EFFECT OF TOTAL COMMUNICATION ON ACADEMIC ACHIEVEMENT OF PUPILS WITH HEARING IMPAIRMENT IN ENUGU STATE

BY

EZEMA, EDITH OBIANUJU
PG/M.ED/08/49564

DEPARTMENT OF EDUCATIONAL FOUNDATIONS
(SPECIAL EDUCATION)
UNIVERSITY OF NIGERIA, NSUKKA

SUPERVISOR: DR. V.C. ONU

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A DISSERTATION TO THE DEPARTMENT OF EDUCATIONAL FOUNDATIONS
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CERTIFICATION

Ezema Edith Obianuju, a master student of Educational Foundations University of Nigeria Nsukka with registration number PG/M.ED/08/49564 has satisfactorily completed the requirement for the research work for the award of masters' degree in special education. The work in this project is original and has not been in any way submitted either in part or in full for any other diploma or degree for this university or any other University.

_____ _____

Edith Obianuju Ezema
Student

Dr. V.C Onu
Supervisor

APPROVAL PAGE

This project has been approved for the Department of Educational Foundations University of Nigeria Nsukka.

By

_____	_____
Dr V.C. Onu	Dr. L.N. Onuigbo
Supervisor	**Internal Examiner**
_____	_____
External Examiner	**Dr. D.U Ngwoke**
	Head of Department

_____

Prof. Ik Ifelunni
Dean Faculty Education

DEDICATION

This work is dedicated to my darling husband Dr. Ifeanyi. J .Ezema and my lovely children; Ifeanyi (jnr.), Nneoma, Chukwubikem and Oluchukwu Ezema

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Abstract

The study was designed to find out the effect of Total communication (T.C) on the academic achievement of pupils with hearing impairment. It is a non-equivalent pre-test-post-test quasi-experimental design with treatment and control group. The population of the study consists of 33 pupils from the two primary schools for the deaf in Enugu State. A researcher made test known as Achievement Test on English Language (ATEL) was used to generate data for the study. Three research questions and three hypotheses were formulated to guide the study. Mean and standard deviation were used to analyze the data collected from the study while Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance. The findings showed that pupils with hearing impairment exposed to T.C performed better than the control group. Children exposed to total communication had a mean pre-test achievement score of 31.33 and mean post test score of 64 as against children in the control group that had mean pre-test achievement score of 25.83 and posttest achievement score of 48.33. As for gender, the males exposed to T.C had a pre-test mean achievement score of 20.0 and posttest mean achievement scores of 56.88 as against male in control group that had a pretest mean achievement scores of 30.90 but a posttest achievement score of 49.09. Similarly, the female in the treatment group had a mean pretest achievement scores of 45.0 and posttest mean achievement score of 72.14 as against female in control group that had a pre -test achievement score of 18.57 and posttest achievement score of 47.14. The, result of interaction effect of gender and T.C showed that male had a mean achievement sore of 7.79 while female had a mean achievement scores of 25,which implies that female interacts more than males using T.C. Test of hypotheses showed no significant difference between the mean achievement score of the treatment and control group. Similarly, gender has no significant influence on the academic achievement of pupils with hearing impairment. The study also found no significant interaction effect of gender on the use of total communication.

These findings have implications drawn for the teachers of children with hearing impairment, curriculum planners, parent of children with hearing impairment and policy makers on the importance of using T.C in teaching children with hearing impairment. Based on these implications the following recommendations among others were made: training institution for teachers should try to incorporate T.C as a unit of study in their curriculum if teachers are to be equipped with the skills of using this T.C in teaching. There should also be an in-service training for teachers who are already in the field to enable them update their knowledge in the use of T.C, the children with hearing impairment should be exposed to the use of T.C whether male or female.

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CHAPTER ONE

INTRODUCTION

Background of the Study

The education of children with hearing impairment has over the years generated a lot of interest to experts in the field of special education. The concern is on the best approach to improve the education of children with hearing impairment all over the world. Apparently, people recognized the need to assist children with hearing impairment to process linguistic information for educational attainment.

