selecting focused codes, I compared data with the focused codes which I raised to analytic categories. I then compared data and codes with the analytic categories. At the next stage I moved from the categories to an analytic stage of the analysis where I constructed theoretical concepts from abstract categories and then compared categories with concept. Finally, I compared concept with concept.

In the process of analysing codes through to the conceptualisation stage, I identified the similarities and the differences that existed in the data. For example the code *misunderstanding* was judged similar to *confusing, and frustrating* and other codes in the data. This process enabled me to move from the descriptive level at the initial coding to concepts and categories at the selective coding stage.

Initial coding

The basic and most fundamental process in grounded theory is coding which can be done line-by-line, sentence-by-sentence, paragraph-by-paragraph or even page by page (Jones & Alony, 2011). Charmaz (2006) advocates for a line-by-line coding to ensure that the analysis is truly grounded such that the higher-level categories and theoretical formulations that emerge are not fictitious or imposed but data-driven.

Transcription of data was quickly followed by sentence-by-sentence coding. I personally coded the transcriptions by hand in the right hand margin of the pages of the transcriptions. I read thoroughly through the transcript sentence-by-sentence and in the process asked myself questions such as "What is the data telling me?" and "What did the teacher mean?" For example, one of the respondents said "*because the deafness affect their brain".* I asked myself what the respondent meant by that statement "*deafness affect their brain"* and such questions as what characteristic of children who are deaf gave the study respondent such an impression? While teasing out these questions, I developed memos to describe what was happening in the data. The codes developed at this stage were largely descriptive labels that gave rise to low-level categories such as *misunderstanding, struggling, learning, influencing, facilitating, reinforcing, comprehending, imitating, initiating, adjusting, replacing, refocusing and visualising*. Some of these initial codes have been presented in Figure 5.

Memo writing

Memo writing is a crucial aspect of grounded theory research especially at the initial coding stage of the data analysis (Charmaz, 2006; Goulding, 2017). Its purpose is to enable the researcher to reflect and probe into the efficacy of the emergent categories and to help move the theory to a more abstract and theoretical level. Basically, it is the "self-talk" that helps the researcher to take the emergent codes apart and analyse them thoroughly to bring out what they mean. In the process of writing memos, the researcher is free to explore ideas, scrutinise and improve codes, make conjectures, examine assumptions and express doubt all with

the intention of developing the emergent categories to the analytic level (Charmaz, 2015). The initial coding generated many codes which needed further exploration and expansion.

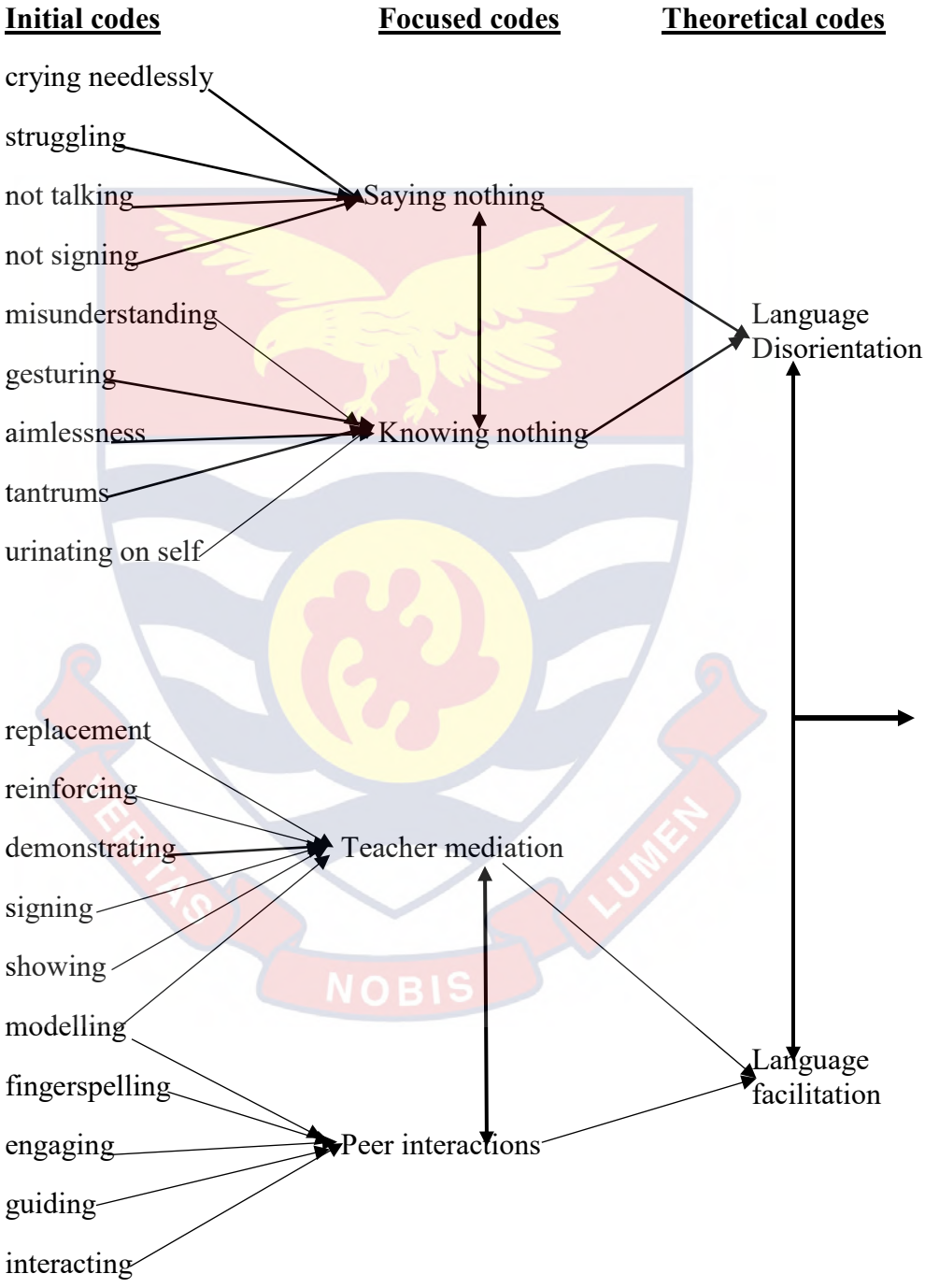


Figure 5: The Coding System Adopted For The Study.
Source: Researcher's own construct, 2019.

As I did the initial coding I asked myself many questions. For example, in developing the initial code *facilitating,* I asked myself: "What might this code assume? Under what circumstances would this code hold? Does it have similarities with other codes in the data? In all of this self-talk, I wrote my thoughts down which helped me to move from the descriptions of the experiences in the data into a more conceptual analysis of it. For instance, after coding teachers' responses, and taking myself through self-reflection, I realised an aspect of the teachers that was embedded in data. The memo I wrote is presented in Figure 6.

Memo

The teachers believe that they are partly responsible for helping deaf pupils to acquire sign language. They believe that it is their duty as teachers to help deaf children to build on their idiosyncratic homemade signs into sign language. They believe that deaf children begin school with no sign language and therefore it is their responsibility to help them learn the sign language through their classroom teaching and learning activities as well as visual instructional strategies. Their philosophy is that sign language is a language of deaf people and should be taught to them. However, they do not consider themselves as the ones to teach sign language directly to deaf children because they do not see themselves as sign language teachers. They therefore, think that a special teacher should be tasked to teach sign language to deaf pupils to complement their role as classroom teachers.

Figure 6: Memo Written During Data Analysis.
Source: Researcher's construct from data collection, 2019.

Focused coding

The next stage of the coding process was the focused coding Charmaz (2015) and Getaneh et al., (2015) which is more selective, directed and conceptual. According to Charmaz (2006), focused coding refers to taking earlier codes that continually reappear in the initial coding and using those codes to sift through large amounts of data. Thus focused coding is less open-ended and more directed than line-by-line coding. I must admit that the focused coding was not a straight forward process.

After the initial codes were identified, I applied them to the rest of the data to arrive at more focused codes. I realised that some of the codes resonate with other initial codes which made such codes more focused. I used the focused codes to organise many descriptive pieces of data into 6 categories. These categories contained codes that had overriding significance in explaining the process of sign language acquisition among deaf preschoolers in the classroom. After the focused coding, the categories that emerged were *saying nothing, knowing nothing, doing nothing, teacher mediation, deaf role model and peer interactions.* I then began to look for conditions or codes that sustained the categories and how they related to one another in order to identify the core categories as shown in Figure 7. Once the core categories were identified, they became the centre of attention and further guide to collect more data using theoretical sampling.

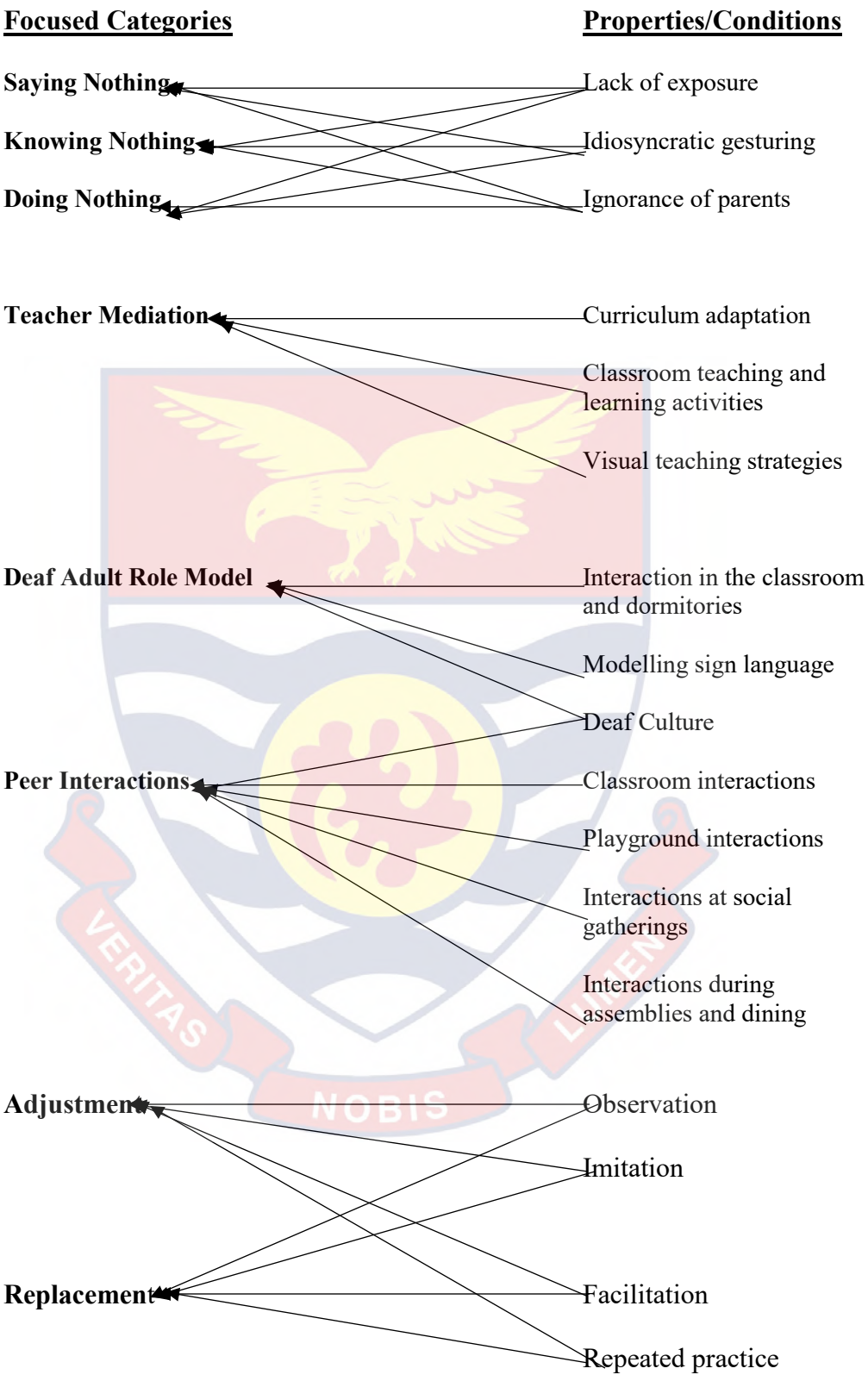


Figure 7: Properties/Conditions of the Focused Categories.
Source: Researcher's own construct, 2019.

Theoretical coding

The last stage of the coding process in constructivist grounded theory is the theoretical coding (Charmaz, 2015) which enables all the core categories to emerge. The core categories are the terms and concepts derived from the conceptualisation of the focused codes which carried a common underlying idea (Charmaz, 2015). I developed the core categories out of the six (6) focused categories. The four core categories identified in this study were *language disorientation, language facilitation, language adjustment and language replacement* (see Figure 7) which were further saturated through theoretical sampling. I gathered further data to fill out the properties of the core categories. For example, the core category *Language disorientation* had properties such as parents' characteristics, lack of sign language exposure and idiosyncratic gestures. I also used the theoretical sampling to gather further data on *language disorientation* as a concept and to move it from mere description to a more analytic level. Thus, the core category represented the predominant themes raised by the respondents and not necessarily an *in vivo* term, although *in vivo* codes taken verbatim from the respondents is an ideal practice in constructivist grounded theory (Charmaz, 2015).

Throughout the theoretical coding, I was still engaging myself in "self-talk" which helped me to develop a conceptual framework that explains the substantive theory. I have discussed the theory in chapter four of this thesis. The entire coding process followed a similar codes-to-theory model by Saldana (2009) as shown in Figure 8.

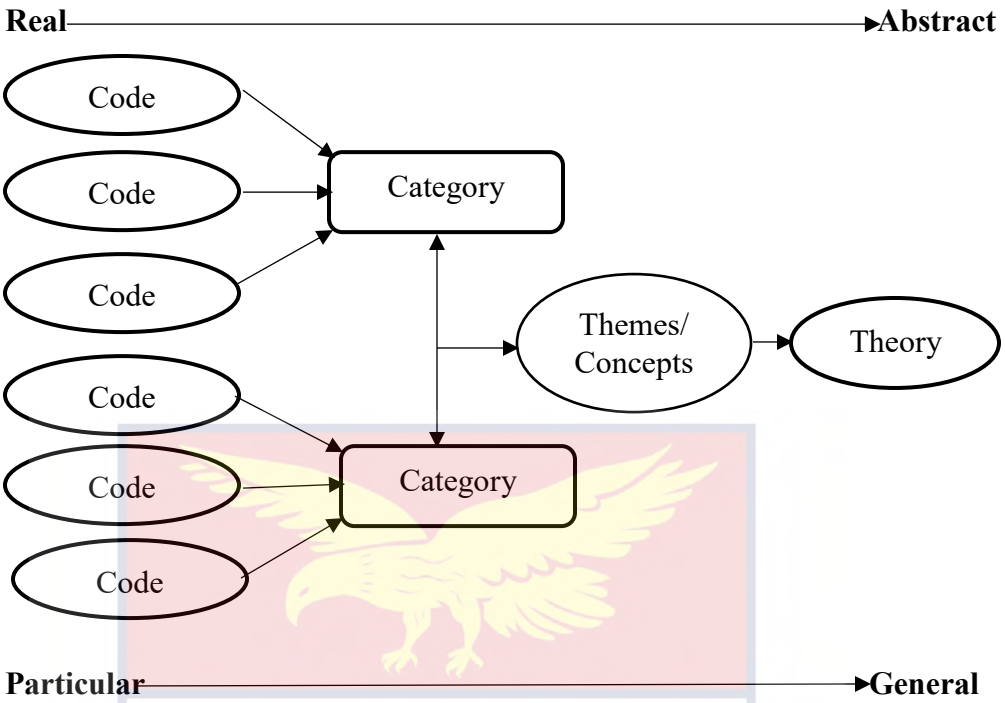


Figure 8: Codes-to-Theory Model.
Source: Saldana (2009, p. 12).

Generating the Theory

The logic of grounded theory lies in its inductiveness (Charmaz, 2006; Glaser & Strauss, 1967). However, according to Corbin and Strauss (2008), the heart of developing a grounded theory is using both inductions (deriving categories) and deductions (making hypothesis about the relationships between the categories). This means that grounded theory may not be purely inductive but abductive; a process of forming an explanatory hypothesis that can be confirmed by the data through both induction and deduction (Suddaby, 2006).

Therefore, to develop a theory that was grounded in data, I collected and analysed data simultaneously and iteratively. I inductively developed the codes and categories out of the data. Specifically, at the initial coding stage of the analysis, I labelled each sentence with gerunds that gave vivid descriptions of the pieces of

data. This process yielded over 500 initial codes. I then looked for the similarities among the initial codes and grouped them into categories. For the initial piece of data, I generated six (6) categories during the focused coding. I continued to refine these categories by checking them empirically against other categories and set of data which moved the categories from descriptive to theoretical levels. I also looked for the properties of the categories to identify the conditions that sustain them within the data. For the category *teacher mediation*, for example, I compared within the data to identify its abstract properties which I identified as *curriculum adaptation, literacy lessons* and *visual teaching strategies*. At the theoretical level of the theory, I compared the categories against other categories in the entire data set to come up with theoretical concepts using a deductive approach. Thus, I used both inductive approach at the descriptive level and the deductive approach at the theoretical level to arrive at a framework that explains the phenomenon in the substantive area.

During the process of developing the theory, I maintained a strong connection with the empirical data and offered an abstract, conceptual explanation of the sign language acquisition process of children who are deaf within the school setting. Throughout the process of data collection and analysis, I engaged in constant comparative analysis and developed memos to maintain the purity of the categories. Hence, the substantive theory that emerged is traceable to the empirical data.

Criteria for Evaluating Grounded Theory

Perhaps one of the biggest challenges that confront qualitative researchers is how to assure quality and trustworthiness of their research. Consequently, many solutions have been proposed over the last two decades to identify appropriate qualitative criteria (Finlay, 2006). Lincoln and Guba (1985) propose four criteria for naturalistic research which have greatly influenced how trustworthiness is measured in qualitative studies. They linked their four criteria with the four criteria usually found in conventional quantitative inquiry which include internal validity (credibility), eternal validity (Transferability), reliability (Dependability) and objectivity (Confirmability).

However, in grounded theory methodology, Giske and Artinian (2007) mention four criteria that are usually followed to ensure trustworthiness of the emergent theory. These include fit, work, relevance and modifiability. The first criterion is fit which judges how categories are generated from empirical data and not forced or selected out of any preconceived ideas. It requires that the categories are constantly validated by fitting and refitting them to the data until an emerging theory is obtained from the data. The fit is therefore considered the most important and fundamental criterion for evaluating validity and truth in grounded theory research.

The second criterion is work which states that the grounded theory must be able to explain what happens in the data, predict what will happen, and interpret what is happening in the area (Giske & Artinian, 2007). As Glaser (1998) puts it, workability in grounded theory relates to how well a theory accounts for what

participants believe. The third criterion is relevance which states that a theory must allow the core problems and processes in the area to emerge in order to have a good grab of participants experiences in the substantive area (Giske & Artinian, 2007). The fourth criterion is modifiability which also states that grounded theory must have a partial closure such that new ideas and more data can be collected to modify the theory which simply means that the emergent theory is an ever-ongoing process that can be modified (Glaser, 1998).

Generally, to conform to rigor in qualitative research, I used the instruments systematically to ensure that they yielded credible and dependable data. Therefore, the interview guide had the same sequence of questions for all the teacher participants (Silverman, 1993). All the recordings of the interviews were transcribed and checked thoroughly to make sure that all errors, omissions and insertions were corrected (Gibbs, 2009). This also involved checking the accuracy of some of the information again with the respondents.

The teaching and learning activities in the preschools were also recorded, with permission from the teachers, to avoid rush in the analysis and to give me the space and time to reflect on the video and to give accurate account of the findings. I used a respondent validation, also known as member-checking, to reduce subjectivity and to improve on the accuracy, credibility as well as the dependability of the data. I cross-checked with the participants to confirm the accuracy of their narrative responses and the interpretations made out of the interviews and the observations (Angen, 2000).

Ethical Considerations

Since it is expected in grounded theory for researchers to be ethical by following certain principles related to participants' confidentiality, anonymity and safety, prior to the study, I undertook an online training course in "*Protecting human research participants from the National Institute of Health Office of Extramural Research"* and attained a certification number (1784567) (see Appendix L). This web-based training improved my knowledge about human subject protocols and made me mindful of the ethical issues during the data collection. Importantly, I sought ethical clearance for the study from the UCC Institutional Review Board and was granted implementation of research protocol with ID (UCCIRB/CES/2017/29) as shown in Appendix M.

Furthermore, consents of the participants were sought using consent form (see Appendix N) to ensure free participation. The participants were personally assured of confidentiality and anonymity. Therefore, I made sure that pseudonyms such as *Teacher A,* were used in the analysis rather than the actual names of the participants (Creswell, 2012). Subsequently, I handled the transcriptions carefully and constantly made comparisons to them. I saved all the transcriptions on my personal computer which I locked with a password. All the classroom recordings of the teaching and learning activities as well as the pictures taken during the data collection period were also treated with confidentiality. The faces of all the individuals found in the pictures that were used in the thesis were obscured to ensure anonymity.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter begins with an outline of the ecology of the school for the deaf in Ghana and the profile of the preschool department of the Cape Coast School for the Deaf. It also describes the school ecology as intervention to sign language acquisition difficulties of children who are deaf. In line with the main purpose of the study, data were gathered to answer four specific research questions. The findings of the study have been presented and discussed concurrently in a way that explains the theory of sign language acquisition of children who are deaf and not according to the research questions. Therefore, this chapter first presents the core categories that emerged from the coding process of the data followed by their sub categories and properties/conditions which have been presented in an analytic story in reference to the literature.

Ecology of the Schools for the Deaf in Ghana

Six schools for the deaf including Cape Coast School for the Deaf were investigated to understand the ecology of the schools for the deaf in Ghana. Observations and interviews were used to explore the school environment of the various schools for the deaf and to seek answers to questions emanating from the initial data collection and analysis from the Cape Coast School for the Deaf (Charmaz, 2017). This was possible because grounded theory methodology permits the use of case study in the research process (Allan, 2003). Hence, Cape Coast School for the Deaf was the focus of the study. The findings have been presented in themes as follows:

Duration of schooling

It was discovered from the study that there are 13 schools for the deaf in Ghana located in some of the 16 regions of the country. These basic schools for the deaf follow the same basic education programme of Ghana Education Service, just like their regular counterparts but with some adaptations. For example, the basic education programme of 11 years of formal education made up of two years of kindergarten education; six years of lower and upper primary education and a three-year junior high school education is run for 12 years in the various schools for the deaf.

At the kindergarten, deaf pupils may take up to four years to complete the two-year kindergarten programme prescribed by the Ghana Education Service. Although deaf pupils may spend the same six years in the primary school just like their regular counterparts, they are made to spend an additional year at a pre-JHS class before they enter Junior High School (JHS). This is because, as the study revealed, their progress from the kindergarten to the JHS largely depends on many factors that include their own abilities and competencies. It appears that deaf pupils' ability to understand classroom lessons in an accessible language is key to their academic advancement which also depends on a good language foundation. This finding is well captured in the following interview response:

> *As for them they…you know…deaf so they don't go through the normal years……when they come to the nursery some can take like four years before they get promoted to class one. And here too we have one year pre-JHS before they are promoted to JHS*

proper…Yes it is to prepare them because it takes a long time to cover the syllabus and the teachers will tell you. Sometime they take months to cover a topic that may take a week to teach in the normal school. You know when the children come, they don't know how to talk and they don't sign so the school tries to help them by adding up the years. But if some of them are good we promote them fast especially at the kindergarten when they learn the sign language fast and they can write, they are promoted to the next class quickly. **(Head teacher 1).**

Curriculum

Schools for the deaf use the same basic school curricular designed by the Curriculum Research and Development Division (CRDD) and supplied by the GES to all public schools in Ghana from which syllabuses are developed for classroom teaching and learning activities. This is evidenced by the following teacher response:

Oh as for here we do the same thing…maybe it is only the sign language that is different. The textbooks are the same. Yes! The curriculum is also the same. That is what we all use to teach here. There is nothing different here…That is the issue, my brother…these children nobody cares about them… **(Teacher G).**

Certainly, the fact that schools for the deaf use the same curriculum just as regular schools means that deaf pupils are taught the same number of subjects. As

one of the teachers indicated, deaf pupils are only exempted from taking French and Ghanaian languages because those are subjects that require hearing abilities.

> *As for us we follow what is in the curriculum for kindergarten children but when you go to the primary and the JHS that is where they do other subjects like BDT. We we don't do it here… here the deafs don't do languages subjects like French….No they don't do any Ghanaian languages here, only English and sign language we use here, because they can't hear.* **(Teacher G).**

The study further gathered that irrespective of their hearing disabilities hence their special needs, deaf pupils are expected to access education provided for them in the classroom and from the textbooks and give the same level of output just like their hearing counterparts in the regular schools as if they have no exceptionalities. This statement is supported by the following interview response:

> *We teach them the same things so the government expects them to pass and pass well but most of them can't pass. They have disability and so they can't learn like their friends in the normal school. Sometimes, one thing you have to teach and teach and teach before they can understand. They also easily forget things. Sometime I can use one day to teach in the normal school, you have to use about two weeks to teach it. Even in the exams if you don't read to them and explain it to them they will*

not get it and they will write the wrong things for you **(Teacher I).**

Hence, in the various school for the deaf, teachers practise curriculum adaptation in order to teach effectively to their deaf pupils. The curriculum adaptations the teachers make in the schools for the deaf seem to have effect on language acquisition among children who are deaf. More light has been thrown on this subject in the subsequent pages of this thesis.

External examination

Schools for the deaf are also required to sit the same set of external examination; the Basic Education Certificate Examination (BECE) with their regular counterparts and are expected to have the same required number of passes in order to make it to the next level of education. Lessons are strictly taught from the regular textbooks supplied by the GES and teachers are expected to make effective use of them. The language of the textbooks are written in English language and deaf pupils are expected to have full access to the linguistic content of lessons provided for them in such textbooks. The following interview response throws light on that:

They don't do well at the BECE because they don't understand the way the English is written. You know before I became the headmaster here, I did not understand some of the issues here. At first I did not understand why they should get an interpreter at the exam hall but now I see it is necessary. Sometimes they know the answers to the questions but they don't understand the

question because they don't understand the English…but they need the English to write in order to pass, so it is really a challenge, the last time we went for meeting the issue came up…until something is done about it the [deaf] students will continue to fail… **(Head teacher 2).**

The assumption from this piece of data is that deaf pupils are required to master the English language and give the same language output just like their hearing counterparts in regular schools as if they have no exceptionalities. Perhaps, that is why the schools for the deaf practice a system of teaching and learning that is similar to the one practised in regular schools. In the kindergarten classrooms of deaf pupils, focus was thrown on literacy and numeracy acquisition which assume similar teaching and learning methods practised in regular kindergartens. Classroom teaching and learning situation at the preschool for the deaf has been discussed in detail in the subsequent pages of this thesis.

The medium of instruction

The official language used in the schools for the deaf is English although lessons are taught in sign language. Sign language which is the major means of communication and a medium of instruction is not part of the school curricular and so it is not officially taught as a subject. This is evidenced by one of the interview responses:

We use sign language to teach. Even the English language we teach them we use the sign language. That is their language. No the sign language is not part of the syllabus and so we don't

> *teach it. But the school sometimes makes arrangement, for example at the PTA meeting, one of the deaf teachers can teach some sign language before the meeting start. But we use the sign language to teach in the classroom. Yes, we can use the sign language to teach all the subject, the English and the maths we use sign language* **(Teacher H).**

Consequently, children who are deaf access education provided for them in English language using sign language. According to the teachers, this language situation poses some learning difficulties deaf pupils may have to grapple with as they access education from the schools:

> *They don't understand the English that we speak, as in they can't read it…some of the good ones can read the words but they sometimes don't understand. In the exams, they know the correct answer but how to know that this what the question is saying it is difficult for them. As for here we read the questions to them in sign language. For example we say "draw a pineapple and colour it. They know, they know but they don't understand the English as in the "draw"…We teach them but they forget. So you the teacher you have to explain it to them before they can understand it* **(Teacher C).**

School deaf culture

Manual communication (the use of sign language to communicate), as the observations revealed, permeates the entire environment of the schools for the deaf

such that it creates an atmosphere of deaf culture which exists anywhere two or more deaf people engage themselves in sign language. Take for example the following personal observation remarks:

> *The deaf pupils seems to engage in a pattern of behaviour that could be considered as a way of life. The language they use is patterned with jargons and some repetitive behaviours that are peculiar to only deaf people such as expressing anger or demanding an item* **(Observation remarks, July, 2017).**

In the schools are also older peers and teachers who engage the deaf in sign language communication and model the correct means of sign language communication to deaf preschoolers. I term as "More Knowledgeable Other". These knowledgeable individuals within the school together form what I term as school deaf culture which influences sign language acquisition of children who are deaf and therefore serve as agent for socialisation and reorientation. It was gathered from the study that older deaf peers as well as deaf teaching assistants in the school transmit the cultural elements including school traditions and customs to deaf preschoolers.

The general situation at the various schools for the deaf directed the study to focus on the preschool department to acquire a vivid picture of the characteristics in the preschool environment that influence sign language acquisition of children who are deaf in Ghana. As stated in chapter three (page 98) of this thesis, Cape Coast School for the Deaf was used as a case study to probe into preschool education of the deaf. Data gathered from the case study school were confirmed

with data from five other schools of the deaf from across the country using theoretical sampling. The data from the case study has been used as extreme sample from which inferences have been made in this section of the thesis.

The Profile of the Preschool Department of the Cape Coast School for the Deaf

At the preschool level where the study placed a major focus, data proved that the number of teachers at the preschool department of Cape Coast School for the Deaf was five but the study purposively sampled only three of them for data collection. All the three teachers were females which seems to suggest a typical gender distribution of teachers at most preschools in general. Out of the three teachers, one of them was deaf. All the teachers had taught on average of 5 years at the preschool. The longest number of years a teacher had served at the preschool was 14 years while the others ranged between 4 and 9 years. All the three teachers had the minimum professional qualifications. However, only two of them held a bachelor's degree in special education. The remaining one did not have special education background. All the three teachers had not received any special teaching or INSET training for the past two years.

It was also gathered that there were 78 pupils at the preschool department of the Cape Coast School for the Deaf. KG 1A was made up of 28 pupils comprising 15 boys and 13 girls. KG1B was made up of 26 pupils including 16 boys and 10 girls. Sixteen boys and eight girls constituted the KG2 class. This piece of data shows a common practice of having a class size which according to the Ministry of Education (2002) should not exceed 30 pupils. However, Gadagbui (2013) opines that a class size of children with sensory impairment exceeding 15 pupils could be

considered as inappropriate because it does not allow the specific needs of children with sensory impairment such as deaf, to be met adequately.

Heward (2013), for example, is of the opinion that persons with disability such as deafness need customised methods that are unique to meeting their language needs in classroom teaching and learning situations. Hence, a class size of 30 pupils may be ideal for regular pupils but might pose teaching and learning challenges in the classroom of deaf pupils because of their special needs which may require individualised attention such as making sure that concepts delivered in sign language are understood. Undoubtedly, this requires time and attention hence the need for a smaller class size in order for teachers to facilitate the learning process effectively.

The classroom sitting arrangement, as seen in preschool classrooms of the Cape Coast School for the Deaf was in rows and columns which again suggests a regular practice but goes contrary to the horseshoe or crescent sitting arrangement which Gadagbui (2013) believes should characterise a classroom for deaf pupils. Hence, unlike the rows and columns sitting arrangement which may hinder deaf pupils from seeing the manual communication of their teachers and peers, the horseshoe or crescent sitting arrangement may allow deaf pupils to sit in semicircles with their teachers in front of them. In this sitting arrangement, the teachers may be seen by their pupils from all angles of the sitting positions which importantly may enable deaf pupils to have visual access to the sign language used in the classroom. The horseshoe or crescent sitting arrangement may also allow deaf pupils who have

residual hearing to benefit from lip reading by focusing on the lips of their teachers if the school practise a total communication approach in the classroom.

All the kindergarten classrooms of the Cape Coast School for the Deaf were spacious and well ventilated. The walls of the classrooms were spruced with pictures, diagrams drawn on cardboard depicting various items and concepts of the environment. The kindergarten also had some teaching and learning materials such as charts, communication boards and pictures that were incorporated into teaching and learning process to enhance visual communication of deaf pupils.

However, it was gathered that classroom seats were inappropriate as most of the chairs did not match the age of the deaf pupils who use them (see Appendix O). It was gathered from the teachers that this problem is aggravated by the fact that some of the pupils are brought to school late, at the time when they have outgrown the nursery desks. Another thing missing in the preschool department of the Cape Coast School for the Deaf was learning centres/libraries. It was observed that in all the kindergarten classrooms, there were rooms designated as libraries but lacked the resources such as books although the Ministry of Education makes recommendations to that effect (MOE, 2002).

Data gathered at the preschool department of the Cape Coast School for the Deaf indicate that the guidelines set by the Ministry of Education for kindergarten education appears to be followed. For instance, the Ministry of Education directs that kindergarten education should pre-dispose children to conditions of formal schooling in order to accelerate the learning process during formal education (MOE, 2002).

Ministry of Education (2002) demands that all kindergartens must have entry age of 4 years for kindergarten 1 and 5 years for kindergarten 2 with a class size not exceeding 30 pupils with 6-8 school hours. It further requires that the curriculum at the kindergarten level should include language development, drawing/writing, number work, music, drama and dance. Data gathered from the observations indicates that the kindergarten of the Cape Coast School for the Deaf follow a similar pattern except that there appears to be slight variation in practice. For example, the nursery school has been added to the kindergarten education in the Cape Coast School for the Deaf.

The preschool department of the Cape Coast School for the Deaf practise a two-year kindergarten education with nursery education inclusive. The two-year kindergarten structure was made up of three mixed ability classrooms; KG1A, KG1B and KG2. KG1A serves as nursery to new children who are deaf prior to their full enrolment into the preschool education. KG2 doubles as a preparatory class for deaf pupils who qualify to enter class one for primary education. All the classrooms at the kindergarten had two teachers each except KG1B which had a teacher and an attendant.

The kindergarten timetable follow a regular pattern of school hours from 8:00am to 1:30pm. On the timetable are slots for extracurricular activities such as Physical Education (play/sports). According to the KG1A and B teachers, the pupils were allotted enough time for play. However, observations revealed that their playground did not have enough playing kits as there were only two seesaws for the over 70 deaf preschoolers in the school. The head teacher confirmed that the

school lacked such necessary facilities such that the two seesaws in the school were a recent donation:

> *I really did not understand the situation in the schools for the deaf until I became head master….there is nothing for them. It's really sad. Even the few seesaws that you see are donations….* **(Head teacher 1).**

This situation may defeat an objective of early childhood education where quality playtime is key to children's social and language development (MOE, 2002). The likely implication is that most deaf pupil may be deprived of an appropriate social context for sign language development (Gosse et al., 2014).

Consequently, it was observed that deaf pupils were unsupervised during playtime which resulted in a number of casualties during the time of the data collection (June-July, 2016/2017). Older deaf preschoolers bullied the younger ones by either pushing them to the ground or pelting stones at them. When such incidence were reported to the teachers, they paid little attention to the victims because they were not able to give full account of the incidence. It was observed that the children who are deaf were unable to express themselves using sign language and mostly the gestural system they used to communicate to the teachers seemed unintelligible to them hence such issues of abuse were left unaddressed among these deaf pupils. Therefore, such abhorrent behaviours were frequently repeated and reported to the teachers without any controlling measures.

Admission to the preschool was open throughout the academic year. This is expressed in a statement of one of the respondents:

They are still reporting, even yesterday they brought one, one of them. So, they will report like that ahhh….. **(Teacher C).**

No they come as preschoolers. Because we will be admitting them the following term, the next academic year but they have to come around to familiarise with the school environment because this is a boarding school and most of them they have not had that experience before…so have to visit the school for a while to acclimatize themselves with the school conditions before they come **(Teacher B).**

The admission process followed a pattern similar to the one recommended by the Ministry of Education (2002) which states that admission should be open to all children including those with disabilities. It also states that no special examination or interviews should be conducted for the purposes of selecting children into kindergartens. Only birth certificates, health cards and immunisation records should be inspected. Those without such necessary documents should be assisted to obtain them. As part of the admission requirements, a medical report to confirm the child's deafness is required by the school.

Children who are deaf who sought admission without medical reports were referred to the various hearing assessment centres such as Speech and Hearing Clinic at Winneba and Korle-Bu Teaching Hospital. Take as evidence the following interview response from one of the teachers:

> *When they come and they do not have anything to show that their children are deaf we ask them to go to the hospital and bring a report showing that they are deaf…No, if they don't bring it we cannot admit them. So when they bring the report from the doctor before they are given the prospectus to go and buy. We don't take report from any one, we will tell you the specific hospitals you can go and get the assessment. For example you can go to Winneba or Korle-Bu* **(Teacher C).**

Consequently, admission into the preschool was made if the assessment report of the ward indicated deafness. The integration of children who are deaf into the classroom however, took a process of gradual sensitisation where children who are deaf were made to come along with their parents or caregivers to the nursery class at least once every week. The intent, as was explained by Teacher B, was to allow children who are deaf to acclimatise themselves to the preschool environment:

> *All we first have to make sure that the child can stay in the school. We just don't admit them. So we usually will ask the mother of the child to come with the child to school. Sometimes we make the mothers choose the day they are comfortable maybe Monday or Wednesday. First when they come they will sit at the back of the classroom with the child and observe. So she will do that for about one month then after sometime I will ask the mother to go outside and see if the child will cry. If the child doesn't cry then it means he can stay without the*

mother…Yes by then maybe he has gotten friends in the classroom, so small small the child comes to like school and the mother can now stop coming with him….Well, the seniors takes care of that, we also have house mothers. Some of the deaf are also here, those who have finished school and they have come back, they all help the little ones **(Teacher B).**

During the data collection period at Cape Coast School for the Deaf (June-July, 2016), I personally observed that the new comers who wore their house dresses were made to sit at the back of the classroom with their parents while regular classroom activities went on. Occasionally, the teachers asked the parents to leave the classroom with their wards left behind. This was to determine whether the children who are deaf had become acclimatised to the environment and were willing to be independent. This process was continued throughout the term depending on how quickly the children who are deaf responded to the environment and become acclimatised.

This practice at the various schools for the deaf confirms Ocloo et al.'s (2004) description of the process of admission into schools for the deaf. The old tradition of providing preschool education for children who are deaf with support from their parents before their full enrolment into boarding school facilities is still in practice at the various schools for the deaf.

When asked about the nature of pupils in their classrooms, the teachers indicated that their pupils were deaf and could not hear. They also admitted that some of their deaf pupils had multiple disabilities such as low vision and epilepsy

that impede progress of learning in the classroom. This assertion has been captured in the following interview response:

> *Yes! Some of them have multiple disability, intellectual disability, epilepsy…* **(Teacher A).**

> *As for these children a lot of them have multiple disability. This one for example has mental retardation but they have brought him here. But God is wonderful ooo. I have seen that school helps such children. When he came at first they told school that I can't teach him they should send him away but now see. Now he is better though he cannot do most of the things we do but I can see that he is improving* **(Teacher B).**

> *Some come with other sickness. That girl there can't see well. Some of the parents lie to the school that my child is only deaf but later we find that the child has other sickness. Some of them come and they have mental retardation. In fact some of them don't belong here but once they hear that there is a school for the deaf then they bring them here when they should be sent to the mental school* **(Teacher C).**

It was further confirmed through observation that some of the pupils at the kindergarten of the Cape Coast School for the Deaf had a form of disability such as visual, cognitive and physical impairments in addition to their deafness that posed

learning challenges in the classroom. As the teachers further indicated, the pupils also had mixed hearing ability such that some of the pupils could be considered as hard of hearing. This situation has been expressed in one of the responses from the teachers:

> *Oh some of them can hear! So we use the bell. You see that when they ring the bell some of them will tell their friends that is break time* **(Teacher C).**

By this statement, the teacher meant that some of the pupils were not deaf but hard of hearing. This finding validates the study of Deku, cited in Gyimah (2000) who conducted hearing assessment on pupils of the Volta School for the Deaf and found out that 27 out of 69 (18.6%) of the pupils were rather hard of hearing which in turn supports the general assertion that 20% of pupils who attend schools for the deaf are not deaf but hard of hearing (Offei, 2006).

This situation may suggest lack of proper assessment practices for children who are deaf in the country. Ametewee (2010) indicates that there is lack of comprehensive and non-discriminatory assessment of children with special needs in Ghana which could lead to wrong placement. The net implication is that children who are hard of hearing and could benefit from hearing aids and placement in the regular school setting would all be lumped up together in the various schools for the deaf in the country. The possible effect of this situation is that the language needs of both deaf and hard of hearing pupils may not be met adequately. This is because as Offei (2006) says, the medical, social and language needs of hard of hearing pupils are quite different from those who are deaf.

Offei (2006) further argues that wrong placement of children with hearing impairment may lead to unsatisfactory academic performance where hard of hearing pupils placed in schools for the deaf perform below expectation. Likewise, in the case of deaf pupils, when teachers are unable to effectively communicate in sign language to their deaf pupils in a way that meets their language needs, their academic performance may decline. This argument is in line with Heward (2013) and Humphries et al. (2016) who believe that sign language neglect of children who are deaf constitutes a form of harm that awfully affects their academic advancement. Hence, possibilities exist that the language needs of some pupils found in the preschool department of the Cape Coast School for the Deaf may not be met.

Generally, data gathered from the various school for the deaf indicated that the school serves as an intervention for sign language acquisition for most children who are deaf who miss that from home. The following category: "school as intervention" emerged from data collected from the various schools for the deaf.

The School as Intervention

Most of the schools for the deaf in Ghana have boarding facilities. This system of education allows children who are deaf to have more interaction with their peers and teachers than they would have with their families. The school setting and the type of education system it operates as well as the effectiveness of the teachers have effect on how children who are deaf learn sign language at school. Since most children who are deaf are in boarding facilities, the school ecology may exert high influence on them. The school may serve as the environment where the

poor language foundation and poor adaptive behaviours of children who are deaf can first be mitigated. It appears that until children who are deaf are brought to school, their exposure to sign language may be limited. Take for example the following response:

> *They come to school with no sign language. It is in the school here they come to learn the sign language. Sometimes when they come they cannot understand anything* **(Teacher A).**

> *They don't know anything about sign language, and they are now picking it* **(Teacher B).**

> *So when they come we give them the basics* **(Teacher F).**

These responses lay emphasis on the school as the key environment where children who are deaf first get exposed to sign language as seen in the above statement by Teacher A. Hence, children who are deaf learn sign language only when they are brought to school, a place where they begin to learn the sign language for the first time as indicated by Teacher B. Hence, the school serves as intervention to the sign language acquisition of children who are deaf.

The school also becomes the environment where children who are deaf begin to learn essential daily living skills such as toilet training and bathing for the first time. This has been expressed in the following interview response:

> *Some of them even came to learn how to bath from the school, in the house, nothing, I learnt there is a small girl, how to send food*

to the mouth is not very easy, we have to hold the child to pour water and food into his or her mouth before she became used to eating by herself, so these are some of the challenge **(Teacher E).**

…So when they come here, at the beginning, they learn how to wash their face, brush their teeth and to bath. It's something that they are learning, in developing those skills step by step, when they grow up they begin to know what is in the school, this and that, right and the bad, and they also learn how to interact in the environment and to control themselves with others in the environment **(Teacher E).**

Therefore, teachers become surrogate parents who support children who are deaf through a process of reorientation where children who are deaf learn sign language and daily self-help skills from the schools. Researchers have shown considerable interest in understanding language acquisition in preschool children because as Weigel, Lowman and Martin (2007) explain, preschool years are a time when language abilities arise and mature. According to the authors, it is in the first three years, at the time when children who are deaf begin preschool that their language competences are harnessed.

Ultimately, the school ecology becomes a crucial environment where children who are deaf can get the opportunity to learn sign language. The picking of language from the school shows that teachers are positioned to offer high-quality

preschool strategies and experiences that support sign acquisition of children who are deaf. This situation corroborates the views of Lonigan et al. (2011) and McCabe et al. (2010) who believe that the school ecology can serve as vehicle through which the language skills of children are developed. The school for the deaf is the primary environment where children who are deaf get early exposure to sign language because they mostly miss language acquisition from home. The school therefore seems to be a crucial endpoint to sign language development of children who are deaf.

However, most children who are deaf are admitted to school late, far beyond the critical period of language acquisition. Majority of the deaf pupils in the schools for the deaf began school older than four years which suggests that most children are denied early access to sign language. This situation has been expressed in the following response:

> *They don't come, they don't come at the normal age…so by the time they bring the child, the child is already old, grown passed the preschool age. For now, I will say… let's say from 5 years to….let say 12 years* **(Teacher B).**

On the average, children who are deaf begin preschool between the ages of 5-12 years and they find it difficult to grasp classroom lessons. For this reason, most deaf pupils still enter primary one with reading and writing problems. The lack of good language base at home seems to have a strong adverse effect on their later reading skills at school.

The late admission to school that characterises children who are deaf suggests a serious language problem at school. For example, Santrock (2004) and Robson (2002) indicate that language acquisition occurs within a critical period of children's development such that when language inputs are delayed or denied, it becomes extremely difficult or even impossible to gain functional proficiencies of it in later years. Therefore, since the school environment intervenes for poor sign language foundation of children who are deaf and yet most children who are deaf begin school late, the net effect is severe (Humphries et al. 2016). This is because language acquisition occurs during a critical period which Santrock (2011) labels as 0-5 years. Thus, children who are deaf who wait till they are 7 or 12 years before they are enrolled in school will have to bear the brunt of language deprivation. Lederberg (2006); Stokoe (2005); Marschark (1993) have explained that by age 5 years, typical children who are deaf who have been exposed to sign language should be able to use signs that show order and semantic relations and not idiosyncratic gestures. They should be able to use classifiers to represent objects and make accurate signs to initiate conversation.

This means that by the time children who are deaf begin preschool, they should be able to make accurate handshapes and use varied inflected verb forms to indicate direction or agreement. By this same time, they should be able to use more complex signs and use non manual marker more effectively for yes/no and Wh-questions as well as possessives (your, mine) and plural pronouns in communication (Stokoe, 2005). The point is that children who are deaf who get early exposure to sign language should be able to refer to things around them during

conversations and tell stories using complete sentence formation and facial articulations. However, data gathered from the various schools for the deaf indicate that most children who are deaf do not acquire such sign language skills from home by the time they begin school.

Children who are deaf facing difficulties with sign language do poorly at school (Humphries et al., 2016). They have restricted understanding of their world and are limited in their psychosocial and emotional adjustment (Gosse et al., 2014). For these reasons, Humphries et al. (2016); Humphries et al. (2014) and Marschark (2001) are of the view that children's inability to have full access to language in early years has devastating and permanent consequences. Therefore, children who are deaf are at risk of developing psychological and mental health problems if they fail to develop effective and sophisticated language at an early age. There is every indication that access to language by children who are deaf at an early age is crucial also to their cognitive development and school success.

These characteristics of pupils who are deaf make the school ecology a pivot to their sign language development. The school provides an avenue for language reorientation for children who are deaf who are language deprived and disorientated. This means that the school should provide children who are deaf with language interventions that promote high-quality sign language experiences including visual teaching and learning materials such as toys and other technologies for learning capable of enhancing the language abilities of children who are deaf.

PRESENTATION AND DISCUSSION OF THE MAJOR CATEGORIES

Research Question One

What situational characteristics of children who are deaf at school influence their sign language acquisition?

This section begins with the first research question of the study. The core category that emerged from the analysis of data on research question one is *language disorientation* which describes the poor language situation of children who are deaf at the time of admission to school.

Language Disorientation

Language Disorientation emerged as the core category from the data on the characteristics of children who are deaf at school that influence their sign language development. This category is supported by three subcategories such as *saying nothing, knowing nothing and doing nothing* which characterise children who are deaf at the preschool level. Conditions from the home environment such as ignorance of parents and lack of sign language exposure were the main properties of the core category. The subcategories have been depicted in Figure 9.

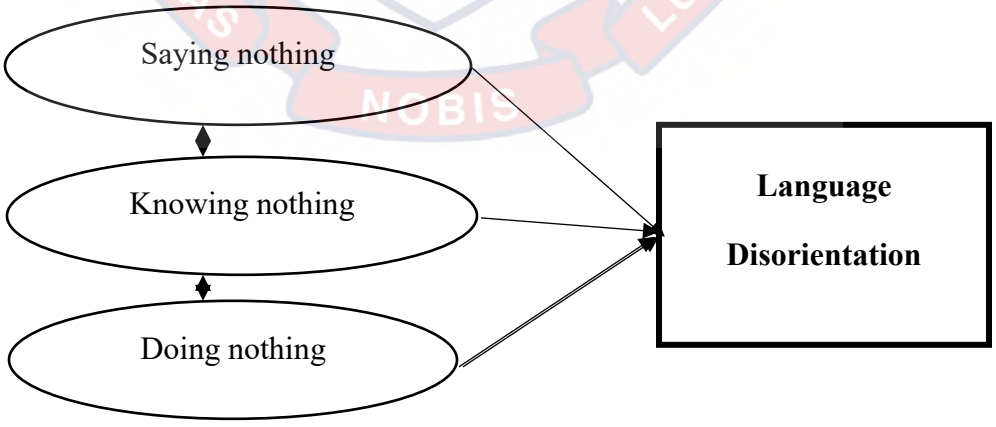


Figure 9: The Concept of Language Disorientation.
Source: Researcher's own construct, 2019.

Saying nothing

The first subcategory that explains the *Language Disorientation* is *saying nothing* which describes the lack of accessible language foundation among children who are deaf by the time they begin preschool at the various schools for the deaf. Data revealed that most children who are deaf begin school with no gains in both spoken and signed languages although typically, all children are biologically programmed to acquire language during early infancy (Santrock, 2011). This finding has been expressed in the following responses:

> *When the children come to school, they cannot speak, they cannot sign so we teach them their language that is the sign language. Initially, they refuse to do anything in the classroom, if you ask them to write they will refuse and some too will cry all day* **(Teacher E).**

> *It's true, because when they come they've not learned the language….but gradually gradually, and so….when you compare them to their hearing counterparts there are some things they can't do, telling stories and all that.* **(Teacher C).**

The teachers' responses imply the lack of sign language among children who are deaf who by the time of school age cannot *speak.* Children who are deaf's inability to speak at school may be due to their hearing impairment. The basis is that children who are deaf are unable to hear speech sounds from their home environment which means that they will not be able to speak. This is because they become handicapped

in employing phonological or speech-based codes in memory and so lack the knowledge of the structure of any spoken language (Marschark & Mayer, 1998). Since spoken language acquisition depends on good hearing (Gadagbui, 2014), children who are deaf find it difficult, almost impossible to develop spoken language at home which explains their lack of speech at school. Thus at the school, most children who are deaf have difficulty acquiring receptive and expressive language skills as depicted by the following statements:

> *Of course if you speak to them they will not understand you because they can't hear and they also can't sign. No, they don't know any sign language when they come…so it is difficult. They can't hear, they can't say anything* **(Teacher G).**

This situation corroborates the assertion of Easterbrooks and Stoner (2006) who believe that children who are deaf will generally have receptive and expressive spoken language difficulties just as this study found out.

Knowing nothing

The second subcategory that explains the core category; *Language Disorientation* is *knowing nothing.* Most children who are deaf begin school with little competencies in the necessary adaptive behaviours required for formal schooling such as self-help and practical skills. Adaptive skills are skills needed in everyday life in order to function and meet the demands in the environment. As expressed in one of the interview responses, many of the children come to school with *"nothing…"* and *"…they don't know anything"* **(Teacher E).** This idea is well captured in the following interview responses:

Because these children can't hear anything their parents just ignore them, and how to control the human waste becomes a big problem, when they come, they don't even know how to remove their pants too, they will just be there and the urine will be flowing from the pants which is not the best… **(Teacher B).**

As they say, this school is a special school and the children too we have handicapped, mentally challenged and all others are mixed, so when they come here they don't know anything but only to bath themselves and to brush their teeth is something they are acquiring from the school. Because, back in the house, most of them could not do anything, it's their parents who help them to do them **(Teacher E).**

These responses may indicate that children who are deaf begin school lacking the necessary daily living skills such as using the toilet and cleaning themselves. Perhaps, these difficulties at school may be associated with the lack of everyday family conversation children need to adapt to their physical environment. It seems to suggest that due to this lack of accessible language, children who are deaf lag behind in other developmental such as social and emotional development. In such situation, children who are deaf miss out on the language with which to communicate aspects of everyday living such as using the toilet or removing their dresses.

Hardman et al. (2013) describe adaptive behaviour as the effectiveness or degree with which an individual meets the standards of personal independence and social responsibility expected of his/her age and social group. The personal independence and social responsibility mentioned by the author cannot be met if children who are deaf are unable to use sign language to communicate freely within their social setting. Hence, the lack of language that characterises deaf pupils at school may be implicative in all the three elements of adaptive behaviour such as conceptual, social and practical skills. According to Hardman et al. (2013), the conceptual skills largely depend on children's use of receptive and expressive language skills which children who are deaf lack from home. Therefore, knowledge on other aspects of living such as money, time and number concepts and following rules or keeping personal hygiene may all be affected if deaf pupils do not develop accessible language early in their development. It is therefore understandable that the teachers describe children who are deaf as knowing nothing because their lack of language which hinders them from meeting the daily living standards as required by their age.

Doing nothing

The third subcategory *doing nothing* resonates with the subcategory *knowing nothing* which together explain the lack of knowledge of basic self-help skills which most children who are deaf fail to acquire from home before they transition to school due to language development difficulties. Hence, the basic activities children are likely to engage in such as using the toilet themselves with little or no supervision, cleaning themselves or knowing when and how to seek help

on these behaviours were lacking among deaf preschoolers when they first reported to school.

This is further clarified by the following interview response by one of the teachers:

> *As for these children you have to do everything for them. Because their parents don't teach them how to do that. They can do the simple simple things that every normal child can do… Oh at least, you by their age they should be able to use the toilet by themselves and dress themselves at least do some simple things for themselves. But they cannot do that. They can't tell you of their names. They can't I mean they can't do the things you expect them to do* **(Teacher H).**

This response buttresses other teachers' responses (Teachers B and E) mentioned above to indicate that largely due to the lack of sign language, children who are deaf exhibit behaviours that could be considered as maladaptive at school. Their inability to do basic things for themselves indicate that they have not been taught basic adaptive skills by their parents at home. This is evidenced by teachers' interview responses which indicate that this situation of 'knowing nothing" and doing nothing is not directly the result of their disability but their inability to develop accessible language at home to communicate these feelings and actions. The teachers blamed this on the negative attitudes of parents. Take for example the following response:

> *But some of them [parents] will just leave the children, they don't have time for the children, this is very bad, most at times*

too, they don't even teach the children how to bath… **(Teacher E).**

This response indicates that parents show very little or no interest in their children who are deaf such that by the time their children who are deaf are brought to school, they are virtually "empty". This situation directed the focus of the study to the homes of children who are deaf. Two different homes were sampled for the study although I had made personal observations in about 10 different homes of the deaf prior to this study. Data collected from the homes of children who are deaf indicated that parents' characteristics greatly influence the sign language development of their children who are deaf.

Parents' characteristics

The general suspicion is that most hearing parents of children who are deaf are not literate in the Ghanaian sign language which means they are unable to teach their children who are deaf sign language right from infancy or from the time when their children's deafness is detected. This is evidenced by the following personal observation remarks:

All the parents I have interacted with so far are hearing parents who do not understand sign language. They scoff at the idea of learning sign language. Some see sign language as a language of the deaf and since they are not deaf they might not acquire it no matter how much effort they put in to learn **(Observation remarks, August, 2017)**

This observation which was further buttressed by the composition of the PTAs of the various schools for the deaf which portrays a high suspicion that majority of children who are deaf have hearing parents. Although the study could not substantiate statistics of such hearing parents, interactions with them at PTA meetings show their lack of knowledge about sign language. Take for example, the following conservational remarks:

> *Eii, I don't understand sign language.* **(Parent derides the idea of learning sign language by laughing at the question of whether she has made effort to learn the sign language).** *There is no one to teach me. As for him we speak to him. Oh if you speak to him he can look at your lips or if you tell him "come" and he faces you, he will understand you* **(Parent 1).**

Hence, these hearing parents of children who are deaf lack the knowledge and the experience required to provide an accessible context for sign language acquisition among their children who are deaf. Therefore, a large majority of school-age children who are deaf do not acquire sign language before they enter school because their parents do not "speak" it.

Consequently, family interactions that are necessary for normal language development available to hearing children through family interactions is lacking among children who are deaf. Find for example, the following conservation remarks from one of the parents:

> *Well it is painful because if we all gather to watch TV or when we are talking they cannot hear so they are sometimes lonely.*

They like to be with their deaf friends. So when they go to school they have friends to do their sign language with **(Parent 2).**

This finding corroborates the study of Moores (2001) who reports that for the population of children who are deaf, only about 10% of children who are deaf are born to deaf parents who are literate in sign language and therefore get early exposure to sign language via their older deaf relatives. However, the majority 90% of children who are deaf are born to hearing parents and families with no older deaf relatives and therefore do not get exposed to early sign language.

Undoubtedly, the effect of this finding on sign language acquisition of children who are deaf is profound as seen in the following teacher response:

The parents themselves do not know the sign language….then they bring them here to learn. When the children come they don't know anything, they cannot do anything, and they refuse to do anything…sometimes the parents don't care and the children don't feel loved...like the feeling…they don't have **(Teacher F).**

The response suggests that because most parents of children who are deaf are hearing and do not use sign language, they are unable to use language to teach basic living skills to their children who are deaf such that they lack the ability to be independent at school. The basic argument is that since parents of deaf do not speak sign language, they may ignorantly refuse to expose their children who are deaf to sign language in the early years of their lives.

Lack of exposure to sign language

Since hearing parents of children who are deaf lack knowledge about sign language, they ignorantly refuse to expose their children who are deaf to it in the early years of their children who are deaf. Findings from home indicate that language needs of children who are deaf are not adequately supported by their families. Children who are deaf are raised in all-speech environment with little or no exposure to sign language. Most homes of children who are deaf, such as the ones the study used, were typical Ghanaian homes characterised by lack of knowledge, ignorance and superstition that prevent parents from exposing their children who are deaf to accessible language if they themselves could not speak it as evidenced by the following cases of Nketsiah and Kakra. The conditions in the homes of these children who are deaf could be described as a form of language neglect or deprivation (Sullivan, 2000).

Take for example the case of Nketsiah, a profoundly deaf child of about 9 years who lives with his mother and grandmother in one of the suburbs of Cape Coast. He was the first of four children born to his mother. His biological father abandoned his family after discovering that Nketsiah was afflicted with a disability. The following field note was written about Nketsiah during data collection:

> *Nketsiah's deafness was well accepted by the mother and other family members which seems to suggest that his mother has overcome the shock, denial, guilt, anger and sadness that, according to Kirk et al. (2015), characterise most parents when their children's disabilities are first identified or diagnosed.*

Nketsiah's mother had adjusted. Although Nketsiah is 9 nine years old, he had not developed any proficiency in sign language. The interaction between Nketsiah and his immediate family had been brief at length using gestures and speech. Nketsiah is observed to be "no nonsense" with his younger siblings and quick tempered at certain times. Except for his lack of language, Nketsiah has stable character **(field note, August, 2017).**

Personal conversation with Nketsiah's family about the cause of Nketsiah's deafness yielded no scientific explanation. According to his mother:

[Nketsiah] was born "normal" but fell sick…I don't know the name of the sickness but it affected him…..it really did. Some said it is "nwewee" But it made him shrink, very very little. Eventually, the sickness made him paralysed and [degenerated] in some developments such that he was taken up as a baby again. We had to feed him like a baby again, he couldn't sit by himself…..oh it was worrying. But small small we managed him….someone will show us a mother who heals children and we will go…unitl eventually we realised that he was recovering…. Well, by the time he recovered, he could not talk again. When the thing happened to him, he was about 2 years. Oh….he could say mama…..he used to play by himself but after the sickness he could not do all that…

(Nketsiah's mother).

According to the family, by the time Nketsiah was well, he could not say anything. The "mama" he had begun to say by the time he fell sick was all forgotten. He could not hear nor be startled by loud noise. The family "*did not know what to do"* as the mother stated. There was nothing they could possibly do hence Nketsiah was "*left alone to his fate"* without any language support except to communicate with him in gestures. The following response expresses that idea:

> *It is God we thank that he is living, as it happened that way…and we did not know what to do, so we took him like that…He has been playing around with his siblings….he has just been around…that alone is even ok for us. Initially…we were waiting to see if he would talk again but the talking did not come. If you call him, he will not hear…ah….so we took it like that* **(Nketsiah's mother).**

When Nketsiah's parent was asked if she was aware of the school of the deaf that could have supported Nketsiah's language, the following was the response from the mother; *we did not know, as for here who….who will help…* which indicated lack of knowledge and financial assistance. Hence, for the entire life of Nketsiah, until he was discovered during the data collection, he had not known any alternative means of language communication. Preparations are currently underway to send Nketsiah to the Cape Coast School for the Deaf at age 9 years without sign language.

The case of Nketsiah clearly indicates that some parents of children who are deaf are ignorant about the cause of their children's deafness and the necessary support to give them. Gadagbui (1998b) notes that in Ghana most parents are

superstitious and ignorant about their children's disability and therefore do not know where to seek appropriate help. This situation seems to compel many Ghanaian mothers with children who are deaf to resort to uninformed people for help and therefore have inadvertently delayed their children's language development.

Nketsiah's case, suggest that some parents who have children who are deaf fail to take the necessary steps to support their children's language needs. Consequently, some parents have denied their children's deafness such that by the time they came into full realisation that their children's deafness was irreversible, a critical period for language acquisition had passed. This situation may lead to a form of neglect which can cause harm to the language acquisition of children who are deaf. This finding continues to buttress that some parents of children who are deaf are misguided on their approach to tackling their children's deafness (Gadagbui, 1998b).

Similarly, for a large portion of their lives, children who are deaf, as found in Nketsiah's case, would not have access to sign language nor be exposed to it. Consequently, homes that do not use sign language as their primary language may not see the need to create an environment for sign language or expose their children who are deaf who apparently become the first deaf relative in the family to sign language. Therefore, the family interactions that are necessary for normal language development becomes awfully inadequate. As Obosu (2016) found out, most parents of children who are deaf resort to spoken language as well as the use of body language, real objects of food items and home utensils to initiate

conversations with their children who are deaf which is unprofitable to the deaf. The problem is that parents of children who are deaf may assume that by the use of gestures and other modalities to initiate communication, their children who are deaf would be equipped with language.

However, these modalities of using body gestures and real objects to initiate conversation may not necessarily nourish the brain of children who are deaf to satisfy their language needs (Marschark, 2001). The simple reason is that these modalities are rudimentary and may be accessible to children who are deaf only for some time. As conversations assume a more complex and sophisticated shape, such modalities may become unprofitable to children who are deaf. Largely due to this reason, most children who are deaf begin school when they have not fully developed a functional language. Admittedly, children who are deaf who do not get exposed to sign language in early years bear the brunt of language difficulties as academic tasks become more challenging (Heward, 2012). Subsequently, most children who are deaf start preschool with significant sign language deficit such that they become language disorientated. This finding corroborates the claim of Humphries et al. (2016) who argue that many children who are deaf who are raised in a strictly speaking environment without sign language until they are past the critical period of language development are likely going to be language deprived by the time they enter school.

In another case, Kakra, an eleven-year old severely deaf is a pupil of the Cape Coast School for the Deaf. He is a twin and the fourth of eight children born to his parents. His father is deceased. Interaction with his mother showed that Kakra

was born "normal" and even began to talk. However, it was later detected that he was not responding well to his name and his speech was not developing as compared to his twin brother and other siblings. Although, the mother agreed to have taken Kakra to the hospital, she could not explain what caused Kakra's hearing loss nor what intervention was put in place for him to acquire language. At home, personal observations indicate that Kakra is well accepted. His immediate family members use speech and gestures to communicate to him. By the time Kakra was sent to school, he was nine years old with no language either in spoken or sign. This case clearly suggests a lack of exposure of children who are deaf to sign language in some homes of children who are deaf in Ghana.

Personal experiences with mothers of children who are deaf further indicate that long before deafness is detected, some hearing mothers speak with their children. However, such typical interactions may not necessarily lead to language development of their children who are deaf because their children cannot hear. Cassady, Kellogg, MacDonald, Mounty and Northrop (2005) as cited in Humphries et al. (2016) state that children who are deaf may be surrounded by rich language input but such inputs may be inaccessible to them. This makes the issue of accessibility a key concern in the language development of children who are deaf born to hearing families.

The findings from the data collected from homes of deaf childen point to the fact that some parents of children who are deaf lack knowledge about the cause of their children's deafness which also suggests lack of appropriate measures to mitigate the effect of the deafness. Whereas some parents identify signs of their

children's deafness late, others identify their children's deafness early but intentionally delay sending their children who are deaf to school for the deaf hoping that the deafness would heal.

This situation indicates a lack of guidance on constructing home environment that supports the language needs of children who are deaf. The effect is that children who are deaf would be deprived access to sign language in the early years of their lives. This lack of full exposure to language in either spoken or signed modalities in the early years of life can be devastating since language acquisition occurs in a very short window of time (Humphries et al., 2016). Therefore, it can be argued that parents who fail to provide their children who are deaf with complete and early access to sign language do them a great deal of harm. The net effect is the language disorientation that characterises children who are deaf at school which may adversely affect their academic progress and make them have a mutilated foundation for sign language development.

Negative attitudes of hearing parents towards their children who are deaf sign language development depict a typical societal situation where the birth of a child with disability is highly reviled which is also consistent with Kirk, Gallagher, and Coleman's (2015) description of "symbolic death" where many parents lose hope in their children who are deaf as persons who would be useful in society. This situation seems to make many parents shirk the responsibility of providing daily care for their children. Consequently, they seem to see the school for the deaf as the "dumping grounds" for their children who are deaf who are seen as burdensome.

The following interview response from a teacher gives a vivid description of the situation:

> *Some are dumped here……We invite the parents, they will not come, when the child needs something you have to provide for the child. I don't understand why your own child… [You don't want to care for], at times when it wasn't a boarding school, a child will get missing either on the way to school or on the way back home. When they are brought to school, at times by the police or these social workers will bring them, the parents will not come for them, the child will stay with me 4 days, 5 days the parents will not ask, you have to look for the number again, call to inform her "ooo your girl is missing ooo and is here", she will say "ooo I will come, I will come"* **(respondent demonstrates disappointment by sighing and shaking her head).** *When you are tired, then you let the child go or at times we use the school bus to locate the house and then send the children there if not they will remain with you. So, it seems the parents some are not interested in their children, so we the workers, we the teachers especially we have to take heart and then help them so that they will also not be a burden on themselves or the society. We all have to work hard now so the government have to come to our aid in doing these things* **(Teacher F).**

This piece of data suggests how parents view their children who are deaf as a burden, something to be jettisoned. It was difficult to get parents to confess that they see their children who are deaf as burden during the interviews. However, their attitudes and responses to the needs of their children who are deaf gave the impression that they view their children as burdens. Perhaps, this situation is worsened by the lack of speech of children who are deaf to communicate their needs and parents' frustration to understand them. For example in a conversation with one of the sampled parents, it was ascertained that due to communication barrier, there was little family relationship between she and her child:

> *Oh as for me what can I do? I don't understand his language and he also doesn't understand mine. Even if we talk to him he can't understand so what can we do. As for these people they don't understand issues and they easily get angry so you have to leave him alone* **(Parent 2).**

The use of terms such as "d3m nkrofo yi" [as for these people] to refer to her own child seems to suggest that the parent sees her deaf child as belonging to a different group of people disconnected from her own family. Hence, the parent sees the child's inability to develop hearing and spoken language as the child's own doing which resonates with the medical model of disability which sees disability as inherent and personal to the individual (Hallahan et al., 2014). Consequently, some of the parents have been found to shy away from their children who are deaf as described in the following response:

> *...but the parents, some of them even hide the children feeling shy to expose them, so before the child comes he has basically nothing, so the parents themselves, there should be education. The parents should be educated* **(Teacher G).**

In another interview response, the teachers expressed that in most cases the parents are ignorant about their children's condition which delays the needed support the children require:

> *It seems most parents think... some don't even know there are deaf schools, so they keep the children in the house until maybe... or some think that, because the child is deaf, excuse me to say "useless", unless somebody comes in to educate or somebody opt to cater for the child financially before the parents will say ooo ok* **(indicating the parent's willingness to send the child to school)** *so by the time they bring the child, the child is already old, grown passed the preschool age. So, due to this because sign language is not a common language that anybody at all can speak, due to this the children lack language* **(Teacher B).**

This attitude of parents "feeling shy" to expose their children who are deaf may stem from a wider cultural perspective regarding disabilities (Hallahan et al., 2014). In spite of current knowledge about disabilities and inclusive practices, many communities view disabilities such as deafness as a stain to the social status of a family which often leads to a situation where children with disabilities are rejected or isolated (Hallahan et al., 2014). Due to such societal ridicules and pressures, the

family begins to hide or shy away from their members with visible disabilities. Consequently, the negative attitudes of the family members penetrate into the school setting and the vicious cycle continues. Adera and Asimeng-Boahene (2011), for example, indicate that prejudices and negative attitudes towards children with disabilities start within the family network and eventually makes its way into the school system. Consequently, by the time children who are deaf begin school they seem to have very little "self" to build on. This problem may be further created or perhaps worsened by the lack of language of children who are deaf which results in poor communication.

All these negative home characteristics influence the behaviour and language development of children who are deaf at school. Hence, the characteristics of parents and the way children who are deaf are raised at home bring to bear on the kind of orientation children present at school. If the orientation is supportive and geared towards the total development of children who are deaf, the results is a smooth transition to school which facilitates school success. However, in the case of children who are deaf in this study, it seems to appear that most children who are deaf are given a kind of orientation at home that does not support the wellbeing of children who are deaf at school which makes them assume the state of disorientation when they first begin school. This is because the school environment presents an entirely different culture that creates a feeling of frustration and confusion for children who are deaf. Certainly, children in this situation would require support to acquire these basic essential skills of life.

The implication of this finding is that because children who are deaf are unable to use language by the time of school entry, their lack of language may pose some teaching and learning challenges in the classroom such as their inability to follow simple instructions such as sit, sleep or write as evidenced by the following response:

> *When the children come to school, they cannot speak, they cannot sign so we teach them their language that is the sign language. Initially, they refuse to do anything in the classroom, if you ask them to write they will refuse and some too will cry all day* **(Teacher E).**

These are varieties of skills most young children enter preschool with which make them differentially prepared for school success (Gosse et al., 2014). However, these essential skills are lacking among deaf preschoolers in the various schools for the deaf such that they *cannot do anything;* they are empty. This state of language emptiness that characterises children who are deaf at school undoubtedly may have effect on deaf pupils' educational progress which depends on a good language foundation already acquired from home. This state of affairs alludes to the opinion of Rowh (2006) who agrees that the ability to use sign language, in the case of children who are deaf, is an important component of one's potential academic and vocational success.

Idiosyncratic gestures

In the years before school, children who are deaf develop a system of gestural communication from home which is idiosyncratic in nature. Perhaps, the

biological drive to acquire language in early infancy, makes children who are deaf develop their own means of communication using unmethodical gestures which they formulate with their parents and siblings at home if they lacked access to sign language. This situation has been captured in the following teacher responses:

> *This class is a… if it were to be a regular school, this class is something like a crèche or a nursery because they come with nothing. They have their own…like… way of … identifying… [things]* **(Teacher A).**

The use of the expression, *"their own"* shows that the gestures deaf pupils use at school are not the same gestures that form the basis for normal language acquisition process. For instance, Stokoe and Marschark (1999) cited in Marschark (2001) indicate that gestures such as pointing and flexing are essential components of communication during the first year of life of children. However, the gestures children who are deaf use by the time of school age are rather consciously developed and personal to them hence idiosyncratic in nature.

Unlike the gestural systems that children naturally develop as precursor to language development, these idiosyncratic gestures are developed among children who are deaf to communicate their wants and needs to their hearing family members. These gestures are homemade, eccentric and immature. These homemade signs serve as communication modes between children who are deaf and their immediate families but become meaningless to the teachers and peers at school. The following response well captures the idea:

> *When they come, they have their own this thing…..like signs [gestures] they use which is different from what we use here…..like their mother will teach them "Dada" this way* **(respondent demonstrates a home sign for father)** *and when they come we will say no no, Dada is this way* **(respondent demonstrates father in Ghanaian Sign language)**. *Sometimes what their mother teach them, when they come, we we don't understand….you see, so that is the struggle…* **(Teacher G).**

This response shows that the idiosyncratic homemade signs emerge as hearing parents interact with their children who are deaf in spoken language. Since spoken language is inaccessible to children who are deaf, parents resort to the use of gestures which become a system of communication between them and their children. However, these idiosyncratic gestures are peculiar to every home of children who are deaf which explains why a gesture developed for the word "father" at a particular home may not be applicable in another home.

The use of idiosyncratic gestures by children who are deaf is generally presumed to pave way for their eventual use of sign language. Hence, at the prelinguistic stages of language development, gestures are used by both deaf and hearing children which means that gestures are biological foundations of the language acquisition process (Marschark, 2001; Stokoe, 2005). Therefore, just as gestures aid hearing children in speech development, so gestures support children who are deaf in developing sign language. Still, since most children who are deaf are raised by hearing parents who do not know both sign language and the deaf

community, they inadvertently deny their children who are deaf access to sign language. This means that for majority of children who are deaf, sign language will not be exposed to them until they arrive at the various schools for the deaf. It is during this period of deprivation that the biological need for communication drives children who are deaf to develop linguistic systems of their own based on spontaneous gestures called homemade signs (Tomaszewski, 2001).

Research that has looked into gestural systems of children who are deaf such as Goldin-Meadow and Feldman (1977) cited in Tomaszewski (2001) has shown that children who are deaf consciously develop gestural names for people, objects and actions. The study of gestural system is detailed such that this study may not be able to cover. Further research is needed to provide new insight into linguistic properties of gestural systems of children who are deaf.

Santrock (2004), explains that children are biologically programmed to develop spoken language once they are exposed to it. Therefore, at age 0-6 months, during the prelinguistic stage of language development, children naturally use their good hearing to respond to sound in their immediate environment and begin to coo and cry. At age 4-6 months they begin to babble. These reflexive behaviours may not only exercise infants' vocal organs for speech, but also serve as a form of language communication with their mothers and caregivers through mutual exchanges. Subsequently, children develop their first language by age 5 years and acquire the basic functions of communication such as narrating a story, expressing or explaining an event or making request through the language they naturally acquire by the time they begin preschool (Santrock, 2004). Nonetheless, for

children who are deaf, such natural means of language acquisition is impaired and an alternative means of language acquisition may have to be instituted. This would mean that children who are deaf would have to resort to learning sign language as an alternative means of language acquisition in early infancy through family interactions.

Yet, by the time children who are deaf are brought to school for admission, they are unable to sign which means that they do not acquire sign language from home. This situation, as shown by the data, can be blamed on the kind of language orientation children who are deaf receive from home where sign language is not a primary language at home. Orientation generally describes a person's basic attitudes, beliefs or feelings in relation to a particular subject or issue. The orientation children who are deaf are raised with is characterised by ignorance or indifference on the part of some parents hence, they are addressed at home with unconventional means which develop in children who are deaf, a system of communication which is unmethodical and idiosyncratic in nature.

In summary, children who are deaf are characterised at school by subcategories such as: saying nothing which explains the poor language foundation of children who are deaf at school; knowing nothing which portrays their lack of basic information necessary for normal social development and doing nothing which describes lack of basic daily living skills required at preschool. All these characteristics describe children who are deaf at school as language disorientated. Data proved that the language disorientation children who are deaf experience at school is different from the experiences all children go through as they are

transitioned from home to school. Such typical transition anxieties are short lived and easily controlled at school through school interactions. Nevertheless, the type of language disorientation children who are deaf experience is as a result of lack of accessible linguistic orientation from their hearing parents at home who neither know the sign language nor understand deaf culture. Consequently, deaf pupils become language disorientated as they grapple with school culture.

Research Questions Two and Three

What major role do teachers in schools for the deaf play to facilitate sign language acquisition among deaf preschoolers?

How is teaching and learning done in schools for the deaf to facilitate deaf preschoolers' sign language acquisition?

The second and third research questions of this study aimed at ascertaining the major role teachers in school for the deaf play to facilitate sign language acquisition among deaf preschoolers and how teaching and learning is done to facilitate sign language acquisition in the various schools for the deaf. In answering these research questions the core category that emerged is *Language Facilitation, adjustment and replacement*. The subcategories are teacher mediation, peer interaction and deaf adult role model, observation and imitation.

Language Facilitation

Language Facilitation emerged as the core category from the data gathered for research questions two and three. The core category basically describes the support children who are deaf receive from their teachers, peers and other deaf adults to facilitate their sign language acquisition process within the school. The

core category is supported by three subcategories comprising *teacher mediation, deaf role models and deaf culture and peer interactions.* The properties of this core category are *classroom teaching and learning activities*, curriculum adaptation, and visual teaching strategies within the classroom as well as peer interactions during school gatherings. The subcategories have been depicted in Figure 10.

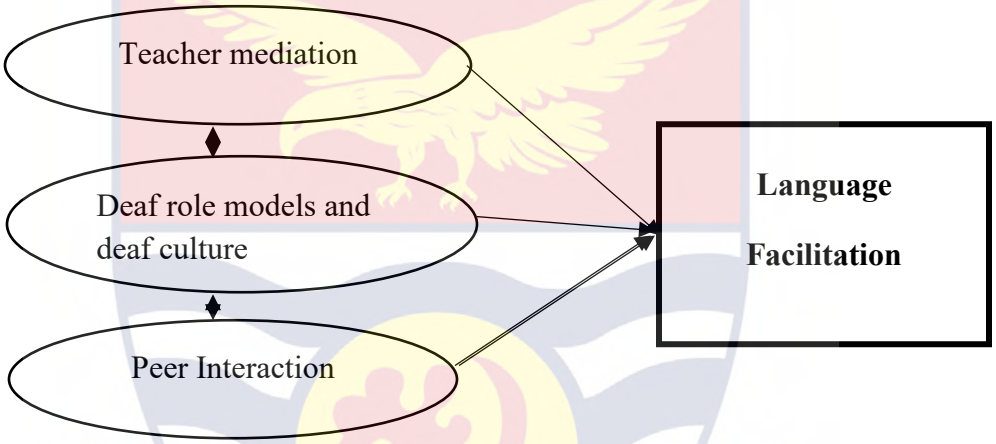


Figure 10: The Concept of Language Facilitation.
Source: Researcher's own construct, 2019.

Teacher mediation

One of the categories that support the core category *language facilitation* is *teacher mediation.* As children who are deaf begin school with language disorientation, teachers, their first agents of socialisation in the school environment in relation to sign language, provide instructional intervention that facilitates the process of sign language acquisition through classroom teaching and learning activities. Hence, the major role teachers play in sign language acquisition of deaf preschoolers is facilitation. This mediation process of the teachers involves curriculum adaptation, literacy

lessons and visual teaching strategies that are part of classroom teaching and learning activities but reinforce deaf pupils' sign language acquisition process.

Teacher mediation was found to be routine, repeated and reinforcing which makes deaf pupils become familiar with sign names of objects in the classroom such as pencils, erasers, book, toys and chalk which partially facilitate sign language communication in the classroom. Observations indicated that deaf pupils at the kindergarten level still exhibited object- naming skills in sign language supported with idiosyncratic gestures. The observations also revealed that the deaf preschoolers used more of facial expressions in their communication. Therefore at school, teachers play a major role of facilitating sign language acquisition among deaf through classroom teaching and learning processes. The following responses well capture this concept of facilitation:

You have to help them to…. It is my duty to help them to pick up the language. Though it is their language...it is like the Fante we speak….there are certain words you wouldn't know how to pronounce it or understand the meaning. You need someone to help you to get it so that is what I am doing here to help them….though it is their language but you have to help them **(Teacher B).**

This class is a… if it were to be a regular school, this class is something like a crèche or a nursery because they come with

> *nothing. They have their own…like… way of … identifying. So when they come we give them the basics. So KG1A and B we use the same syllables. So I teach them numbers, how to count. Those kind of things so when they go there they will go and continue….we are doing almost the same thing. Because here they are new. We build on their [idiosyncratic gestures], basic language, so by the time they get to KG 1B, they might have acquired simple simple language to enable them understand things* **(Teacher A).**

The above responses suggest that the teachers in the process of classroom teaching and learning scaffold sign language acquisition of children who are deaf by replacing the homemade signs of deaf pupils with correct sign modes. Teachers do this by initiating conversation with deaf pupils in the form of simple instructions using deaf pupils own idiosyncratic gestures they are familiar with such as the natural means of gesturing sit, stand, go and come. As rapport is established and clear lines of communication are built, teachers then help deaf pupils to replace these homemade gestures with sign language. This process of replacement may be both conscious and unconscious effort on the part of the teachers. Take, for example, the following scenario recorded from one of the observations I conducted on the initial phase of the data collection:

> *A deaf pupil wanted to use the toilet. She alerted the teacher by squatting and pointing to the direction of the school urinal. The teacher replaced her idiosyncratic gestures with proper sign mode for urination* **(Observation remarks, July, 2017).**

This piece of data indicates that for replacement to take place, teachers and deaf pupils must come to a level of understanding through mutual gaze and attention.

The teachers recognise that they are preschool teachers and not language experts. Thus, they advocate for the need to directly teach sign language to deaf preschoolers by a special sign language teacher. The following interview response expresses this idea clearly:

> *Sign language is their language….but it must be taught in the classroom to them. You do not expect them to get all the language from us, there must be a teacher to teach it. Formerly, [Mr P] used to come round to help us but stopped because he was not getting time…….yes it must be taught like a subject. If we want hearing children to learn Ghanaian language and so we teach them Fante why not teach the sign language too to the deaf* **(Teacher C).**

The above response gives another perspective to sign language acquisition in the school which points to the fact that sign language must be taught as a subject to deaf preschoolers by an expert who serve as role model to deaf sign language acquisition. For example, Mr P mentioned in the above response is a deaf teacher who had taken up the role of supporting sign language acquisition at the preschool.

Curriculum adaptation

One of the properties of the *teacher mediation* is curriculum adaptation which characterises teaching and learning process of deaf preschoolers. The preschools for the deaf follow the same kindergarten 1 and 2 curriculum supplied

by the Ghana Education Service of the Ministry of Education. The following response portrays the idea:

> *Hmmmm sign language we don't have any book that have the drawings and how the signing is so if there is any signing we have to help them. So we also learn and teach them. We don't have textbooks on sign language. So we do the teaching through the syllabus, the normal syllabus that the hearing are using….the same thing. We don't have a special sign language syllabus* **(Teacher G).**

The kind of curriculum used in the preschool supports the type of curriculum Luetke-Stahlman and Luckner (1991) cited in D describe as the one that uses general education curriculum and tries to meet the same standards and expectations that apply to students without exceptionalities but allows for special or related services and methods.

The kindergarten curriculum is designed to help children to develop communication skills that will enable them to express their emotions, thoughts and actions in various ways such as listening, speaking, reading and writing among others. Generally, the curriculum has six areas of learning experiences recognised as essential for all children. These include language and literacy, environmental studies, numeracy, creative activities, physical development, and psychosocial skills. The rationale of the curriculum according to the teaching syllabus for kindergarten (2007) is to help the preschool child to:

i. Develop communication skills to enable him/her express emotions, thoughts and actions in various ways.

ii. Engage in play as a means to develop the listening and expressive language skills.

iii. Develop skills in reading and writing while exploring the environment and print in books

iv. Create print awareness and concept by helping the child to recognise the association between spoken and written words by following print as it is read aloud.

v. Gain alphabet knowledge by recognising that symbols are associated with letters of the alphabet to form words.

Since the curriculum prescribes nothing for deaf pupils, teachers adapt the regular school curriculum in order for teaching and learning to be carried out effectively. One area of the curriculum that preschool teachers adapt is the aspect on language activities which is designed to favour hearing children and so does not benefit deaf preschoolers. For instance, teachers in school for the deaf are expected to teach lessons on sound and auditory discrimination which requires adaptation before teaching to deaf preschoolers (see Appendix P). However, this situation poses a number of questions such as how the adaptation should be done; what should go into the adaptation and with what measures.

The Special Education Division (SpED) of the GES does not give any guidance on how lessons on language activities which have been designed for hearing pupils should be carried out in the classroom of deaf pupils. So preschool

teachers in the various schools for the deaf are in a state of uncertainty on how to adapt specific language activities in the curriculum designed for hearing pupils to suit their deaf pupils. The major challenge lies in how to replace the oral activities in the curriculum with manual activities. The following response points to this issue:

> *Yes as for those areas…we try,…yes we sometimes change and do other activities because they cannot hear so when the syllabus is saying they should sing a rhyme or do sound discrimination, how are they going to do that…so when try to do something different...urmmm like jumping or do some exercise* **(Teacher H).**

This state of personal discretion over which aspect of the curriculum to adapt may make many deaf preschoolers miss out on the necessary language activities that support their sign language activities in the classroom. Perhaps, the teachers are left with no choice but to ignore those aspects of language learning activities that are difficult to make adaptations because they require an adaptation from spoken to sign language which the teachers may be incapable of. Thus, the use of storytelling, songs, and rhymes prescribed in the curriculum to support language development in children at the preschool level for hearing children is absent among deaf preschoolers as teachers are unable to adapt those aspects in schools for the deaf.

Nevertheless, teachers make adaptation of some aspect of the curriculum they are capable of. The following interview response supports this claim:

> *We have to teach them something so you the teacher you have to find a way to do it. If it is the sign language you cannot…. Yes you can make them do some action instead of saying it with their mouth. You see…it is not easy but you have to do something for them to understand* **(Teacher G).**

This response shows how teachers map out strategies to engage their children who are deaf in some aspect they adapt in the kindergarten curriculum. This involves demonstrating or role-playing some aspects of the curriculum which is possible through adaptation. The fact is that when teachers are specifically not taught to understand how these aspects of the curriculum should be adapted, it may result in varied and uneven language learning activities among deaf pupils in the various schools for the deaf. It is therefore important that teachers direct teaching and learning process in a way that facilitates sign language learning.

Literacy lessons

One of the properties of the *teacher mediation* is *literacy lessons*. The teaching and learning activities in preschools for the deaf resemble the traditional strategies of "chalk and talk" method used in regular preschools. Except for the use of sign language, visual teaching, body gestures and demonstrations, the classroom teaching and learning do not employ any special activities. The focus of classroom teaching and learning is to equip deaf preschoolers with basic academic functions such as drawing and writing as expected by the curriculum. Thus, teachers focus on literacy and numeracy acquisition and not necessarily sign language. The following response indicates this assertion:

The children start from here, and we first help them to learn the A, B, C, D and how to write their names……if they go to KG1B they will continue there…they will teach them the two and three letter words there… **(Teacher A).**

This response buttresses the fact that teachers focus on literacy activities at the kindergarten where emphasis is placed on identifying the letters of the English alphabet and how to write one's name. Subsequently, letters of the English alphabet were drawn on corners of the blackboards in some of the selected schools for the deaf (see Appendix Q). In the process of teaching literacy, teachers make references to letters of the English alphabet on the blackboard and enforce rote learning. Therefore, the letters of the English alphabet written on the blackboard served as visual prompts which reinforce literacy among deaf preschoolers. During this process, teachers put in positive reinforcement such as a clap (waiving of the hands in the air) or a handshake. Teachers use body gestures and demonstrations during literacy lessons to reinforce certain concepts such as jump, sleep, cry and dance. Take, for example, the following interview response:

At times if you are teaching certain words maybe dancing, jumping …we name it action words… you have to do it demonstration. You have to demonstrate and they also do the same thing it means they are picking…mostly you have to do the demonstrations or use the teaching materials ……the signing signing, it bores them (because they don't make sense of it). So when you give the work without explaining it bores them, unless

someone one one…some gifted children in it they…when you explain a little, they get it but the rest, and you don't have to solely depend on those bright ones, you have to help all of them so you have to involve a lot so demonstration and the rest normally takes most of the part in teaching. Maybe if I am teaching an hour…30 minutes will be demonstration, action songs, rhymes and……..to bring up their interest in what you are coming to teach. If it is environmental studies and we are dealing with soil, we go to the school garden, we will be moving around. They like…..they don't want to be in the classroom all the time. They want full of activities **(Teacher H).**

The literacy lessons also involve introducing deaf preschoolers to fingerspelling using Ghanaian sign language. In the observations made in the kindergarten classrooms of the various schools for the deaf, it was seen that the teachers would point at each letter on the blackboard and demonstrate how it ought to be finger spelt. Accordingly, the deaf pupils imitated the sign mode their teachers made. It was gathered from the interview that the deaf pupils who make progress acquire fingerspelling skills quickly which becomes basis for further classroom teaching and learning activities. This is evidenced in the following statements:

So some of them will move to the two letter words. Yes! Because they can do the signs and so we have to add on for them to progress. Yes from the finger spelling then they will be learning how to spell their names **(Teacher G).**

According to the teachers, some of the deaf pupils lag behind their peers in the classroom. They attribute this challenge to the mixed ability grouping of deaf preschoolers. Find, for example, the following interview response:

> *Most of them here will repeat if they don't progress. Some of them are very slow like they are slow learners so even if you give them exercise, they will take a long time to finish it while their friends will finish the work long time. Well, it is because they are mixed up so some of them are clever and others too….so you see that some of them can't still write their names because they don't know the alphabet so they don't know how to spell their names in sign* **(Teacher C).**

A session of classroom teaching and learning activities was recorded during one observation to explain how teachers help deaf pupils to associate the letters of the English alphabet in sign language with the ones written on the blackboard or in the textbook. During the lesson:

1. *The teacher showed self-made flash cards one after the other to the class. Each flash card had the name of one of the pupils written on it.*
2. *The teacher raised the individual flash cards and expected the pupil whose name had been inscribed on the flash card to come forward for it. It was observed that majority of the pupils were able to identify their names on the flash cards and went for them.*

The few ones who were prompted before they could go for their flash cards were said to be late comers.

3. *After the pupils had received the flash cards bearing their names, the teacher helped them to memorise their names in sign language after which they were made to fingerspell.*
4. *The teacher helped the pupils to identify the letters of their names they know in sign language with the letters of the alphabet written on the flash cards.*
5. *The pupils, after memorising the letters of their names from the flash cards, were asked to spell, this time on the board. Successful pupils were applauded by waiving both hands in the air* **(classroom observation, July, 2017).**

These activities in the classroom teach deaf pupils about the letters of the English alphabet first in symbols and then in sign modes. These activities facilitate the process of finger spelling which further results in literacy acquisition such as writing, drawing and spelling. Even though literature is silent on the type of teaching method to be used in preschool classroom for deaf pupils, teacher-centred teaching approach is particularly practiced by teachers in the various schools for the deaf. As described by Giles, Pitre, and Womack (2003), the teacher-centred approach allows the teacher to incorporate materials, resources into a lesson as opposed to the pupil-centred approach which allows pupils to actively use their varied means of engagement to learn. The teacher-centred approach allows teachers to incorporate a lot of visual elements in the teaching and learning process.

Visual teaching strategies

Another property of the *teacher mediation* is *visual teaching strategies*. The planning, implementation and evaluation of instruction for the deaf pupils include the selection of appropriate visual instructional materials and resources that can facilitate understanding of lessons in the classroom as well as equip deaf pupils with knowledge of sign language vocabularies although this aspect may not be the highlight. Thus, visual teaching is a strategy the teachers use to organise lessons for deaf pupils which has the ability to sustain the interest and participation as well as motivate deaf pupils to learn, increase retention of information and aid visual communication. Take, for example, the following responses:

> *When it comes to reading, we do picture walk. We have conversational posters and we have something called big book, there are a lot of pictures, so as a teacher I will be talking to them about the things in the picture. Once they have acquired few vocabulary, so when they see it……this is an animal….maybe this is* **(interviewee demonstrates an animal)**, *so they will also be identifying some of the things….so we don't do reading necessary, but we have a way of……like using the real objects and the pictures to teach them but as they advance to the next class, they do the reading. The two letter words and things like that* **(Teacher A).**

When I am teaching I have the conversational charts…..I have a lot here. So the topic I'm teaching, and if there is conversational chart that deals with that topic, then I paste them on the board. We talk about the pictures, they tell me their mind. I ask them to view the picture and tell me what they know about the picture or tell me something about the picture. So through the discussion about the poster I have pasted then we get to know the context of what we are doing **(Teacher I).**

What they have is pictures, and the story walk…., so we'll tell them the story as we point to the pictures on the wall…like this **(Interviewee demonstrates in sign language) (Teacher D).**

They are now picking so for them what they understand…I ask them if they can draw. You will see that someone will draw something which is not about the topic. So I will ask, why this? "I have some in the house" or "I have seen some here" what their mind tells them about the whole is what they draw **(Teacher B).**

The above responses suggest that teachers at the preschool use visual instructional strategies to complement their teaching which also facilitate deaf preschoolers' sign language acquisition. Teachers hang the posters in the classroom during lessons and tell stories about the images in the posters and chats. They also point to particular images and ask for their names. The naming of the images in the charts

and posters help deaf pupils to acquire sign language vocabularies for images such as mother, table, eraser, pencil, book and chalk thereby gaining understanding of concepts in sign language. As teachers use these visual elements to teach concepts, sign language acquisition among deaf pupils is facilitated. The teachers explained that visual instructional strategies serve as a means of communication.

The teachers' use of visual teaching supports the notion that deaf pupils are visual learners (Easterbrooks & Stoner, 2006). Visual materials such as pictures, paintings, drawings, charts, graphs, flow charts and diagrams are useful visual aids for deaf pupils if they are well designed and used appropriately. They can become powerful tools from the periphery of the curriculum toward the core of teaching language skills to deaf pupils (Eubanks, 2011). Since deaf pupils at the preschool are unable to read because they lack the appropriate language to do so, analysing pictures and providing what they mean in sign language can increase their understanding of lessons and facilitate sign language acquisition. This is because visual material can be used as viable and effective teaching tools to teach language skills to deaf pupils as well as strengthen their memory. Thus for effective use of visual materials, they must be clear and colourful and should not be used in a singular fashion but should be combined with other multisensory approaches that appeal to deaf pupils' visual intelligence (Smith, 1995).

The point is that the kindergarten curriculum used in preschools for the deaf aims at preparing pupils academically for formal primary education where they are required to have the ability to write and spell, hence the focus of the teachers of the deaf preschoolers. Sign language is however not the focus although through the

teaching and learning process, deaf pupils' sign language learning is facilitated. Take, for example, the following interview response:

> *From this place to this place……it's almost the same. They are using the same textbook, the same syllabus, its KG1 but they are many that is why we have divided them. But her class [KG1A] they come straight from the house like preschool…they will come and go. Most of them they will come and go. It's one one one they will stay for the term. They are preschool so they will come and develop the KG1 here. She will start then I will build up. When they go to KG2 then from there they learn towards class one. So from here they will know the writing but some will come here still not knowing how to write or identify the alphabet so I have to continue. So most of the time, they do letter identification, and two letter word and three letter words….I don't go beyond four. The three letter words is getting to the latter part of the term or year that I teach them* **(Teacher B).**

This response shows that teaching and learning in preschools for the deaf involves repeated literacy and numeracy activities geared toward preparation for primary education. Teachers engage deaf preschoolers in teaching and learning activities similar to those done in regular school such as the acquisition of the letters of the English alphabet, two letter words, three letter words and names of objects through the medium of sign language.

It was gathered from the data collection that teachers at preschool for the deaf do not specifically teach sign language as a subject to deaf preschoolers because sign language is not part of the kindergarten curriculum. Therefore, the teachers do not have the instructional content and the methodology to teach it. Consequently, the language development aspect of the curriculum mainly focuses on helping deaf pupils to gain English language literacy.

Nevertheless, the classroom teaching and learning process plays important role in the sign language acquisition processes. In the process of teaching and learning, visual teaching strategies such as pictures, diagrams and real objects are frequently used to reinforce learning. This process also involves concrete teaching where teachers send their deaf pupils to the school garden or around the school compound to learn the names of the items they find in their natural environment as earlier mentioned by Teacher H in the following statement:

> *…to bring up their interest in what you are coming to teach. If it is environmental studies and we are dealing with soil, we go to the school garden, we will be moving around. They like…..they don't want to be in the classroom all the time. They want full of activities* **(Teacher H).**

It was gathered from the observations that presenting real objects to deaf pupils reinforces classroom lessons and helps deaf pupils to acquire specific sign names for objects such as apple, pepper, onion, fish and cutlass. Jumping, hopping, squatting, turning round, standing, sitting or stamping the feet were common classroom drills that were frequently incorporated in teaching and learning

activities to explain lessons to the deaf pupils thereby helping deaf pupils to learn new words in sign language.

Deaf role models and deaf culture

Another major category that was discovered from the analysis of the data was the influence of deaf culture. Within the schools for the deaf are other deaf adults who serve as role models to deaf pupils' sign language development. These deaf role models were either deaf teachers or deaf aides who assist preschool teachers in the various schools for the deaf. These deaf teachers or aides play multiple roles in the school. Find, for example, the following teacher response:

> *The some of the teachers are deaf so they help us….they are like our sign language teachers* **(interviewee laughs)**. *They support us when we teach. Like when there is a word that I don't know how to sign I call them to come and sign it to the children. As for the sign language it is their language so they know how to sign it better* **(Teacher G).**

> *Oh as for this school we have some of the deafs here. Some of them have finished the training college and they are here as teachers. They support us to teach the [preschool] children. But some of them are also in the dormitories. Yes they are the house mothers who take care of the little ones. At the vocation section too they we have some there* **(Teacher I).**

The above responses support the fact that these deaf adults within the school deaf culture serve as school mothers/fathers and sign language teachers to deaf pupils by modelling standard signs when deaf pupils produce idiosyncratic gestures in their interaction with them. The following response well depicts this idea:

> *Many times you see that they [deaf adults] will be talking with the little ones. They help them to learn the proper sign language. We cannot teach them everything in the classroom so they also help to teach the [sign] language to them. In fact that is where the little ones learn their sign language. Like when we close from here and they go to the dormitories that is when they older ones will teach them how to say this or that and they learn from them* **(Teacher I).**

This response indicates that these deaf adults engage deaf preschoolers in native ways thereby providing a learning environment that gives deaf pupils opportunities to be immersed into the deaf culture. Deaf culture may be explained as the set of social beliefs, traditions and shared values that are influenced by deafness and which uses sign language as the main means of communication (Bauman, 2008). It is deaf cultural immersion that equips deaf pupils with sign language and what it means to be Deaf (Singleton & Dianne, 2006).

Most of these deaf aides are officially recognised in the schools for the deaf and are strategically placed as teaching assistants. They give support to hearing teachers by helping hearing teachers to understand some of the homemade signs of deaf pupils. They serve as deaf interpreters and sign language resource persons for

hearing teachers who depend on them as authority in sign language when they are uncertain of some sign language concepts. Through their everyday interactions with deaf pupils perhaps motivated by the deaf culture characterised with deaf pride and belongingness, deaf teachers and deaf aides demonstrate appropriate ways of using signs as they role play conversations and directly teach sign language concepts. What may seem to be routine interactions is probably the vehicle through which deaf pupils learn of everyday conversation which they lack from their hearing parents at home.

Peer Interactions

Although, classroom teaching and learning exposes deaf pupils to the rudiments of sign language, peer interactions also influence sign language acquisition among deaf preschoolers. Deaf preschoolers pick the proficiency of sign language from their knowledgeable peers. The following responses indicate this assertion:

> *...yea, they are always with their peers and they interact and communicate with one another while they play and so they do imitate themselves and learn from one another….otherwise they will write the…."broken language" for us… especially during exams…* **(Teacher C).**

> *No! It does not depend on me alone but it depends on the teachers and their peers as well* **(Teacher A)**

No! Because I can't teach them all. They learn from their friends especially these young ones… they don't anything about sign language, and they are now picking it. But some too can sign without meaning….they are signing but they don't understand. So it is my duty….when they sign then I teach them the meaning of what they are signing especially when they come to the classroom, they have heard their seniors or friends signing certain things where they don't understand so I have to add meaning to what they are signing….mhmmm that is my duty. **(Teacher H).**

No! The teachers do their part… **(Teacher E).**

The children learn from their friends as well… **(Teacher D).**

These responses indicate that the acquisition of sign language proficiency does not depend on the teachers but lies within the deaf culture which is characterised also by peer interactions. As deaf pupils gather during morning assembly, dining or formal school programmes, they interact through play and conversations which influence sign language acquisition among deaf preschoolers. The fact that total sign language acquisition among children who are deaf exists within the deaf culture in the school is consistent with Bruner's (1983) claim that the environment provides children with a Language Acquisition Support System (LASS). In addition to the LASS, teaching and learning activities and social interactions with teachers, deaf aides and peers facilitate deaf pupils' language acquisition. This

indicates that much of the sign language deaf pupils would acquire by the end of their kindergarten education would not directly have come from their teachers alone, but also from the social interactions deaf preschoolers have with their knowledgeable peers as indicated above in the interview responses from Teachers C, A, H, E and D. Therefore, the major theoretical concept developed from teacher mediation, peer interactions and influence of deaf culture *is language facilitation* where deaf pupils are exposed to sign language and are reinforced to acquire it.

In summary, the language facilitation as it emerged from the study explains the school's intervention for sign language acquisition of deaf pupils. It states that as children who are deaf become immersed in the culture of the school, they are exposed to classroom teaching and learning where teachers facilitate their sign language acquisition process through teacher mediation. This involves teachers adapting the kindergarten curricula, concretising teaching through the use of real objects and demonstrations as well as through visual teaching strategies such as the use of pictures, illustrations and charts. Though the focus of the teaching and learning process in the classroom is not to teach sign language to deaf pupils, it exposes children who are deaf to sign language and equip them with the rudiments of sign language. During the process of language facilitation, children who are deaf go through phases of sign language acquisition such as struggles characterised by frustrations and confusions. The language facilitation is also heavily influenced by peer interaction and the influence of deaf culture through deaf adults within the school environment. As peers of children who are deaf converse and play with their knowledgeable older peers at the playground and at school gatherings, they learn

of the communicative functions of sign language and improve on their proficiency. This may mean that the classroom teaching and learning activities that facilitate deaf pupils' sign language acquisition process is reinforced by peer interaction and deaf culture.

Language Adjustment

This facilitation stage is followed by another core category; *language adjustment* as shown in Figure 11. This stage of the process of sign language acquisition is first characterised by language confusion whereby deaf preschoolers mix-up the idiosyncratic gestures they acquire from home with sign language they learn from teachers and peers. This situation is initially characterised by inattention, tantrums, frustration and anxiety in the classroom in the quest to readjust to the new process of interaction. The following response depicts the idea:

> *It can be frustrating. They don't understand anything. When you are trying to show them this, they will also be doing that. ....Yes it is because at first we don't understand their language. They will do some signs and we we don't understand but we try to understand. Sometimes, maybe they want to go and urinate or they want something and we too we don't understand so the child can cry or misbehave. One time, one of the girls wanted to go to toilet but the she was saying it, we did not understand, before we realised, she has done it on herself.... So it is not easy for them when they come. But small small they learn the sign language. Their friend also help them especially their seniors, they are with*

them in the dormitory so the children learn from them **(Teacher G).**

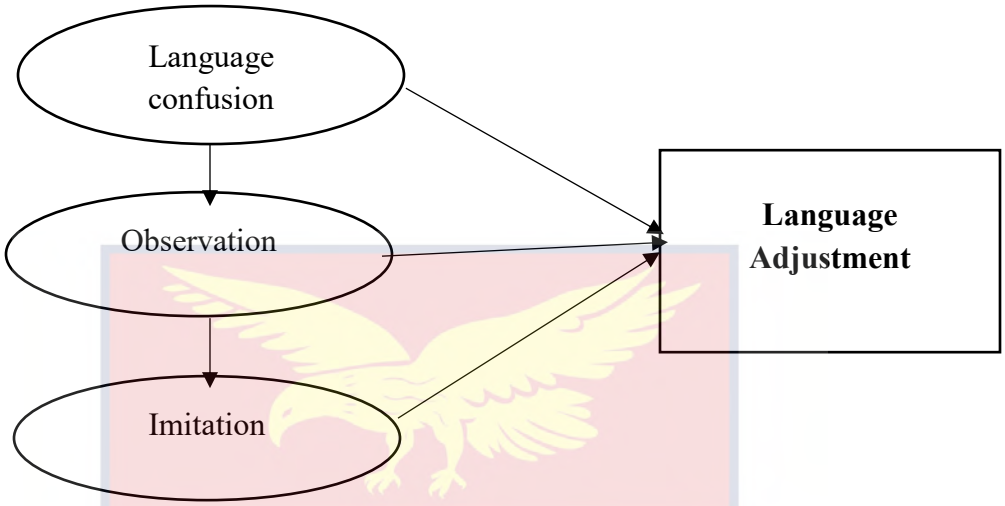


Figure 11: The Concept of Language Adjustment.
Source: Researcher's own construct, 2019.

The frustration that results from language confusion forces children who are deaf to readjust to the new way of communication by accepting sign language as the proper language of interaction. Hence, children who are deaf become aware of the difference of the idiosyncratic gestures they use and the sign language used at school. They then observe closely what their teachers, deaf adults and peers do and imitate the process. The observation process takes place within the deaf culture in instances where deaf pupils are engaged in sign language. Following personal observation remarks indicate this idea:

> *The deaf pupils are stable now, the tantrums are ceasing and they seem focused in classroom and other social interactions. They tend to gaze on teachers and older peers as they sign to them. It*

appears they are learning from their teachers and peers now as they observe the way they sign. Perhaps, they are beginning to understand some of the signs **(Observation remarks, July, 2017).**

The observation is followed by imitation where deaf pupils begin to imitate the sign language they observe from teachers and peers. This imitation involves both manual and non-manual markers. The manual markers are the handshapes that are formed when signing concepts such as father or mother whereas the non-manual markers are the facial expressions that accompany the handshape (Stokoe, 2005).

Language Replacement

The adjustment leads to another core category; Language replacement where preschool children who are deaf drop their idiosyncratic gestures and replace them with proper sign language. This is seen in repeated practice during the language facilitation stage through teacher mediation; classroom teaching and learning activities where deaf pupils repeat what their peers and teachers do and gradually adopt their way of signing. Take for example the following interview response:

They are beginning to pick the sign language…yes so when they look at you the teacher or even their friends, they copy and then they start to sign the way they have seen their friends signing. Sometimes they sign without understanding it, maybe it is a sign that they have seen it before maybe in the classroom. When they go to their dormitories too they talk a lot with their seniors and so

they will copy from their seniors and they will be signing it. They will continue to copy and sign like that aaa till they come to understand… oh by that time they will forget their old signing [idiosyncratic signs] and they will be using the correct sign language **(Teacher G).**

The response indicate a gradual process of language reorientation where deaf pupils begin to exchange their idiosyncratic gestures with proper sign language. This core category is explained by the continuous and repeated practice of observation and imitation which eventually lead to language replacement as depicted in Figure 12.

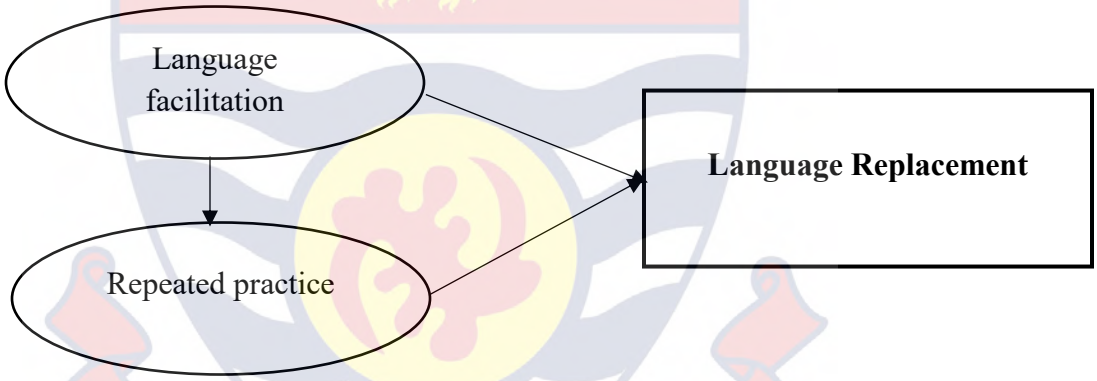


Figure 12: The Concept of Language Replacement.
Source: Researcher's own construct, 2019.

The data analysis points to a theoretical explanation for the process of sign language acquisition among deaf preschoolers. I term this theoretical explanation "the theory of language reorientation". This theory has been discussed in the following section of the thesis. Existing literature on sign language development has also been reviewed in relation to the emergent theory (Charmaz, 2015; Martı, Mubanga, & Bagnol, 2015; Richards & Farrokhnia, 2016).

The Theory of Language Reorientation

Children who are deaf who spend the best part of their early years at home developing only idiosyncratic gestures and signs become limited in expressing themselves at school using sign language. This situation tends to make children who are deaf miss out on acquiring proper sign language communication skills such that they become disoriented at school which creates language communication difficulty between deaf pupils and their teachers. Hence, the first core category language disorientation emerged from the data to explain the lack of accessible language that characterises children who are deaf at school. The focused categories that make up the core category were *saying nothing, knowing nothing* and *doing nothing*.

The attributes of these categories were derived from home environment where hearing parents were ignorant about the language needs of their children who are deaf. For this reasons, some hearing parents inadvertently have denied their children who are deaf early access to sign language. Due to this lack of exposure to sign language, most children who are deaf are addressed at home using speech and gestures which develop in them a system of communication which are idiosyncratic in nature. Hence, by the time children who are deaf begin school, they lack the necessary language to function academically because the idiosyncratic gestures they develop at home are eccentric and therefore cannot be considered as a form of language. The entire school system including its teachers, peers and deaf culture tends to exert influence on sign language acquisition of children who are deaf. The second core category that emerged from the data is *language facilitation* which

describes the school intervention for sign language acquisition of children who are deaf. The core category had three focused categories including *teacher mediation, deaf adult role model* and *peer interactions.* Consequently, as children who are deaf continue to use homemade signs and gestures at school, teachers, aides and peers model and reinforce the accepted way of communication using sign language. The attributes of the teacher mediation were *curriculum adaptation, literacy lessons* and *visual teaching strategies.*

Hence, the first stage of the sign language acquisition process is *facilitation* where teachers mediate the acquisition of the rudiments of sign language such as fingerspelling and name identification. As deaf pupils interact with the school environment they are further exposed to sign language through adult role model who may be house mothers or teaching aids. These deaf role models interact with deaf pupils to expose the deaf to acceptable means of communication using sign language. The influence of the deaf culture at school where knowledgeable peers model the accepted ways of sign language communication further strengthens the facilitation process. The attributes of these interactions occur during classroom/dormitory conversations, playtime, and morning assemblies, dining time, social gathering such as school programmes.

During the language facilitation process children who are deaf may experience language confusion which they overcome by adjusting to the deaf culture in the school. In the *adjustment* phase, deaf pupils learn to observe teachers and peers in the facilitation process and begin to imitate what they observe. Continuous imitation leads to the *replacement* phase where children who are deaf

learn to drop their idiosyncratic homemade signs and gestures and substitute them with proper means of interaction using sign language. All these phases of facilitation, adjustment and replacement take deaf pupils through a process of reorientation, hence the theory of language reorientation as shown in Figure 13.

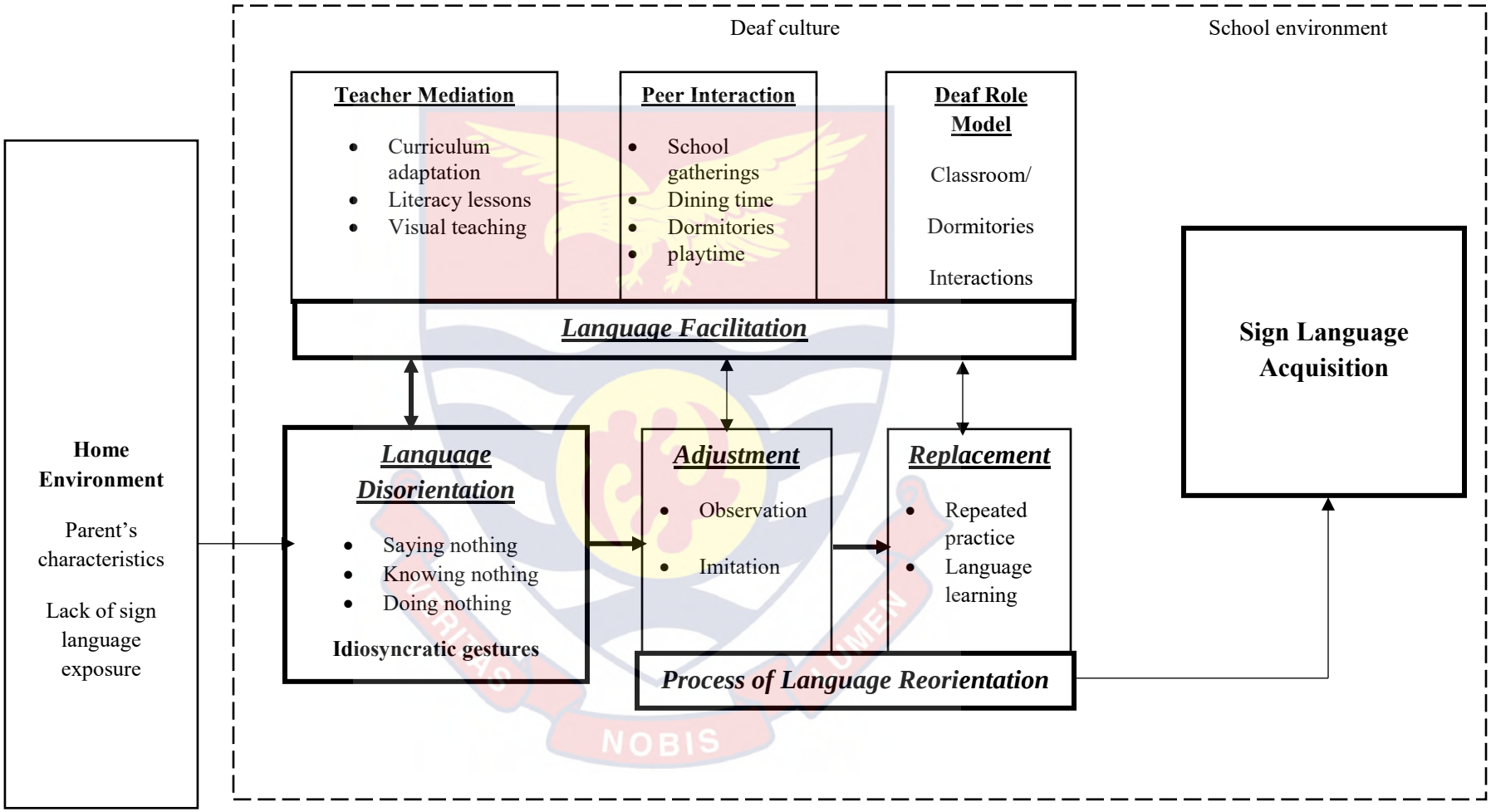


Figure 13: Grounded Theory of Language Reorientation.
Source: Researcher's own construct, 2019.

Situating the Theory of Language Reorientation within Existing Literature

Theories of language development

The theory of *language reorientation* is consistent with the behaviourist and the social interactionist theories of language acquisition. According to the behaviourists, children learn language through observation and imitation (Demirezen, 1988; Bandura, 1989; Leman et al., 2012). This theory of *language reorientation* confirms the behaviourist theory which explains that hearing children learn spoken language directly by observing and imitating what others do or say and repeat the experiences they gather from their environment. Similarly, children who are deaf acquire sign language through a process of observation and imitation. The school environment exposes deaf pupils to sign language hence, deaf pupils directly pick up the sign language from their immediate environment by observing their teachers and peers closely within the school and imitate how they use the sign language to interact among themselves.

As teachers, deaf adults and peers model correct sign language in the classroom and in other social gatherings, deaf preschoolers imitate the manual markers of sign language such as hand formation, orientation, location and movement as well as non-manual markers such as raising eyebrow, squinting or frowning and head shaking which form the basis for sign language. Hence, language acquisition of children who are deaf is shaped by environmental influences and behavioural principles (Lerner, 2006). This suggests that during the process of sign language acquisition, children go through periods of trial and error

as they attempt to use correct adult language many times until they succeed. This practice makes language development a process of habit formation (Bullock, 1983). In principle, this theory explains language development as a learned human behaviour in observable stimulus-response interaction as children imitate, repeat and memorise human language.

The theory of *language reorientation* also resonates with the social interactionist theory of language acquisition. According to the social interactionist theory, language is a social tool that children must acquire through social interactions. Hence, children must be exposed to accessible language environment in order to gather rich language experiences. It further explains that children as they observe what adults use to communicate and imitate such behaviours within their cultural contexts, they acquire language. Through social interactions, the More Knowledgeable Other (MKO), usually parents or more experienced members of a social group teach children, who are less experienced, the skills of language communication. These knowledgeable members of society offer good language models to children, who at a point in their development would need such help (Gadagbui, 2014).

Similarly, the theory of language reorientation explains that children who are deaf begin preschool with language difficulty. Children who are deaf will naturally encounter difficulty in the understanding of sign language as they interact with school environment. This is because most children who are deaf do not develop sign language at home and the idiosyncratic gestures they develop at home are personal and incomprehensible at school. Hence, older peers or deaf adult in the

school who are more skilled in sign language help deaf pupils by providing them with the understanding of basic concepts in sign language using gestures, demonstrations and pictures.

This amount of assistance deaf pupils receive help them to move out of their language difficulty to an upper level of sign language acquisition where they drop their idiosyncratic gestures and replace them with correct sign language. This language difficulty is what Santrock (2011, 2004) describes as zone of proximal development (ZPD) and the language facilitation process is what Santrock (2004) refers to as scaffolding. This means that the teachers, peers and deaf adults found in the school ecology are agents to sign language development of children who are deaf when they model the appropriate means of communication using sign language (Bohannon & Bonvillian, 2005).

The Language Acquisition Support System (LASS) Bruner (1983) outlines in the social interactionist theory of language development also resonates with the theory of *language reorientation*. In the LASS, according to Bruner (1983), caregivers become facilitators of children's language acquisition through mutual gaze, questions, joint attention and dialogues to support children's own role in communication, a process Gadagbui (2014) calls guided communication. Similarly, teachers, deaf adults and peers become facilitators of sign language acquisition of children who are deaf at school through demonstration, joint attention, classroom teaching and learning and visual teaching strategies. Therefore, children who are deaf are exposed to an engagement system at preschool that enables them to acquire important meaning -making practices of the school. Miller and Goodnow (1995)

cited in Singleton and Dianne (2006) explain that the meaning-making practices of the school involves meaningful actions such as the use of language and cultural behaviours that are repeated and packaged with values. The authors further add that these practises are part of a group's identity.

Consequently, Rogoff (1990) cited in (Singleton & Dianne, 2006) also argues that the two general processes of the meaning making practices are intersubjectivity and appropriation which enable children who are deaf to engage mutually with their teachers and peers. According to the author, the intersubjectivity involves the sharing of attention and intentions in the communicative practice between the More Knowledgeable Other (teachers and deaf adults) and children who are deaf. The intersubjectivity is achieved when adaptations or shifts in understanding occur on the part of both parties. This means that when there is intersubjectivity, there is mutual understanding and learning can take place. This concept seems to connect with the replacement stage of the theory of language reorientation. This is because during the replacement stage where deaf pupils begin to drop their idiosyncratic gesture and replace them with proper sign language, some measure of intersubjectivity is assumed to be reached. Further research is needed to ascertain this assertion.

Rogoff (1990) cited in (Singleton & Dianne, 2006) also mentions appropriation as part of the meaning-making process. The appropriation, according to the author, is characterised by children imitating, experimenting or trying the practises that have been observed. The author however cautions that the appropriation is different from simply internalising something that has been

observed externally. Rather, it is taking in or trying on some of the meaning that occur in communication which is supported or limited by children's own sense-making ability and level of development. The study could not ascertain how this appropriation is reached among deaf pupils in the various schools for the deaf in Ghana and further research is needed to substantiate that.

However, as Rogoff (1990) cited in Singleton and Dianne (2006) maintains, intersubjectivity and appropriation are primarily achieved through everyday social exchanges that occur within children's immediate environment which are essential for language development. This means that routine conversations in sign language between teachers, peers, deaf adults and children who are deaf that exist in the schools for the deaf are just the "everyday talk" that many children who are deaf of hearing parents miss from home but are essential to their sign language development.

In comparison, the theory of language reorientation is different from the existing theories of language development because it specifically explains the process of the sign language acquisition among children who are deaf with focus on how the school environment uses its assets such as teachers and deaf culture to facilitate sign language acquisition. The existing theories of language development seem to focus on spoken language of hearing children. It is therefore rather vague and misleading to explain the sign language acquisition among children who are deaf in Ghana, using general theories of language development. The point is that such existing theories lack specificities such as this theory has fulfilled.

Language Disorientation: Effects of Deafness or Neglects

The findings of the study point to the fact that deafness is a disability that makes it difficult for children who are deaf to naturally acquire spoken language because of the inability to receive auditory inputs. It also suggests that by default, children who are deaf are likely to grapple with academic challenges if proper measures are not instituted to mitigate the effects of deafness. However, studies on language acquisition in children who become deaf congenitally or in the early years of their lives show that it is not the lack of hearing per se that causes the overwhelming effects of deafness but the lack of exposure to accessible language. While these effects of deafness are well documented in the literature and are actively debated (Humphries et al., 2016), this study points to the fact that the overwhelming issues of language disorientation of children who are deaf at school are as a result of neglect, delay or deprivation and not entirely the effect of deafness.

Humphries et al. (2014) report on language neglect to indicate the effect on children who do not receive accessible language input from early infancy. According to Humphries et al. (2014), about 60,000 children who languished in profoundly understaffed state-run orphanages in Romania in 1999 suffered cognitive and socio-emotional deficits and psychiatric disorders. It was reported that while later foster intervention enhanced their development, some areas of neural activity, cognitive and social-emotional functioning did not recover fully unless intervention was given early before age 2 years. Further study by Drury et al. (2012) confirms that the protective caps on the ends of chromosomes called telomeres, of the children found in the Romanian orphanages grew shorter the

longer they stayed in those orphanages. This severe form of neglect affects the architecture of the brain leading to poor cognition and can curtail cortical activities (Humphries et al., 2016). Most importantly, it deprives the proper function of the brain language mechanism responsible for fluid receptive and expressive language behaviour (Humphries et al., 2014).

Neglect has been defined by Sullivan (2000, p.8) as "failure to provide basic physical health care, supervision, nutrition, personal hygiene, emotional nurturing, education or safe housing. It also includes child abandonment or expulsion". Since most parents have natural tendency to love and protect their children and will do anything to ensure their welfare, it may be difficult to say that parents consciously neglect the language needs of their children. However, neglect can be subtle and yet damaging. Even a little language neglect in early infancy may have an effect on sign language development of children who are deaf.

Similarly, failing to provide sign language to children who are deaf can be considered as a form of neglect. The argument is that when the immediate environments of children who are deaf are not well maintained to respond to their language needs in order to build a solid foundation in sign language, it constitutes a form of language neglect, delay or deprivation.

Sources of sign language neglect

Humphries et al. (2014) indicate that many hearing parents with children who are deaf resort to the internet, physicians, spiritual leaders, friends and family or even sympathisers for help when their children's deafness is first diagnosed. The authors further explain that the family and friends hearing parents of children who

are deaf resort to are in most cases stereotypical about deaf people. They may not know the way of life of deaf people and so they may be under or misinformed about the language needs of children who are deaf. Hence, they fail to help these parents to understand the crucial issues of brain plasticity connected to the risk of language delay in children who are deaf. Similarly, as this study revealed, most hearing parents of children who are deaf are ignorant or even superstitious about the language needs of their children who are deaf. Consequently, they ignorantly refuse to provide their children who are deaf with the right exposure to sign language. The net effect is that such parents resort to raising their children who are deaf with speech which develops in them a gestural system for communication rather than an accessible language which has the capability of nourishing the brain.

While this study points to ignorance on the part of hearing parents, Humphries et al. (2016) also point to some medical personel as contributors to children who are deaf's language neglect. The authors mention that some medical professionals in the USA advise parents who have children who are deaf to avoid raising their children with sign language for fear their children may not acquire spoken language. Johnston (2006), confirms that most of these advisors believe that sign language, if considered at all, should be the last resort. Some medical professionals are of the opinion that since absence of hearing can lead to absence of spoken language, the only means by which children who are deaf can acquire language is by sensory restoration through cochlear implant or other medical intervention. By this notion, they equate language acquisition to speech production and perceive sign language as a barrier to learning speech (Broesterhuizen &

Leuven, 2008 as cited in Humphries et al., 2014). Hence, considering the fact that most parents of children who are deaf are hearing and would want to have their children the same way, they resort to the long medical procedure of trying to restore their children's hearing causing undue delay, neglect or deprivation to language development (Humphries et al., 2014).

This state of affairs can be seen as unfortunate because it eventually results in language neglect/deprivation of children who are deaf. This might not be the case in Ghana as limitation in technology may point to different dimensions such as ignorance and superstition, such as this study revealed. Further research is needed to ascertain such notions among the medical professional in Ghana.

Notwithstanding, this situation of medical professionals misleading parents is worrying especially when statistics from Moores (2001) show that for the population of children who are deaf in USA alone, only 4% are born to deaf parents whereas a majority 96% of children who are deaf are born to hearing parents. For the minority of children who are deaf born to deaf parents, the assumption is that they may likely be accepted as part of the deaf culture and be provided with sign language at an early age. However, for the majority of children who are deaf born to hearing parents, they may become first time deaf members of the family and may not get exposed to sign language early in their lives. Likely, hearing parents, out of unawareness about the lives of deaf people and sign language, may resort to remedies that delay, neglect or deprive their children who are deaf of sign language development just as this study confirmed. However, further study is needed to ascertain the statistics involved in this situation in Ghana.

Effects of sign language neglect on children who are deaf

According to Hall, Levin, and Anderson (2016) children who are deaf who are raised in an oral environment without sign language such as the study revealed do not receive enough auditory inputs to develop any spoken language and consequently miss out on developing fluency in any spoken or signed language. Hence, they become language disorientated at school as described by this study. They are also likely to show cognitive deficits due to lack of access to communication since lack of language may correlate with poor cognitive abilities. Language deprivation when severe can also lead to a mental health disorder known as language deprivation syndrome (Humphries et al., 2016). This is because without full access to language, the privilege of social communication children who are deaf is taken away with severe consequences such as inhibited development of healthy, strong sense of self and identity (Hintermair, 2008 as cited in Humphries et al., 2016).

Undoubtedly, language deprivation can hinder executive functions or cognitive control and supervisory attentional system (Humphries et al., 2016). When language deprivation leads to mental health disorder, the control of cognitive processes such as working memory, reading, flexibility, problem solving, planning and execution will severely be impaired (Hillman, 2008 as cited in Humphries et al., 2016). The situation, according to Schick, de Villiers, de Villiers, and Hoffmeister (2007), can impede the development of the theory of mind where children who are deaf will have trouble understanding that others have mental states, beliefs, needs, desires, intentions and perspectives that are different from

theirs. This condition of the mind of children who are deaf who are language deprived makes them find it difficult to get along with peers because of lack of empathy for them.

Apart from biological harm, language neglect/deprivation can also greatly affect memory and weaken the educational and career opportunities of children who are deaf. Hermans, Ormel, Knoors, and Verhoeven (2008) found that a good foundation in a first language leads to strong cognitive abilities which correlates with literacy, without which the professional development of children who are deaf will be highly circumscribed. Linguistic deprivation can lead to isolation, frustration and abuse in children who are deaf because of the inability to express themselves fully (Leigh, 2008).

Influence of School Environment on Sign Language Acquisition of Children who are deaf

The theory of *language reorientation* also highlights the importance of environment, placing emphasis on Urie Bronfenbrenner's ecological system of development. The ecological systems theory stresses the importance of the relationship children and the various developmental systems such as family and community. For example, in the microsystems of the ecological systems theory, which forms the closest setting in which the children live and interact with people and institutions is crucial for children's language development. Similarly, the theory of *language reorientation* shows that preschool environment is important to sign language acquisition among children who are deaf in Ghana.

Besides, language acquisition, the process by which humans gain the ability to perceive and understand language and to use it to communicate, is dependent on

a multiple of factors which includes children's own cognitive and physiological maturation, good language model and interactions with the environment (Gadagbui, 2014). This means that language acquisition of children who are deaf does not occur in a vacuum. The influence of the environment is crucial to providing a good exposure to language models such as teachers and knowledgeable peers and deaf adults to help children who are deaf to learn sign language by observing, imitating and repeating what they see and experience within their environment.

This makes the school environment essential to understanding the emergent theory that explains the process of sign language acquisition of children who are deaf (Bronfenbrenner, 1979a). The school environment forms part of the immediate environment of children who are deaf, which is patterned with activities, roles and interpersonal relationship that is bi-directional, in that it happens from within children and toward children (Härkönen, 2007). Hence, the school environment exerts the strongest and most powerful influence on sign language development of children who are deaf.

Therefore, for many children who are deaf in Ghana, who are born to hearing parents, the major opportunity for acquiring sign language will take place in the school environment and the primary linguistic model will come from the deaf culture at school and their preschool teachers. Until children who are deaf are exposed to sign language within the school environment, their chances of acquiring it from home from their parents and siblings are very limited. This is because basically children are born into social structures in which they are cared for and

which shape their interpersonal variations and social interactions. These social structures are a system of engagement and interactions that enable children to acquire language for meaningful practices of their family and to have a sense of identity through increasing participation as members of their community (Rogoff, 2003).

In early infancy, both deaf and hearing mothers appear to be sensitive and responsive to their deaf and hearing infants respectively, in specific ways that likely facilitate the processes of mutual sharing of attention and intentions in communication practices leading to imitation, experimentation and trial of such practices by their children (Singleton & Dianne, 2006). For this reason, Gosse et al. (2014) are of the opinion that high language practices at home before schooling are essential to children developing a primary native language. However, the issue of situational characteristics in homes of most children who are deaf in Ghana shows that home environment may not be supportive of sign language acquisition of children who are deaf because such homes may vary and impact on their language development differently thereby shifting the focus onto the school setting.

The school setting has received research attention on the notion that the classroom is a context for language development. Therefore, a considerable amount of time has been paid to language development in preschool children. For example, as Weigel et al. (2007) express, preschool years are crucial times when language development abilities emerge. Admittedly, it is in the first three years of children's lives, at a time when they begin preschool that their language competencies are transitioned and harnessed (Lonigan et al., 2011). High-quality preschool strategies

and experiences support language and literacy development and serve as instructional intervention to compensate for early language deficit (McCabe et al., 2010; Lonigan et al., 2011).

A study conducted by Gosse et al. (2014) for instance, reinforces the notion that the school environment including classroom teaching and learning processes can have direct impact on children's language development. What the Gosse et al. (2014) study did was to examine the extent to which relational and instructional supports in preschool classrooms are associated with children's language development and whether these associations vary as a function of children's language ability. The population of this study comprised at-risk children in 95 classrooms in a state-funded preschool in the state of Virginia, USA where language skills of 360 at-risk children were assessed using an expressive narrative task. The findings identified a stronger association between instructional support and children's language development.

These findings reiterate the idea that the school setting can impact positively and children's language acquisition such as this study discovered. It is therefore plausible to conclude that sign language acquisition among children who are deaf is facilitated at school with adequate support by their teachers and knowledgeable peers through the adoption of effective and appropriate interactions in the school settings that are robust with language learning activities.

Benefits of sign language acquisition to children who are deaf

It is clear from the study that many children who are deaf raised without sign language in their early years will experience language disorientation at school

just as Humphries et al. (2016) believe that such children who are deaf may never become fluent in any signed or spoken language. Even in the developed countries such as USA where cochlear implantation has become a preferred medical intervention for children who are deaf in order to support their language development, the success rate has not been enough stressing the need for children who are deaf to be exposed to sign language in the early years of their lives.

Research over the past 40 years has demonstrated that full and prolonged exposure to sign language for children who are deaf results in language development that has the same development pattern and yields the same benefits as spoken language does for hearing children (Mayberry, Chen, Witcher, & Klein, 2011). Sign language is a viable human language with all the cognitive benefits attributed to spoken languages. It is also accessible to all children who are deaf such that if children who are deaf acquire sign language during the early years of their lives, they will not experience the harm of linguistic deprivation.

Several studies show that children who are deaf who develop sign language in early infancy at home do better at school and show better reading skills than children who are deaf who are raised without it (Holmer et al., 2016). Hrastinski and Wilbur (2016) agree that there is a strong correlation between signing skills and better print literacy, therefore children who are deaf who develop sign language from home during childhood have higher academic achievements than those who do not. It is known that children who are deaf who acquire sign language and then learn the written form of a spoken language have greater cognitive, social and educational benefits.

It is better if children who are deaf are raised bilingually, if possible, such that after acquiring a strong first language in sign language, they have a better foundation to develop the written form of a spoken language such as English (Singleton & Dianne, 2006). When children who are deaf are raised this way, they may show more syntactic complexity than their monolingual peers (Humphries et al., 2014). They may show better ability in creative thinking and problem solving and have better mental flexibility as well as cognitive control that persists throughout their adult lives (Kushalnagar, Hannay, & Hernandez, 2010).

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter presents the summary of the findings, conclusions and recommendations of the study. It gives a general overview of the entire thesis by recapping the various chapters. This includes the overview of the purpose of the study, the research questions which guided the study, the research methods that were employed and the findings. The final part of the study looks at the implications of the study as well as some suggestions for further research.

Summary

The auditory systems of children who are deaf are nonfunctional which makes spoken language acquisition a major challenge to them. Hence, to avoid the effect of language deprivation, children who are deaf must, as a matter of expediency, acquire sign language in the early years of their lives. However, the home environments of most children who are deaf are without sign language therefore the need to look into the school environment as last resort to sign language acquisition of children who are deaf. This attempt was to fill a knowledge gap on the shortage of literature on how children who are deaf acquire sign language in the context of school environment which seems to suggest an apparent lack of a substantive theory that explains the processes. Subsequently, four research questions were formulated to guide the study.

The purpose was to explore the school environment in order to theorise the process of sign language development among children who are deaf in Ghana. In

line with the purpose, the constructivist grounded theory design was employed to gather qualitative data for the study using interviews and observations. Guided by symbolic interactionism of the constructivist research paradigm, data were collected from multiple data sources including hearing parents, teachers and head teachers of children who are deaf.

With the help of case study design in grounded theory, focus was placed on Cape Coast School for the Deaf to explore the preschool environment, examine classroom teaching and learning process, conduct portfolio analysis and examine the kindergarten curriculum. During the data collection period, three preschool teachers and one head teacher were purposively sampled for interviews in order to understand the process of sign language acquisition among deaf pupils. The categories that emerged from the data after initial, focused and theoretical coding directed further data collection and analysis. Hence, one head teacher and 10 preschool teachers of five schools for the deaf were selected using theoretical sampling procedure to saturate the emergent categories. The entire process of data collection and analysis was done using the constant comparative analysis. The major findings of the study have been summarised as follows:

Research Question One

What situational characteristics of children who are deaf at school influence their sign language acquisition?

The study found that at school, children who are deaf lack the necessary language proficiency both in spoken and sign modalities. This is because parents of children who are deaf are mostly hearing who are not literate in sign language and so deny their children who are deaf an early access to sign language. This lack

of early exposure to sign language deprives children who are deaf of a primary language to communicate at school, hence they resort to using homemade gestures they develop at home with their hearing families. However, these homemade gestures are idiosyncratic and comprehensible only to children who are deaf themselves and their families. Consequently, children who are deaf become disorientated as they grapple with the challenge of using these idiosyncratic gestures to communicate with their teachers and peers necessitating the need to facilitate sign language acquisition among them.

Research Question Two

What major role do teachers in school for the deaf play to facilitate sign language acquisition among deaf preschoolers?

The study found out that the major role teachers play in school for the deaf to facilitate sign language is *mediation* which involves curriculum adaptation, literacy lessons and visual teaching. Since the schools for the deaf use the same kindergarten curriculum designed for general education, teachers play the role of adapting some aspects of the curriculum in order to ensure effective classroom teaching and learning. The study also found that teachers do not specifically teach sign language in class as a subject because it does not form part of the school curriculum for kindergarten. Hence, teachers use the teaching and learning process to facilitate learning of the rudiments of sign language such as naming objects or signing the letters of the English alphabet. Teachers also use visual elements such as pictures, posters, diagrams and charts to reinforce sign language concepts thereby facilitating its acquisition.

Research Question Three

How is teaching and learning done in schools for the deaf to facilitate deaf preschoolers' sign language acquisition?

The study found that the focus of teaching and learning activities in the classroom is to help deaf preschoolers to gain numeracy and literacy skill such as counting, identifying the letters of the English alphabet, spelling their names and identifying two and three letter words. However, during classroom teaching and learning activities, teachers use body gestures, demonstration and other visual instructional strategies such as pictures, charts, flashcards and posters to interact with deaf pupils which help deaf preschoolers to learn new words and concepts in sign language. It was gathered that teachers display visual materials such as posters on the blackboard during lessons and teach concepts from them by pointing to particular images and asking for their names in sign language. The naming of the images help deaf pupils to acquire sign language vocabularies for concepts such as mother, table, erasers, pencil, book and chalk thereby facilitating their sign language acquisition.

Research Question Four

What substantive theory explains sign language acquisition of Ghanaian deaf preschoolers within the school ecology?

The substantive theory that explains sign language acquisition process of deaf preschoolers within the school environment in Ghana is the *theory of language reorientation*. The theory explains that children who are deaf begin school without any functional language because they are raised in homes where family members are hearing and so sign language is not the primary language of interaction.

Therefore, at school children who are deaf become language disorientated as they interact with teachers and peers with homemade gestures which they develop at home with their hearing relatives. The first stage of the sign language acquisition process is *facilitation* where teachers use classroom teaching and learning to reinforce the learning of the rudiments of sign language such as naming objects and fingerspelling. Subsequently, the facilitation process is strengthened by the influence of the deaf culture at school where knowledgeable peers and deaf adults model the accepted ways of sign language communication. The facilitation process leads to an adjustment phase which is characterised by confusion, frustration and acceptance. At the acceptance stage, children who are deaf observe teachers and peers in classroom teaching and learning and social interactions respectively and begin to imitate what they observe. As the imitation is perfected through continuous use of manual markers such as hand shapes, children who are deaf begin to drop their idiosyncratic homemade signs and gestures and replace them with sign language. Hence, repeated practice of observation, imitation and replacement leads to sign language acquisition which is described as language reorientation.

Conclusions

Based on the findings, the study concludes that:

1. Children who are deaf in Ghana become language deprived at school because their home environments do not supportive of their sign language acquisition in the early years of life.
2. The schools for the deaf serve as a place of last resort hence an intervention to sign language development of children who are deaf in Ghana. Resources

in the school such as teachers and peers become facilitators of sign language acquisition among deaf preschoolers. This is because sign language is not taught as part of the curriculum in the schools for the deaf in Ghana.

3. The process of sign language acquisition among deaf preschoolers in Ghana can be explained using the substantive theory of language reorientation which states that children who are deaf who are language disorientated at school interact with the school environment through teacher mediation as well as peer and deaf adult interactions to facilitate their sign language acquisition. Hence, the facilitation the school provides enables deaf pupils to adjust to the school culture, drop their idiosyncratic gestures to replace them with proper sign language.

Recommendations

The following recommendations are provided based on the findings:

i. The Ghana Education Service in collaboration with Department of Social Welfare may embark upon public campaign to give education to parents and caregivers on the need to have hearing problems of their children who are deaf assessed early enough and to seek early educational intervention for children who are deaf in the various schools for the deaf to expose them to sign language as soon as possible.

ii. The heads of assisted special schools may in consultation with the Special Education Division of the GES should push for the inclusion of Ghanaian sign language in the curriculum for kindergarteners.

iii. Schools for the deaf should in consultation with the Special Education Division of the GES designate deaf teachers as sign language teachers in each of the schools for the deaf to enforce the official learning of sign language among deaf pupils.

iv. The GES may ensure the provision of in-service training for teachers to update their knowledge and give guidance on how to adapt the linguistic aspect of the curriculum to make it accessible to deaf preschoolers.

Implication for Practice

Sign language development among children who are deaf is a broad concept that cannot thoroughly be covered in just one research study. However, the findings of this study indicate some implications for policy and practice. The theory that emerged from this study points to the school as a place of last resort for sign language development of most children who are deaf in Ghana. Hence, this study has a lot of implication for the kind of school system designed for children who are deaf in Ghana. For example, Weigel et al. (2007) indicate that the type and quality of school system involving teacher-learner interactions in the preschool classroom has great influence on children's sign language learning. The authors further state that the language stimulation teachers provide through the number of times they ask questions, respond to children's vocalisations and talk positively to them improve children's language acquisition in the classroom.

Similarly, the degree of stimulation that preschool teachers are able to provide for children who are deaf during classroom teaching and learning can significantly improve their sign language production and comprehension. The

implication of this study is that for children who are deaf to gain sign language skills from the classroom teaching and learning environment within the school, teachers must be more accommodating and proficient users of sign language.

This study again points to the fact that teaching and learning in preschool for the deaf must take a format that will not only impart knowledge to children who are deaf but also equip them with sign language acquisition skills. Hence, preschool teachers' sign language interactions, joint attention, conversational style, use of questions and feedback, demonstrations and visual teaching strategies are all part of the teaching and learning process that impact on sign language acquisition of children who are deaf and must be underscored in any preschool education formulated for deaf pupils.

Furthermore, as this study indicates, the current curriculum used in schools for the deaf is designed with the hearing in mind. Whereas it might be ambitious to formulate a new curriculum for children who are deaf in Ghana, it is in place to have a laid down procedure for adapting the regular school curriculum in schools for the deaf especially at the preschool level. This direction should specifically inform teachers of the deaf on how to adapt and manage the linguistic aspect of the education provided for deaf pupils.

Sign language teaching should subsequently be a part of the kindergarten curriculum for children who are deaf more so that the current preschool education emphasises on the use of local language as a medium of instruction among preschool children through the National Literacy Acceleration Programme (NALAP). The implication is that if there is the need to teach Ghanaian languages

such as Fante, Ewe and Twi to hearing children in regular school as part of the school curriculum, then there is an equal need to teach sign language to children who are deaf as part of the school curriculum.

This study also has implication for visual teaching strategies in schools for the deaf. Since children gesticulate, make movements, leap, draw and paint long before they form proper communication skills (Brouillette, 2012), the use of visual instructional strategies in the classroom of deaf preschoolers can help to strengthen their memory and become a means of communication. Deaf pupils are visual learners who can only enrich their vocabulary visually (Easterbrooks & Stoner, 2006).

Consequently, an alternative means of visual communication which provides sensory stimulation, mostly through vision, should be provided to deaf pupils in order to enhance their language learning processes. As the eyes replace the ears in classrooms of deaf pupils, visual instructional strategies should, as a matter of expedience, be the focal point of every teaching and learning process formulated for deaf pupils. Therefore, activities in deaf pupils' classrooms such as dramatic movements and demonstrations, role play, posters, and pictures can become powerful generators of visual images that help deaf pupils to understand lessons and facilitate their sign language acquisition. Certainly, deaf preschoolers rely on visual cues such as demonstrations, real objects, facial expressions and body movements to gain information in the classroom thereby facilitating their sign language development.

The use of visual instructional strategies in preschool for the deaf is essential because they help deaf pupils to visualize which can aid cognitive development. Visual elements such as pictures are able to communicate a lot of information in a small amount of time and facilitate understanding of concepts. Smith (1995) is of the opinion that even straight academic content such as literacy and mathematics can be taught effectively to deaf preschoolers using visual instructional strategies.

The point is that visual instructional strategies lend themselves to the imaginative use of concrete materials and experiences to teach abstract ideas. Lack of hearing makes it difficult for children who are deaf to understand abstract concepts (Easterbrook & Stoner, 2006; Marschark & Mayer, 1998). However, the use of visual instructional strategies can concretize abstract concepts and make deaf preschoolers understand them easily. This suggests that visual instructional strategies can become a tool for teaching sign language as well.

Implication for Policy

The study also has implications for policy formulation. Currently, the Government of Ghana through its 1992 Constitution (Article 19.2d, Article 29.6) and the Disability Act 2006, Act 715 recognises the rights of persons with disabilities which also acknowledges the rights of deaf people to access information and other public goods and services through the use of sign language (Government of the Republic of Ghana, 1993).

Specifically, Article 19.2 of the 1992 Constitution, for example, demands that:

> *"A person charged with a criminal offence shall be informed immediately in a language he understands, and in detail; of the nature of the offence charged. AND be permitted to have, without payment by him, the assistance of an interpreter where he cannot understand the language used at the trial".*

Article 29.6 likewise stipulates that any public institution that provides public services must make its facilities accessible to all whereas Article 39 states that "The State shall foster the development of Ghanaian languages and pride in Ghanaian culture".

Ghanaian Sign Language is also a Ghanaian Language like Akan and Ewe which will have to be recognised and upheld. The implementation plan of the inclusive education policy specifically mentions as part of its implementation actions that community outreach and programmes will be organised in local languages on radios and TVs on awareness creation for promoting inclusive education for national and regional level audiences targeted at PTA's, School Management Committees, and School Boards of Governors (Ministry of Education, 2015). This implementation strategy directs the need for a sign language policy in Ghana in order for the MOE to carry out the inclusive education agenda successfully. This will also ensure inclusiveness as programmes are organised for deaf parents and their children who are deaf.

As part of policy formulation, sign language acquisition among children who are deaf in Ghana needs be underscored in national discourses more so that disability issues are becoming global agenda addressed in Sustainable

Development Goals. Goal 10 specifically addresses the issue of reducing inequality within and among countries by empowering and promoting the social, economic and political inclusion of all with persons with disabilities in focus. Sign language can undoubtedly serve as the bridge to ensuring the social, economic and political inclusion if children who are deaf are exposed to it early in life. This can only be realised if sign language is promoted in homes and schools.

All these constitutional demands point to the need to train teachers who are proficient in sign language to serve as resource teachers in these capacities. For example, Section 21 of the Disability Act, Act 715 in 2006 state that:

> *The Minister of Education shall by Legislative Instrument, designate in each region a public technical, vocational and teacher training institution which shall include in their curricula special education, such as: 1. Sign language, and 2. Braille writing and reading.*

This calls for higher institutions of learning to incorporate sign language teaching as part of teacher training in order to make teachers who serve in schools for the deaf more effective.

Perhaps, as Singleton and Dianne (2006) suggest, schools for the deaf may consider the need to place more deaf teachers or deaf adults in early childhood settings. As this study found, deaf adults within the school setting play significant role in sign language acquisition of children who are deaf. These deaf adults may not be professional teachers or hold post-secondary qualifications but can serve as teaching aides to preschool teachers in the classroom. The significant role they play

includes providing the "everyday talk" children who are deaf miss at home in order to facilitate the acquisition of sign language within the school environment.

The deaf adults may also provide hearing teachers at the preschools for the deaf with the necessary resources such as how some concepts are signed to facilitate the teaching and learning process in the classroom. As deaf adults serve as language role models and help to immerse children who are deaf into deaf culture while hearing teachers also engage them in the "hearing world", they may develop in them bilingual/biculturalism.

Besides, with the basic understanding from this study that sign language is a natural language for deaf people, there is the need to continue to formulate policies that will introduce sign language to children who are deaf in the early years of their lives. This is because just like any other Ghanaian languages, Ghanaian sign language enables deaf people to access public goods and services and to participate fully in public events, education, political, social, economic and healthcare.

However, the unavailability of sign language at home, would mean most children who are deaf are often side-lined from participating and engaging in public events, programmes right from their early years which may make deaf people receive inadequate, inappropriate and sometimes unethical healthcare, judicial and other services resulting in either casualties or miscarriage of justice in later years. This situation demands a head-on approach which tackles the problem from the early years by making sign language a part of the hearing society. This will also mean that there should be a policy to screen all neonates to identify those with

deafness early in order to mitigate the effect the deafness may have on their language development.

Suggestions for Further Research

The theory developed to explain the process of sign language acquisition among deaf preschoolers is substantive, hence there is the need for further research to test the practicability of the theory in an attempt to develop it into a formal theory.

As with all empirical studies, some limitations are admitted in this study which open up avenues for further research. The study was conducted on specific assumption that children who are deaf are born to hearing parents who are not literate in sign language. Further research may focus on other assumptions such as those involving children who are deaf of deaf parents.

REFERENCES

Adera, B. A., & Asimeng-Boahene, L. (2011). The perils and promises of IE in Ghana. *The Journal of International Association of Special Education*, *12*(1), 28–32.

Allan, G. (2003). A critique of using grounded theory as a research method. *Electronic Journal of Business Research Methods*, *2*(1), 1–10.

Ametewee, S. D. (2010). *Factors affecting efficacy of assessment centres in assessing children with special educational needs in Winneba, Hohoe and Accra centres*. University of Cape Coast, Cape Coast, Ghana.

Angen, M. J. (2000). Evaluating interpretive inquiry: Reviewing the validity debate and opening the dialogue. *Qualitative Health Research*, *10*(3), 378–395.

Avoke, M. (2000). *Introduction to special education for universities and colleges*. Accra: The City Publishers.

Backman, K., & Kyngäs, H. A. (1999). Challenges of the grounded theory approach to a novice researcher. *Nursing and Health Sciences*, *1*, 147–153.

Bandura, A. (1989). Social cognitive theory. In R. Vasta (Ed.), *Annals of child development: Six theories of child development* (pp. 55–65). Greenwich, CT: JAI Press.

Bauman, H.-D. (2008). *Open your eyes: Deaf studies talking*. Minneapolis, MN: University of Minnesota Press.

Blumer, H. (1969). *Symbolic interactionism: Perspective and method*. Berkeley, CA: University of California Press.

Bohannon, J. N., & Bonvillian, J. D. (2005). Theoritical approaches to langauge acquisition. In J. B. Gleason (Ed.), *The development of language* (6th ed., pp. 230–291). New York: Pearson Educational Inc.

Bowe, F. (1998). Language development in deaf children. *Journal of Deaf Studies and Deaf Education*, *3*(1), 73–77.

Bronfenbrenner, U. (1979a). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.

Bronfenbrenner, U. (1979b). *Understanding children in context: The ecological model of human development*. *Harvard University Press*. Cambridge, MA: Harvard University Press.

Bronfenbrenner, U. (1994). Ecological models of human development. *Readings on the Development of Children*. https://doi.org/http://www.psy.cmu.edu/~siegler/35bronfebrenner94.pdf

Brouillette, L. (2012). Supporting the language development of limited english proficient students through arts integration in the primary grades. *Arts Education Policy Review*, *113*(2), 68–74. https://doi.org/10.1080/10632913.2012.656494

Bruner, J. S. (1983). *Child's talk: Learning to use langauge*. New York, NY: W. W. Norton.

Bullock, D. (1983). Seeking relations between cognitive and social-nteractive transitions. In K. W. Fischer (Ed.), *Levels and transitions in children's development: New directions in child development* (pp. 97–108). San Francisco: Jossey-Bass, CA.

Butterworth, R. R., & Flodin, M. (1989). *Signing made easy*. New York, NY: The Putnam Publishing Group.

Carter, M. J., & Fuller, C. (2015). Symbolic interactionism. In *Sociopedia.isa* (pp. 1–17). Northridge, CA: California State University.

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. *Book* (Vol. 10). London: Sage Publications. https://doi.org/10.1016/j.lisr.2007.11.003

Charmaz, K. (2008). Grounded theory as an emergent method. In S. N. Hesse-Biber & P. Leavy (Eds.), *Handbook of emergent methods* (pp. 155–172). New York: The Guilford Press.

Charmaz, K. (2015). Teaching theory construction with initial grounded theory tools : A reflection on lessons and learning. *Qualitative Health Research*, *25*(12), 1610–1622. https://doi.org/10.1177/1049732315613982

Charmaz, K. (2017). Constructivist grounded theory. *The Journal of Positive Psychology*, *12*(3), 299–300. https://doi.org/10.1080/17439760.2016.1262612

Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education* (7th ed.). Oxon: Routledge.

Cooter, R. B., & Reutzel, D. R. (2004). *Teaching children to read: Putting the pieces together*. Upper Sadle River, NJ: Pearson Educational Inc.

Corbin, B. J., & Strauss, A. (2008). *Basics of qualitative research: techniques and procedures for developing grounded theory* (3rd ed.). Los Angeles, CA: Sage Publications Inc.

Cormier, K., Schembri, A., Vinson, D., & Orfanidou, E. (2012). First language acquisition differs from second language acquisition in prelingually deaf signers: Evidence from sensitivity to grammaticality judgement in British Sign Language. *Cognition*, *124*(1), 50–65. https://doi.org/10.1016/j.cognition.2012.04.003

Creswell, J. W. (2006). *Qualitative inquiry & research design: Choosing among five approaches*. London: Sage Publications.

Creswell, J. W. (2012). *Educational research: Planning, conducting and evaluating quantitative and qualitative research* (4th ed.). Boston, MA: Pearson Educational Inc.

Crotty, M. (2003). *The foundations of social research process: Meaning and perspective in the research process*. Thousand Oaks: Sage Publications Inc.

Curtiss, S. R. (1977). *Genie: A linguistic study of a modern day "wild child."* New York, NY: Academic Press.

DeKeyser, R. M. (2000). The robustness of critical period effects in second language acquisition. *Studies in Second Language Acquisition*, *22*(4), 499–533.

Demirezen, M. (1988). Behaviorist theory and language learning. *Hacettepe University Faculty of Education Journal*, *29*(3), 135–140.

Drury, S. S., Katherine, P. T., Gleason, M. M., Smyke, A. T., De Vivo, I., Wong, J. Y. Y., … Nelson, C. A. (2012). Telomere length and early severe social deprivation: Linking early adversity and cellular aging. *Molecular Psychiatry*, *17*, 19–27.

Easterbrooks, S. R., & Stoner, M. (2006). Using a visual tool toincrease adjectives in the written language of students who are deaf or hard of hearing. *Communication Disorders Quarterly*, *27*(2), 95–109. https://doi.org/10.1177/15257401060270020701

Emmorey, K. (2003). *Perspectives on classifier constructions in sign languages*. (K. Emmorey, Ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Eubanks, P. K. (2011). Art is a visual language. *Language*, *23*(1), 31–35.

Farrant, J. S. (1995). *Principles and practice of education*. Essex: Longman Group.

Fernald, A., & Morikawa, H. (1993). Common themes and cultural variations in Japanese and American mothers' speech to infants. *Child Development*, *64*, 636–637.

Finlay, L. (2006). Rigour, ethical integrity or artistry?, *69*(7), 319–326.

Fraenkel, J., & Wallen, N. (1996). *How to design and evaluate research in education*. San Francisco, CA: Jossey-Bass.

Friedmann, N., & Rusou, D. (2015). Critical period for first language: The crucial role of language input during the first year of life. *Current Opinion in Neurobiology*, *35*(JUNE), 27–34. https://doi.org/10.1016/j.conb.2015.06.003

Gadagbui, G. Y. (1998a). *A handbook of language and speech deviations*. Accra, Ghana: City Publishers.

Gadagbui, G. Y. (1998b). *Education in Ghana and special needs children*. Accra, Ghana: City Publishers.

Gadagbui, G. Y. (2012). *Home-school partnership and counselling for families*.

Winneba, Ghana: University of Education, Winneba.

Gadagbui, G. Y. (2013). *Exceptionalities, inclusive education, personality disorders and gerontology-The aged.* Winneba, Ghana: Department of Special Education, UEW.

Gadagbui, G. Y. (2014). *The teaching of speech and langauge*. Winneba, Ghana: Department of Special Education, UEW.

Gay, L. R., Mills, G. E., & Airasian, P. W. (2009). *Educational research: Competencies for analysis and applications*. New York, NY: Merrill/Pearson.

Getaneh, A., Stevens, B., Ross, P., & Chandler, J. (2015). The use of a constructivist grounded theory method to explore the role of socially-constructed metadata (Web 2.0) approaches. *Qualitative & Quantitative Methods in Libraries*, (4), 517. https://doi.org/ISSN 2241-1925

Ghana Statistical Service. (2010). *Cape Coast municipality*. Accra, Ghana: Ghana Statistical Service.

Ghana Statistical Service. (2012). *2010 Population and housing census*. *Ghana Statistical Service*. Accra, Ghana: Ghana Statistical Service. https://doi.org/10.1371/journal.pone.0104053

Gibbs, G. R. (2009). *Analysing qualitative data: The sage qualitative research*. New York, NY: Sage Publications.

Giles, E., Pitre, S., & Womack, S. (2003). *Multiple intelligences and learning styles*. New York, NY: Sage Publications.

Giske, T., & Artinian, B. (2007). A personal experience of working with classical

grounded theory : From beginner to experienced grounded theorist. *International Journal of Qualitative Methods*, *6*(4), 67–80.

Glaser, B. (1998). *Doing grounded theory: Issues and discussions*. Mill Valley, CA: Sociology Press.

Glaser, B. G., & Strauss, A. (1967). *The discovery of grounded theory*. Chicago, IL: Aldine.

Global Monitoring Report. (2006). Literacy for life. Retrieved from http://www.comminit.com/africa/node/298979

GNAD. (2018). About us. Retrieved from http://gnadgh.org/about-us/

Goldin-Meadow, S., Mylander, C., & Franklin, A. (2007). How children make language out of gesture: Morphological structure in gesture systems developed by American and Chinese deaf children. *Cognitive Psychology*, *55*(2), 87–135. https://doi.org/10.1016/j.cogpsych.2006.08.001

Gosse, C. S., McGinty, A. S., Mashburn, A. J., Hoffman, L. V. M., & Pianta, R. C. (2014). The role of relational and instructional classroom supports in the language development of at-risk preschoolers. *Early Education and Development*, *25*(1), 110–133. https://doi.org/10.1080/10409289.2013.778567

Goulding, C. (2017). Navigating the complexities of grounded theory research in advertising navigating the complexities of grounded theory research in advertising. *Journal of Advertising*, *46*(1), 61–70. https://doi.org/10.1080/00913367.2017.1281775

Government of the Republic of Ghana. (1993). *Constitution of the Republic of*

Ghana. Accra, Ghana: Government of Republic of Ghana.

Groce, N. E. (1985). *Everyone here spoke sign language-Hereditary deafness on Martha's Vineyard*. Cambride, MA: Harvard University Press.

Grotewell, P. G., & Burton, Y. R. (2008). *Early childhood education: Issues and developments*. New York, NY: McGraw-Hill Education.

Grove, S. K., Gray, J. R., & Burns, N. (2015). *Understanding nursing research: Building an evidence-based practice* (6th ed.). St. Louis, Missouri: Elsevier.

Gyimah, E. K. (2000). Identification and assessment procedures for children with disabilities in Ghana. *Ife Psychologia*, *8*(2), 83–84.

Hall, W. C., Levin, L. L., & Anderson, M. L. (2016). *Language deprivation syndrome: A potential neurodevelopmental disorder with social origins*. Massachusetts: Department of Psyciatry, University of Massachusetts Medical School.

Hallahan, D. P., Kauffman, J. M., & Pullen, P. C. (2014). *Exceptional learners: An introduction to special education*. Boston, MA: Pearson Educational Inc.

Hao, J., & Su, Y. (2014). Deaf children's use of clear visual cues in mindreading. *Research in Developmental Disabilities*, *35*(11), 2849–2857. https://doi.org/10.1016/j.ridd.2014.07.034

Hao, J., Su, Y., & Chan, R. C. K. (2010). Do deaf adults with limited language have advanced theory of mind? *Research in Developmental Disabilities*, *31*(6), 1491–1501. https://doi.org/10.1016/j.ridd.2010.06.008

Hardman, M. L., Drew, C. J., & Egan, M. W. (2013). *Human exeptionality: Society, school and family*. Boston, MA: Allyn and Bacon.

Härkönen, U. (2007). *The Bronfenbrenner ecological systems theory of human development*. Saule, Latvia: Daugavpils University.

Hausser, M. D., Chomsky, N., & Fitch, W. T. (2002). The faculty of language: What is it, who has it and how did it evolve? *Science*, *29*, 1569–1579.

Henner, J., Caldwell-harris, C. L., Novogrodsky, R., William, M., & Dye, G. (2016). American sign language syntax and analogical reasoning skills are influenced by early acquisition and age of entry to signing schools for the deaf. *Frontiers in Psychology*, *7*(12), 1–14. https://doi.org/10.3389/fpsyg.2016.01982

Hermans, D. H., Ormel, E., Knoors, H., & Verhoeven, L. (2008). The relationship between the reading and signing skills of deaf children in bilingual education programs. *Journal of Deaf Studies and Deaf Education*, *13*(4), 518–530.

Heward, W. L. (2013). *Exceptional children: An introduction to special education*. Boston, MA: Pearson Educational Inc.

Hitchcock, G., & Hughes, D. (1995). *Research and the Teacher; A qualitative introduction to school-based research* (2nd editio). New York: Routledge.

Hollway, W. (2009). Applying the 'Experience-Near' principle to research: Psychoanalytically informed methods. *Journal of Social Work Practice*, *23*(4), 461–474.

Holmer, E., Heimann, M., & Rudner, M. (2016). Evidence of an association between sign language phonological awareness and word reading in deaf and hard of hearing children. *Research in Developmental Disabilities*, *48*, 145–159.

Holstein, J. A., & Gubrium, J. F. (1997). Active interviewing. In J. A. Holstein & J. F. Gubrium (Eds.), *Qualitatve research; Theory, method and practive* (pp. 113–129). London: Sage Publications.

Houston, D. M., & Bergeson, T. R. (2014). Hearing versus listening : Attention to speech and its role in language acquisition in deaf infants with cochlear implants. *Lingua*, *139*, 10–25. https://doi.org/10.1016/j.lingua.2013.08.001

Hrastinski, I., & Wilbur, R. B. (2016). Academic achievement of deaf and hard-of-hearing students in an ASL / English bilingual program. *Journal of Deaf Studies and Deaf Education*, *1*(1), 156–170. https://doi.org/10.1093/deafed/env072

Humphries, T., Kushalnagar, P., Mathur, G., Napoli, D. J., & Padden, C. (2014). Ensuring language acquisition for deaf children: What linguists can do. *Language*, *90*(2), 31–52. https://doi.org/10.1353/lan.2014.0036

Humphries, T., Kushalnagar, P., Mathur, G., Napoli, D. J., Padden, C., Rathmann, C., & Smith, S. (2016). Avoiding linguistic neglect of deaf children. *Social Service Review*, (12), 589–619. https://doi.org/10.1086/689543

Humphries, T., Kushalnagar, P., Mathur, G., Napoli, D., Padden, C., Rathmann, C., & Smith, S. R. (2012). Language acquisition for deaf children: Reducing the harms of zero tolerance to the use of alternative approaches. *Harm Reduction Journal*, *9*(1), 16–22. https://doi.org/10.1186/1477-7517-9-16

Idrees, I., Vasconcelos, A. C., & Cox, A. M. (2018). The use of grounded theory in PhD research in knowledge management: A model four stage research design. *Aslib Proceedings*, *63*(2/3), 188–203.

Janjua, F., Woll, B., & Kyle, J. (2002). Effects of parental style of interaction on language development in very young severe and profound deaf children. *International Journal of Pediatric Otorhinolaryngology*, *64*(3), 193–205. https://doi.org/10.1016/S0165-5876(02)00069-1

Johnston, T. (2006). Response to comment. *Sign Language Studies*, *6*, 225–243.

Jones, A. C., Gutierrez, R., & Ludlow, A. K. (2015). Confronting the language barrier: Theory of mind in deaf children. *Journal of Communication Disorders*, *56*, 47–58. https://doi.org/10.1016/j.jcomdis.2015.06.005

Jones, M., & Alony, I. (2011). Guiding the use of grounded theory in doctoral studies - An example from the australian film industry. *International Journal of Doctoral Studies*, *6*, 95–114. https://doi.org/10.28945/1429

Kindig, J. S., & Richards, H. C. (2000). Otitis media: Precusor of delayed reading. *Journal of Pediatric Psychology*, *25*, 15–18.

Kirk, S., Gallagher, J., & Coleman, M. R. (2015a). *Educating exceptional children* (14th ed.). Stamford, CT: Cengage Learning.

Kirk, S., Gallagher, J., & Coleman, M. R. (2015b). *Educating exceptional children* (14th ed.). Stamford: Cengage Learning.

Kiyaga, N. B., & Moores, D. F. (2003). Deafness in sub-saharan Africa. *American Annals of the Deaf*, *148*(1), 18–24.

Koul, L. (2013). *Methodology of educational research* (4th ed.). New Delhi, India: Vikas Publishing House PVT Ltd.

Kushalnagar, P., Hannay, J. H., & Hernandez, A. E. (2010). Bilingualism and attention: A study of balanced and unbalanced deaf users of American sign

language and English. *Journal of Deaf Studies and Deaf Education*, *15*, 263–273.

Kusters, A. (2012). "The gong was beaten"- Adamorobe: A "deaf village" in Ghana and its marriage prohibition for deaf partners. *Sustainability*, *4*(10), 2765–2784.

Kusters, A. (2014). Deaf sociality and the deaf Lutheran church in Adamorobe, Ghana. *Sign Language Studies*, *14*(4), 466–487.

LaSasso, C., & Lollis, J. (2003). Survey of residential and day schools for deaf students in the United States that identify themselves as bilingual-bicultural programs. *Journal of Deaf Studies and Deaf Education*, *8*, 79–91.

Lederberg, A. (2006). *Language development of deaf children with hearing parents*. Atlanta, GA: Elsevier Ltd.

Leedy, P. D., & Ormrod, J. E. (2010). *Practical research: Planning and design* (9th ed). Paterson, NJ: Pearson Educational Inc.

Leigh, I. W. (2008). Who am I? Deaf identity issues. In K. A. Lindgren, D. DeLuca, & D. J. Napoli (Eds.), *Sign and voices: Deaf culture, identity, language and the arts* (pp. 21–29). Washington, DC: Gallaudet University Press.

Leman, P., Bremner, A., Parke, R. D., & Gauvain, M. (2012). *Developmental psychology*. New York: McGraw-Hill Education.

Lerner, J. (2006). *Learning disabilities and related disorders: Characteristics and teaching strategies* (10th ed.). Boston, MA: Houghton Mifflin Company.

Lincoln, Y. S., & Guba, E. (1985). *Naturalistic inquiry*. Beverley Hills, CA: Sage

Publications.

Lisa, M. G. (2008). *The sage encyclopaedia of qualitative research methods*. New York, NY: Sage Publications Inc.

Lonigan, C., Farver, J., Phillips, B. M., & Clancy-Menchetti, J. (2011). Promoting the development of preschool children's emergent literacy skills: A randomized evaluation of a literacy-focused curriculum and two professional. *Read Writ*, *24*, 305–337. https://doi.org/10.1007/s11145-009-9214-6

MacSweeney, M., Waters, D., Brammer, M. J., Woll, B., & Goswami, U. (2008). Phonological processing in deaf signers and the impact of age of first language acquisition. *NeuroImage*, *40*(3), 1369–1379. https://doi.org/10.1016/j.neuroimage.2007.12.047

Marschark, M. (1993). *Psychological development of deaf children*. New York, NY: Oxford University Press.

Marschark, M. (2001). *Language development in children who are deaf : A research synthesis*. Alexandria, VA: National Association of State Directors of Special Education.

Marschark, M., & Mayer, T. . S. (1998). Interactions of language and memory in deaf children and adults. *Scandinavian Journal of Psychology*, *39*(3), 145–148.

Marschark, M., Morrison, C., Lukomski, J., Borgna, G., & Convertino, C. (2013). Are deaf students visual learners? *Learning and Individual Differences*, *25*, 156–162. https://doi.org/10.1016/j.lindif.2013.02.006

Martı, G., Mubanga, M., & Bagnol, B. (2015). Grounded theory : A methodology choice to investigating lLabia minora elongation among Zambians in South Africa, 1–11. https://doi.org/10.1177/1609406915618324

Mayberry, R. I., Chen, J.-K., Witcher, P., & Klein, D. (2011). Age of acquisition effects on the functional organisation of language in the adult brain. *Brain and Language*, *119*(1), 16–29.

McCabe, A., Boccia, J., Bennett, M. B., Lyman, N., & Hagen, R. (2010). Improving oral language and literacy skills in preschool children from disadvantaged backgrounds : Remembering , writing , reading. *Imagination, Cognition and Personality*, *29*(4), 363–390. https://doi.org/10.2190/IC.29.4.f

McGhee, G., Marland, G. R., & Atkinson, J. (2007). Grounded theory: Literature reviewing and reflexvity. *Journal of Advanced Nursing*, *60*(5), 334–342.

Meisel, J. M. (2013). Sensitive phases in successive language acquisition: The critical period hypothesis revisited. In C. Boeckx & K. K. Grohmann (Eds.), *Cambridge Handbook of Biologuistics* (pp. 69–85). Cambridge, UK: Cambridge University Press.

Miles, A. G., & Browne, K. W. (2004). *Beginnings and beyond: Foundations in early childhood education* (9th ed). New York, NY: Cengage Learning.

Mills, J., & Francis, K. (2006). The development of constructivist grounded theory. *International Journal of Qualitative Methods*, *5*(1), 25–35.

Ministry of Education. (2015). *Inclusive education policy*. Accra, Ghana: Ministry of Education.

Mirus, G., Fisher, J., & Jo, D. (2012). Taboo expressions in American Sign

Language. *Lingua*, *122*(9), 1004–1020. https://doi.org/10.1016/j.lingua.2012.04.001

Mitchell, R. E., & Karchmer, M. A. (2005). Parental hearing status and signing among deaf and hard of hearing students. *Sign Language Studies*, *5*(2), 231–244.

MOE. (2002). *Review of educational reforms in Ghana: Meeting the challenges of education in the twenty first century*. Accra, Ghana: Ministry of Education.

Monahan, T., & Fisher, J. A. (2010). Benefits of " Observer Effects ": Lessons from the field. *Qualitative Research*, *10*(3), 357–376. https://doi.org/10.1177/1468794110362874

Moores, D. (2001). *Educating the deaf: Psychology, principles and practices*. Boston, MA: Houghton Mifflin.

Morrison, F. J., & McDonald, C. C. (2010). Literacy development in the transition to school: An integrative framework. In J. L. Judith Meece & J. S. Eccles (Eds.), *Handbook of research on schools, schooling and human development* (pp. 185–197). New York, NY: Routledge.

Newport, E. L., & Supalla, T. (2000). Sign language research at the millennium. In K. Emmorey & H. Lane (Eds.), *The signs of language revisited: An anthology to honour of Ursula BEllugi and Edward Klima* (pp. 103–114). Mahwah, NJ: Lawrence Erlbaum Associates.

Obosu, G. K. (2016). *Using classroom teaching and learning activities and visual stategies to facilitate sign language acqusition among deaf preschoolers: A*

case study of teachers at Cape Coast school for the deaf. Unpublished master's thesis, University of Education, Winneba.

Obosu, G. K., Opoku-Asare, N. A., & Deku, P. (2016). Access to English language acquisition in Ghana schools for the deaf: Are the deaf students handicapped? *Journal of Education and Practice*, *7*(35), 17–24.

Ocloo, M. A., Hayford, S. K., Agbeke, W. K., Gadagbui, G. Y., Avoke, M., Boison, C., … Essel, J. (2004). *Foundations in special education: The Ghanaian perspective*. Winneba, Ghana: Department of Special Education, UEW.

Offei, Y. N. (2006). Including the hard of hearing in regular classrooms in Ghana. *African Journal of Special Education*, *4*(2), 231–238.

Olusanya, B. O., Wirz, S. L., & Luxon, L. M. (2008). Community-based infant hearing screening for early detection of permanent hearing loss in Lagos, Nigeria: A cross-sectional study. *Bull World Health Organisation*, *86*(12), 956–963.

Oppong, A. M. (2003). *Understanding and effectively educating the special needs students*. Winneba, Ghana: University of Education, Winneba.

Oppong, A. M. (2006). *Fundamentals of sign langauge: A textbook for college and university studens (vol. 1).* Winneba, Ghana: University of Education, Winneba.

Owu-Ewie, C. (2012). *Theories of language acquisition and learning*. Winneba, Ghana: University of Education, Winneba.

Preisler, G. (1999). The development of communication and language in deaf and

severely hard of hearing children: Implications for the future. *International Journal of Pediatric Otorhinolaryngology*, *49*(1), 39–43.

Quartaroli, M. T., Riemer, F. J., & Lapan, S. D. (2011). *Qualitative research: An introduction to methods and designs*. New York, NY: Jossey-Bass.

Reddy, R. J. (2004). *Methods of teaching*. New Delh, Indiai: APH Publishing Corporation.

Reilly, J. S., McIntire, M., & Bellugi, U. (1990). The acquisition of conditionals in American sign language: Grammaticized facial expressions. *Applied Pscholinguistics*, *11*(4), 369–392.

Richards, C., & Farrokhnia, F. (2016). Optimizing grounded theory for policy research : A knowledge-building approach to analyzing WTO E-commerce policies. *International Journal of Qualitative Methods*, 1–14. https://doi.org/10.1177/1609406915621380

Richards, L., & Morse, J. (2007). *Read me first for a user's guide to qualitative methods*. Thousand Oaks: Sage Publications Inc.

Robson, A. L. (2002). Critical/sensitive periods. In N. J. Salkind (Ed.), *Child Development* (pp. 101–103). New York, NY: Macmillan.

Rogoff, B. (2003). *The cultural nature of human development*. New York: Oxford University Press.

Rowh, M. (2006). Write well, go far. *Career World*, *34*(4), 18–21.

Runnels, J. (2017). Dr. Andrew Foster: A literature review. *American Annals of the Deaf*, *162*(3), 243–252.

Rymer, R. (1993). *Genie: Escape from a silent childhood*. London: Michael

Joseph.

Saldana, J. (2009). *The coding manual for qualitative researchers*. London: Sage Publications.

Santrock, J. W. (2004). *Child development* (10th ed.). New York, NY: McGraw-Hill Education.

Santrock, J. W. (2011). *Educational psychology*. New York, NY: McGraw-Hill Education.

Saratakos, S. (2013). *Social research*. New York: Palgrave Macmillan.

Schick, B., de Villiers, J., de Villiers, P., & Hoffmeister, B. (2007). Language and theory of mind: A study of deaf children. *Child Development*, *78*, 376–796.

Schick, B., Marschark, M., & Spencer, P. E. (2006). *Advances in the sign language development of deaf children*. New York, NY: Oxford University Press.

Senft, G. (2002). *Systems of nominal classification*. Cambridge, MA: Cambridge University Press.

Shea, M., & Bauer, A. (1994). *Learners with disabilities. A social system perspective of special education*. Paterson, NJ: WCB Brown & Benchmark Publishers.

Silverman, D. (1993). *Interpreting qualitative data; methods for analysing talk, text and interaction*. London: Sage Publications.

Singleton, J. L., & Dianne, D. M. (2006). Natural sign langauge acquisition within the social context of the classroom. In B. Schick, M. Marschark, & P. E. Spencer (Eds.), *Advances in the sign language development of deaf children*

(pp. 344–370). New York: Oxford University Press.

Smith, S. (1995). *No easy answers: The learning disabled child at home and at school* (Revised). New York, NY: Bantam Books.

Spano, R. (2006). Observer behavior as a potential source of reactivity: Describing and quantifying observer effects in a large-scale observational study of police. *Sociological Methods & Research*, *34*(4), 521–553.

Stokoe, M. (2005). Sign langauge structure: An outline of the visual communication systems of the American deaf. *Journal of Deaf Studies and Deaf Education*, *10*(1), 1–3.

Suddaby, R. (2006). From the editors: What grounded theory is not. *Academy of Management Journal*, *49*(4), 633–642.

Sullivan, S. (2000). *Child neglect: Current definitions and models: A review of child neglect research,1993-1998*. Ottawa, Ontario: National Clearinghouse on Family Violence Prevention.

Sunstein, B. S., & Chiseri-Strater, E. (2012). *Field working: Reading and writing research*. Boston, MA: Bedford/St. Martin's.

Szterman, R., & Friedmann, N. (2014). Relative clause reading in hearing impairment: Different profile of syntactic impairment. *Front Psycho Lang Sci*, *5*, 1–6.

Tamakloe, E. K., Amedahe, F. K., & Atta, E. T. (2005). *Principles and methods of teaching*. Accra, Ghana: Ghana Universities Press.

Tomaszewski, P. (2001). Sign language development in young deaf children. *Psychology of Language and Communication*, *5*(1), 68–80.

Tuckman, B., & Monetti, D. (2011). *Educational psychology*. Belmont: Wadswoth.

Turnbull, A. P., Turnbull III, R., Shank, M., & Leal, D. (2009). *Exceptional lives: Special education in today's schools*. Eaglewood Cliffs, NJ: Prentice-Hall Inc.

UNESCO. (2010). *EFA global monitoring report: Strong foundations*. Paris: UNESCO.

Velonaki, V., Kampouroglou, G., Velonaki, M., Dimakopoulou, K., Sourtzi, P., & Kalokerinou, A. (2015). Nurses' knowledge, attitudes and behavior toward deaf patients. *Disability and Health Journal*, *8*(1), 109–117. https://doi.org/10.1016/j.dhjo.2014.08.005

Ward, K., & Hoare, K. J. (2015). Evolving from a positivist to constructionist epistemology while using grounded theory: Reflections of a novice researcher. *Journal of Research in Nursing*, *20*(6), 449–462.

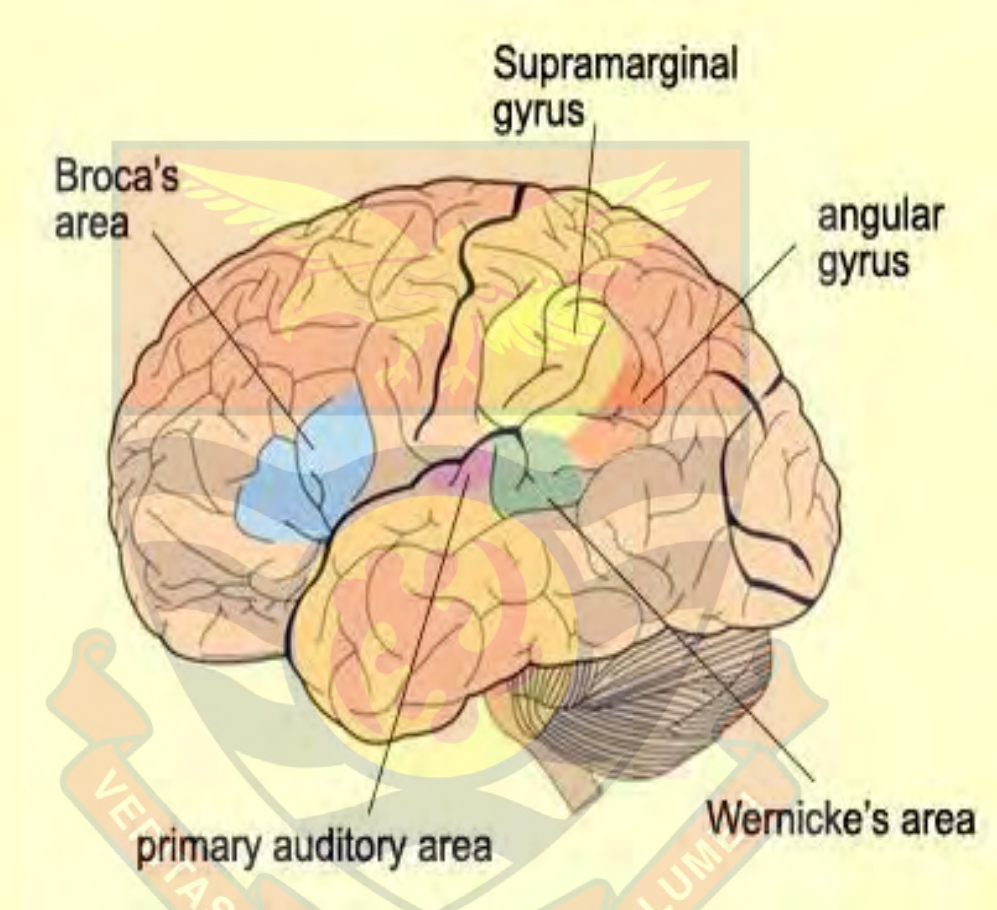
Weigel, D. J., Lowman, J. L., & Martin, S. S. (2007). Language development in the years before school: A comparison of developmental assets in home and child care settings. *Early Child Development and Care*, *177*(6–7), 719–734.

Wilbur, R. B. (2000). Phonological and prosodic layering of non-manuals in American sign langauge. In K. Emmorey & H. Lane (Eds.), *The signs of language revisited: An anthology in honour of Ursula Belugi and Edward Klima* (pp. 215–243). Mahwah, NJ: Lawrence Erlbaum Associates.

Wood, S. E., Wood, E. G., & Boyd, D. (2009). *Portable psychology: Foundations and biological functioninng (vol 2)*. Boston, MA: Pearson Educational Inc.

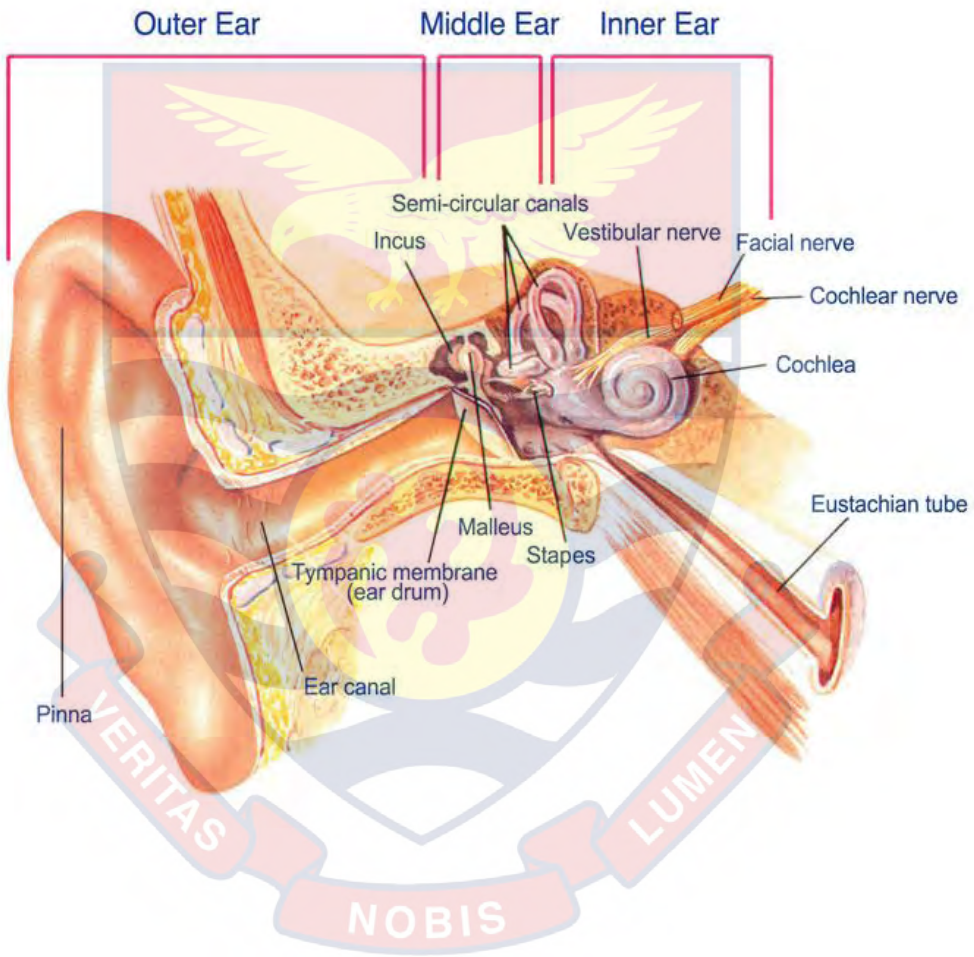
APPENDIX A

CENTRES OF THE BRAIN ASSOCIATED WITH LANGUAGE



APPENDIX B

THE ANATOMY OF THE HUMAN EAR



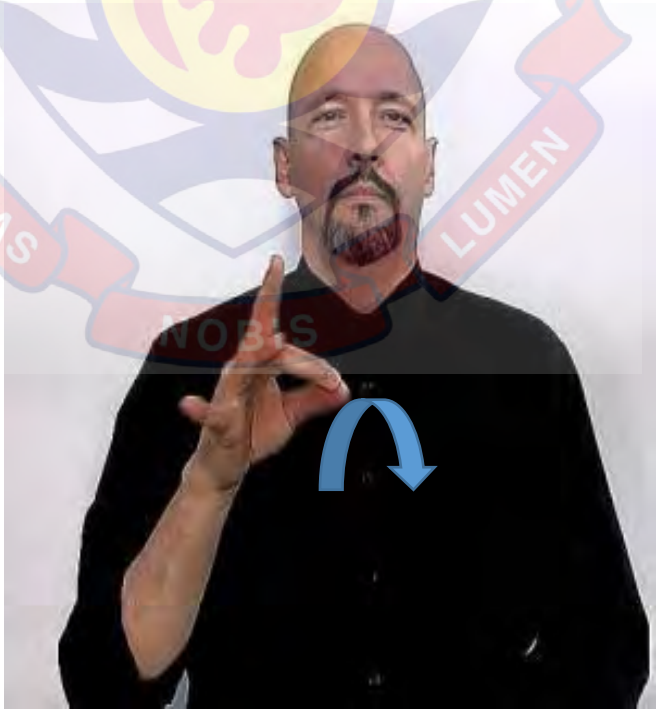
APPENDIX C

HANDSHAPE "5"

APPENDIX D

SIGNING "DISLIKE" TO INDICATE MORPHEMES

Like



"dis" (indicating negation)

APPENDIX E

CLASSIFIER "V"

APPENDIX F

INTERVIEW GUIDE FOR TEACHERS

SECTION A: BACKGROUND INFORMATION

1. How long have you been teaching in the School for the Deaf?
2. How many years have you been teaching in the nursery or the kindergarten?
3. What is your highest level of education?
4. Do you have any qualification in special education?
5. Do you have any qualification in basic education?
6. Have you received training in sign language?
7. How many deaf pupils do you have on roll in your class?

SECTION B: SIGN LANGUAGE ACQUISITION AMONG DEAF PUPILS

6. How do you personally teach sign language to your deaf pupils?
7. What are the characteristics of your deaf pupils when they first begin school?
8. Can you describe how children who are deaf acquire sign language at school?
9. What is the process of sign language acquisition among deaf preschoolers?
10. What role do you as a preschool teacher play in facilitating the sign language acquisition of your deaf preschoolers?

SECTION C: ADDITIONAL INFORMATION

1. Do you have any additional information to add to what we have already discussed?

Thank you

APPENDIX G

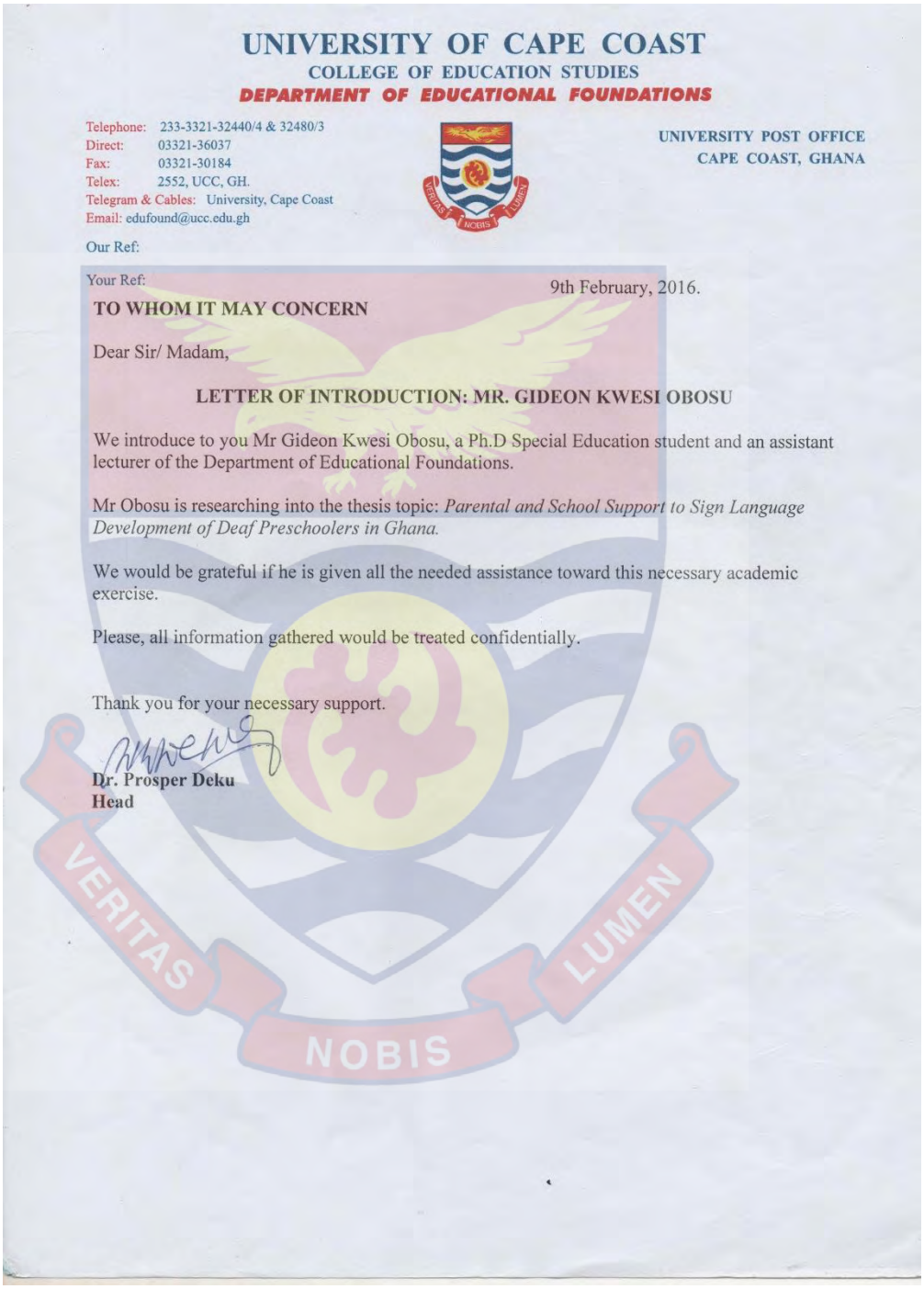
OBSERVATIONAL GUIDE

ANGLES OF OBSERVATION	ATTRIBUTES	REMARKS
What is the classroom teaching and learning environment?	1. Is the classroom environment spacious and safe? 2. What is the classroom culture?	
How is the teaching and learning done to facilitate sign language acquisition?	1. How is the teaching done? 2. Do the teachers use any particular language teaching method? 3. What curriculum do they use in the teaching and learning process 4. Are the teachers able to communicate well via sign language? 5. What is the general impression of classroom teaching and learning?	
How do teachers use other strategies to facilitate sign language acquisition?	1. Do they use joint attention, mutual gazing, engagement and guided practice to facilitate sign language in the classroom?	

	2. Do they incorporate visuals in their teaching? 3. Which kinds of strategies do they use? 4. Are the teachers able to use sketches and illustrations to demonstrate sign modes? 5. How do they use visual tools to buttress a sign language acquisition? 6. How do deaf pupils react to the teaching and learning activities in classroom? 7. How do the teachers teach in the classroom? 8. Is there anything different? 9. Do the inputs of teachers generate maximum pupils' participation in class? 10. Does the use of visuals facilitate sign language output of the deaf preschoolers?	

APPENDIX H

LETTER OF INTRODUCTION



UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
DEPARTMENT OF EDUCATIONAL FOUNDATIONS

Telephone: 233-3321-32440/4 & 32480/3
Direct: 03321-36037
Fax: 03321-30184
Telex: 2552, UCC, GH.
Telegram & Cables: University, Cape Coast
Email: edufound@ucc.edu.gh

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref:

Your Ref:

9th February, 2016.

TO WHOM IT MAY CONCERN

Dear Sir/ Madam,

LETTER OF INTRODUCTION: MR. GIDEON KWESI OBOSU

We introduce to you Mr Gideon Kwesi Obosu, a Ph.D Special Education student and an assistant lecturer of the Department of Educational Foundations.

Mr Obosu is researching into the thesis topic: *Parental and School Support to Sign Language Development of Deaf Preschoolers in Ghana.*

We would be grateful if he is given all the needed assistance toward this necessary academic exercise.

Please, all information gathered would be treated confidentially.

Thank you for your necessary support.

Dr. Prosper Deku
Head

APPENDIX I

MEMO

Memo
Focused coding
Curriculum adaptation in the classroom
(5/11/18)

This situation could pose a number of challenges. Coupled with the fact that teachers would have to adapt the curriculum in order to make it accessible to deaf preschoolers, it raises doubt as to how these teachers are competent to handle the curriculum adaptation. Even if they did take a course while training as teachers, it was still doubtful how uniform the adaption was done to ensure equal access to curricular content of all deaf preschoolers in Ghana.

Additionally, the sign language proficiency of the teachers could be considered as basic since most of them admitted to have difficulty to use the sign language fluently. They however, agreed that they have basic knowledge of sign language vocabularies to enable them facilitate classroom teaching and learning. Four of the teachers also admitted that they had occasionally consulted the other deaf teacher for help on words they found difficult to sign.

APPENDIX J

TRANSCRIPTION OF INTERVIEW WITH DEAF TEACHER

Yea so first of all I want to confirm my own observations I have done.

Number of pupils are 28 13 girls and 15 boys.

Within this academic year have you received new students?

No they come as ehh preschoolers. Because we will be admitting them the following term, the next academic year but they have to come around to familiarize with the school environment because this is a boarding school and most of them they have not had that experience before…so have to visit the school for a while to acclimatize themselves with the school conditions before they come.

So how many have you had so far?

16 pupils

From what time to what time?

Form last year….beginning of last academic year up to this year

But they have not fully enrolled in?

No! They are the preschoolers….and their names have not been included in the register

Ok….I am looking at the graphics in the classroom…they are not many graphics. By my judgment you don't have a lot in the classroom

Yes… we don't have a lot

Any technologies for learning…..I am thinking of maybe puzzles, computer games….you know…. Yes do you have those technologies where younger kids can get to play puzzles…… computer games that tend to them songs in the case of the deaf teach them signs such as cut, and gives the sign for it (demonstrates them in sign language), you don't have anything like that?

That is why they have been able to communicate as at this level. So they teach them the basic things around them….such as tree, this is how we sign tree, this is cup, this is plate, this is this. So that they can identify things around them and to able to communicate just as teaching the regular child, the basic things and information, to together to form sentences.

But how frequent is the teacher?

Oh he comes every Monday but for some time he wasn't coming. I reported him to and he said he will be coming but he has not been coming

So you still use chalk and the board eh?

Same curriculum, toys……used in the first term?

Sign language acquisition of the deaf, how does that occur? Does it depend on the teachers?

No! It does not depend alone but it depends on the teachers and their peers as well.

You feel you have a part to play?

Yea the teacher has a part to play

Not as in normal text language ooooo…but sign language. You also feel like if they will know how to sign this or that, I have a part to play?

Yes.

But since they are too young, I don't know whether I should ask this…. They don't have any book-sharing activities where they read books because they have not picked language much?

We don't… we don't really. This class is a… if it were to be a regular school, this class is something like a crèche. Or a nursery because they come with nothing. They have their own…like… way of … identifying. So when they come we give them the basics. So KG1A and B we use the same syllables. So I teach them numbers, how to count. Those kind of things so when they go there they will go and continue….see are doing almost the same thing. Because here they are new. We build on their [idiosyncratic gestures], basic language, so by the time they get to KG 1B, they might have acquired simple simple language to enable them understand things. When it comes to reading, we do picture walk. We have conversational posters and we have something called big book, there are a lot of pictures, so as a teacher I will be talking to them about the things in the picture. Once they have acquired few vocabulary, so when they see it……this is an animal….maybe this is (demonstrate an animal), so they will also be identifying some of the things….so we don't do reading necessary, but we have a way of…….like using the real objects and the pictures to teach them but as they advance to the next class, they do the reading. The two letter words and things like that.

Let me chip in this: Do you believe that some of the children could be taught speech?

Not necessarily but they can lip-read. Because, they cannot hear, since most of them are postlinguals, sometimes they can look at your mouth and get…..you say it and the sometimes they get what you say.

APPENDIX K

INTERVIEW TRANSCRIPTION

Interviewer: Now the focus of the study is on sign language development

1: when we were taught in the university and I came for the first time, it was the children who taught me more. Because what we learnt when I say they would say wrong, wrong. So there was a time I was going to present something and our lecturers would be coming. So that topic I dealt with the children, they taught me the key words, how to sign them. Because at times I was signing the local one (home signs). I had a brother who is a deaf…you know him….Aikins. so he always speaks to us but we…. like ….in the house we say mother and father (demonstrated in home signs) but when I came into special education, I saw that there is vast difference. Those who sign this (demonstrated in home sign) are…… like…….illiterate in sign language but the real ones that I came to learn (demonstrated in sign language)……so normally if eh…if you want to learn……when they see that you want to learn and help them….they willingly teach you. And my problem is when they sign and I'm transcribing it into a reality that is where I find difficult. Sometimes I ask them to sign it slowly so that I can pick some of the words.

Now I want to know your beliefs. Do you think that performing your duties as a teacher in the classroom, if they will have to pick the sign language, it all depends on you? Do you believe that?

No! Because I can't teach them all. They learn from their friends especially these young ones, they don't anything about sign language, and they are now picking it. But some too can sign without meaning….they are signing but they don't understand. So it is my duty….when they sign then I teach them the meaning of what they are signing especially when they come to the classroom, they have heard their seniors or friends signing certain things where they don't understand so I have to add meaning to what they are signing….mhmmm that is my duty.

This there any way you engage your children specifically to learn the sign language acquisition like that the school, and of course it goes beyond you, does the school maybe help you provide visual materials that children can use to identify items or practice story reading?

When I am teaching I have the conversational charts…..I have a lot here. So the topic I'm teaching, and if there is conversational chart that deals with that topic then I paste them on the board. We talk about the pictures, they tell me their mind. I ask them to view the picture and tell me what they know about the picture or tell me

something about the picture. So through the discussion about the poster I have pasted then we get to know the context of what we are doing.

What is their reading level? Are they able to read on their own and share books?

No! They are now picking so for them what they understand…I ask them if they can draw. You will see that someone will draw something which is not about the topic. So I will ask, why this? "I have some in the house" or "I have seen some here" what their mind tells them about the whole is what they draw.

So that is the way of engaging their imaginations as well? …ok

So how long does it take to learn the sign language? From the KG1 A to this place….?

From this place to this place……it's almost the same. They are using the same textbook, the same syllabus the same……its KG but they are many that why we have divided them. But her class they come straight from the house like preschool…they will come they will go. It's one one one they will stay for the term. Most of them they will come and go. They are preschool so they will come and develop the KG here. She will start then I will build up. When they go to KG2 then from there they learn towards class one. So from here they will know the writing but some will come here still not knowing how to write or identify the alphabet so I have to continue. So must of the time, they do letter identification, and two letter word and three letter words….I don't go beyond four. The three letter words is getting to the latter part of the term or year that I teach them.

But do you think that the sign language should be taught to them or the children pick so no matter what they will learn on their own?

No! No! No! You have to help them to…. It is my duty to help them to pick up the language. Though it is their language …..It is like the Fante we speak….there are certain words you wouldn't know how to pronounce it or understand the meaning. You need someone to help you to get it so that is what I am doing here to help them….though it is their language but you have to help them.

So do you still feel that if there were one teacher who has the responsibility of teaching them sign language?

Yes…formerly Lamptey was coming round…..sign language so that when he comes and there are certain words I want him to sign it for them, he does it or there is a topic I want him to treat it well because he is a deaf and they understand him better than me…we it is not our language, we are trying to help so any how you

help they try to accept it…that is how I see it. So they need special teacher for sign language. That is like interpreter.

So what is your belief so far as sign language acquisition of your children is concerned? Do you think you have a role to play and that it depends on you?

I believe that from the start I have to play my part very well. To help them pick the necessary skills they need to develop the language.

And what are these skills?

It is not solely on me but I have to do my part.

You mentioned some skills…..the skills they need to build on……some skills like what?

Anything….when you are starting to pick language. Ehhh at this level they are joining the letters to make a word. We deal mostly on the alphabet.

Yours is more of the English and the print word. What about the sign language or they learn by themselves on their own?

Hmmmm sign language we don't have any book that have the drawings and how the signing is so if there is any signing we have to help them. So we also learn and teach them. We don't have textbooks on sign language. So we do the teaching through the syllabus, the normal syllabus that the hearing are using….the same thing. We don't have a special sign language syllabus.

How do the teachers facilitate sign language acquisition during classroom teaching and learning? Do you have any special teaching methods that you use?

At times if you are teaching certain words maybe dancing, jumping …we name it action words… you have to do it demonstration. You have to demonstrate and they also do the same thing it means they are picking…mostly you have to do the demonstrations or use the teaching materials ……the signing signing, it bores them (because they don't make sense of it). So when you give the work without explaining it bores them, unless someone one one…some gifted children in it they…when you explain a little, they get it but the rest, and you don't have to solely depend on those bright ones, you have to help all of them so you have to involve a lot so demonstration and the rest normally takes most of the part in teaching. Maybe if I am teaching an hour…30 minutes will be demonstration, action songs, rhymes and…….to bring up their interest in what you are coming to teach. If it is environmental studies and we are dealing with soil, we go to the school garden, we

will be moving around. They like…..they don't want to be in the classroom all the time. They want full of activities.

Do you use visual teaching strategies? Do you have toys?

We have the logos but not actual toys

Do you have computers?

The computers they are up there for the upper classes, these children don't handle them. When you show them they will tell you computer but they haven't handled them.

What about visual instructional strategies like pictures, diagrams, charts…….? Do you have them and do you use them?

Yes! Charts that what I told you….charts for fruits ……. First I will ask them if they know of fruits and they will mention some such as oranges mango and the rest and there are some fruits on the compound, they have their trees and I will show them…they will even tell me that there are some here.

16 girls 10 boys

Some have multiple disability. Yes! Intellectual disability; epilepsy.

But you don't have any technologies for learning?

No!

They also need individual attention….their chairs some of them they come and they are very old.

The chairs you cannot not group them. They use the project method.

Thank you so much for your time. I will come back again if there is something else. And I have to say a proper thank you so I will be back.

You are welcome.

APPENDIX L

CERTIFICATE IN HUMAN SUBJECT PROTOCOL

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **GIDEON KWESI OBOSU** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 06/17/2015

Certification Number: 1784567

APPENDIX M

ETHICAL CLEARANCE

UNIVERSITY OF CAPE COAST

INSTITUTIONAL REVIEW BOARD SECRETARIAT

TEL: 0558093143 / 0508878309/ 0244207814
E-MAIL: irb@ucc.edu.gh
C/O Directorate of Research, Innovation and Consultancy

OUR REF: UCC/IRB/A/2016/236
YOUR REF:
OMB NO: 0990-0279
IORG #: IORG0009096

13TH MARCH, 2018

Mr. Gideon Kwesi Obosu
Department of Education and Psychology
University of Cape Coast

Dear Mr. Obosu,

ETHICAL CLEARANCE –ID: (UCCIRB/CES/2017/29)

The University of Cape Coast Institutional Review Board (UCCIRB) has granted **Provisional Approval** for the implementation of your research protocol titled ***'Sign Language Development in the Early Years of Deaf Children in Ghana; Exploring the Influence of Home and School Factors.'*** This approval requires that you submit periodic review of the protocol to the Board and a final full review to the UCCIRB on completion of the research. The UCCIRB may observe or cause to be observed procedures and records of the research during and after implementation.

Please note that any modification of the project must be submitted to the UCCIRB for review and approval before its implementation.

You are also required to report all serious adverse events related to this study to the UCCIRB within seven days verbally and fourteen days in writing.

Always quote the protocol identification number in all future correspondence with us in relation to this protocol.

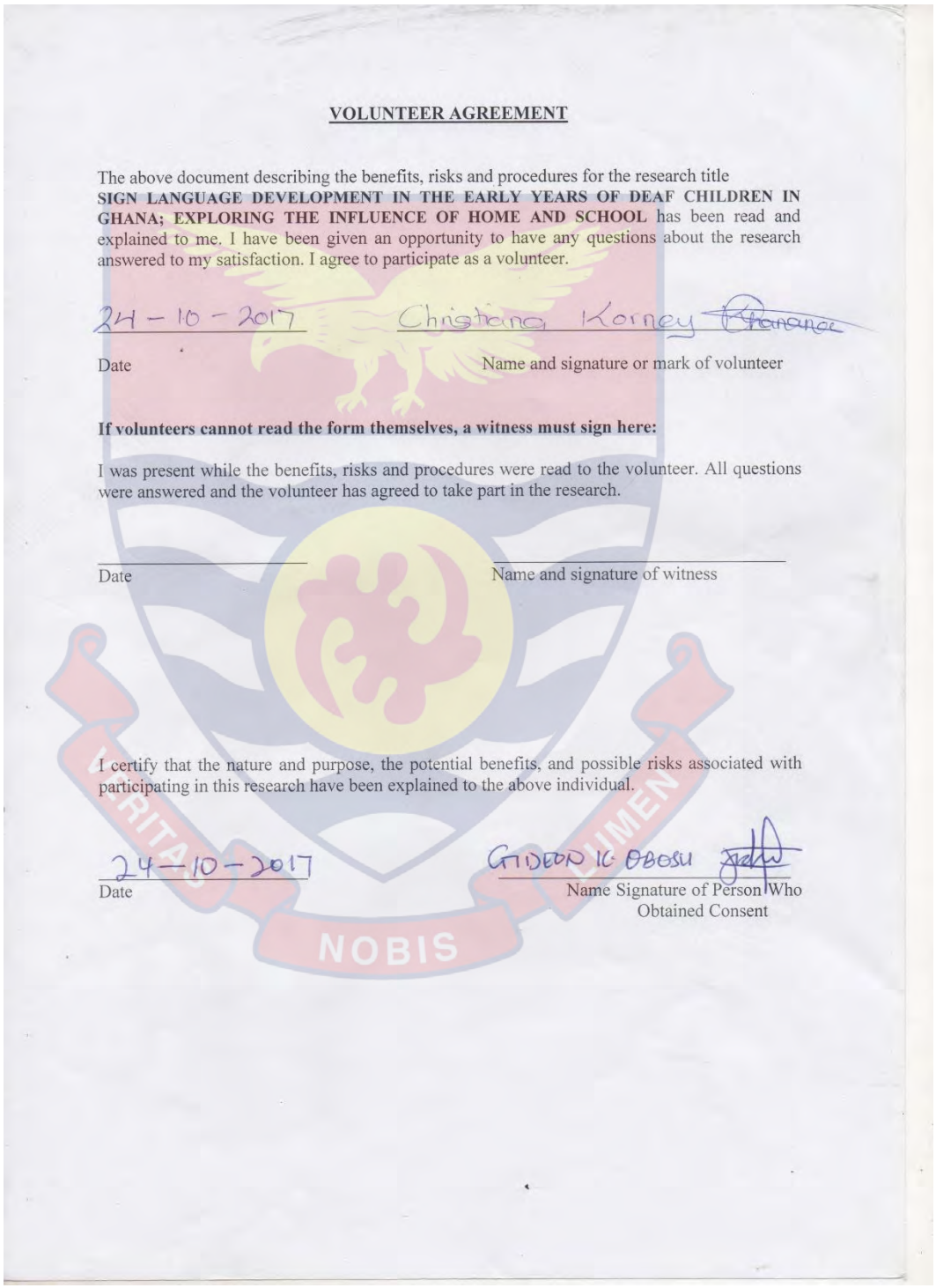
Yours faithfully,

for: Samuel Asiedu Owusu (PhD)
UCCIRB Administrator

ADMINISTRATOR
INSTITUTIONAL REVIEW BOARD
UNIVERSITY OF CAPE COAST
Date: 13/03/2018

APPENDIX N

CONSENT FORM FOR PARTICIPANTS



VOLUNTEER AGREEMENT

The above document describing the benefits, risks and procedures for the research title **SIGN LANGUAGE DEVELOPMENT IN THE EARLY YEARS OF DEAF CHILDREN IN GHANA; EXPLORING THE INFLUENCE OF HOME AND SCHOOL** has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

24-10-2017 Christiana Korney

Date Name and signature or mark of volunteer

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

Date Name and signature of witness

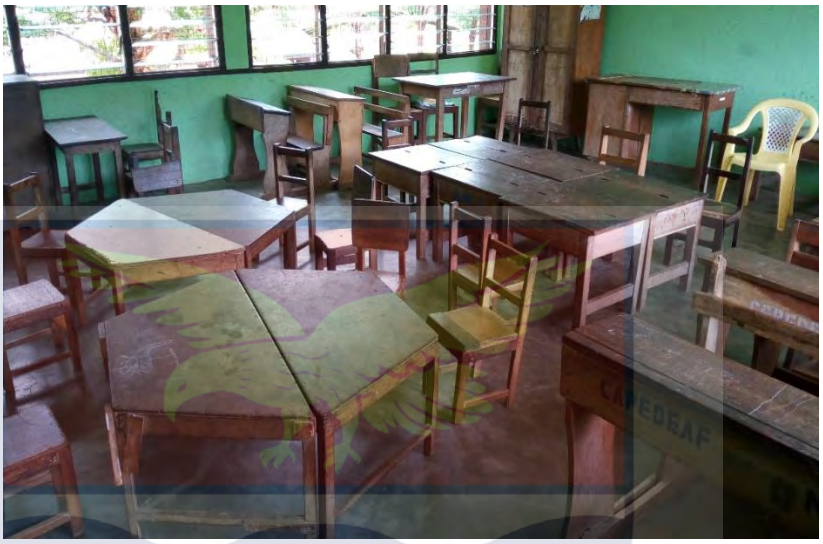
I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

24-10-2017 GIDEON K. OBOSU

Date Name Signature of Person Who Obtained Consent

APPENDIX O

CLASSROOM ENVIRONMENT AND SITTING ARRANGEMENT



APPENDIX P

AN ASPECT OF THE KINDERGARTEN CURRICULUM

LANGUAGE AND LITERACY

General Objectives:

The child will be able to develop skills for:

1. listening
2. expanding verbal communication
3. reading readiness
4. writing

KG1

UNIT/TOPIC	SPECIFIC OBJECTIVES	CONTENT	TEACHER, LEARNER ACTIVITIES/ METHODOLOGIES	EVALUATION
UNIT 1 ORAL SKILLS • (Listening and Speaking) • Auditory discrimination	The child will be able to: • listen to and differentiate between sounds in the environment	Common sounds in the environment e.g. car horns, screams, birds singing, bells ringing, animals crying, sounds from children.	Make sounds using bottles, coins, bells, drums, shakers and other objects. Help children identify the objects and the sounds that the objects make. Children make sounds from objects around them e.g. beating the top of their tables, pulling or pushing chairs, tables, imitating animal sounds bells etc. Sound Game e.g. whispering Chain Sound Game – see appendix..... Class faces the other direction whiles a child is called to make sound from two of the objects. Children should be able to identify the different sounds	Children imitate various sounds e.g. car horns, sirens, animals etc
	• identify differences in high/low sounds and rhythm	Different sounds and rhythm e.g. high/low, slow/fast.	Guide children to clap slowly and then softly/loudly and then faster. Children sing slowly and then sing fast Clapping/stumping/beating according to rhythm	Children stump, sing and clap, low high, slow and fast

APPENDIX Q

LETTERS OF THE ENGLISH ALPHABET ON THE BLACKBOARD