Hearing impairment is the inability of the ear to receive and give meaningful interpretation to a message or sound. According to Okuoyibo (2006), hearing impairment is an umbrella term used to describe all aspects of disorder affecting the auditory system. Paul & Quiqley (1990) see it as any hearing loss ranging from mild to profound. Kirk, Gallegher, & Anastasia (1993) viewed hearing impairment as a generic term which refers to all types and degree of hearing loss. Apparently, this kind of condition requires special assistance for the proper educational development.

According to Kauffman and Hallahan cited in Obi (2006), the Conference of the Executive of the American School for the Deaf described hearing impairment as a generic term indicating a hearing disability that may range in severity from mild to profound. This includes

the subset of deaf and hard of hearing. According to them, a deaf person is one who cannot process linguistic information through audition with or without hearing aids. On the other hand, the hard of hearing can with the use of hearing aids process linguist information. They have residual hearing sufficient to enable them process linguistic information through audition.

For the purpose of this work, hearing impairment is a condition whereby the sense organ of hearing (ear) is deficient in receiving sound waves to process and interpret message. Children with hearing impairment therefore are children that have problem that inhibit the effective functioning of their ears. They often learn to "feign" comprehension with the end result being that the children may not have optimal learning opportunities. This is why many experts such as Werner (1988) and Ugwuanyi (2009) advocated for the use of sign language to improve the education of children with hearing impairment.

Issues in education of children with hearing impairment came into limelight in 1550's when a Spanish Monk Pedro Ponce de Leon started to teach children with hearing impairment how to read, write and participate in the learning of other subject. This made some special educators such as Abang and Wener to continue to conduct research on the best method that should be used in educating children with hearing impairment. They found out that signs that are within the reach of the leaner should be used

in teaching children with hearing impairment. However, further researches on the best method brought about a controversy between two schools of thoughts the manualist and oralist. The oralist believed in the use of speech and lip-reading in educating children with hearing impairment, while manualist believed in educating these children through sign language and finger spelling.

Two oralists Cohen (1980) and Jacobs (1980) believed in the use of speech and lip-reading in educating children with hearing impairment, while manualist such as Wener (1988) believed in educating these children through sign language and finger spelling. For instance Cohen (1980) argued that sign language and finger spelling make children with hearing impairment to be isolated in their community. Isolation of these children from their community hinders them from social interaction which subsequently affects their learning.

According Wikipedia, the free online encyclopedia (2012), manualists claim that oralists neglect the psychosocial development of deaf children and that the extensive practice required leaves students with less time and energy to advance academically and socially. They also believe that oralists' teaching methods result in inadequate skills and often poor speaking ability despite the great effort invested. They also feel that what is most important is giving deaf children a visual- motor language they can truly master so as to enable their intellect to develop

normally. Their argument is that children may not accomplish proficiency in lip-reading and other oralist techniques due to the great degree of time and effort involved.

The oralist on the other hand believe that manualist neglect the residual hearing in deaf children and that the emphasis on sign language isolates them from their culture and hearing family members, thus restricting them to a limited subculture that leaves them unable to succeed in the society and their academic environment. Their postulation is that only a tiny percentage of the population can use sign language. For example, the number of American Sign Language (ASL) users in United States is at roughly between 100,000 and 500,000 or between 0.3% and 0.15% of the population (Wikipedia online free encyclopedia 2012)

Manualists Werner (1988) and Riekeholf (1993) also believed in educating these children through sign language and finger spelling. For instance, Werner argued that if children with hearing impairment acquire sign language and finger spelling, they may improve on their communication and socialization skills. He also maintained that children with hearing impairment who use gestures and signs communicate better than those who are taught speech and lip reading only. This implies that learning sign language first will facilitate the reading competency of children with hearing impairment. Riekeholf also added that people with hearing impairment recoganize the importance of signing because it is

their means of daily communication within the family and the deaf community. It has been called mother tongue of deaf people and is valuable for their social interaction as speaking is for the hearing persons.

In another development Zapien (1998) identified the use of cued speech as one of the methods for the education of children with hearing impairment.` Cued speech is not really speech at all, but a visual representation of English sounds. Scholars propagating this school of thought did not however make appreciable efforts to sway others into their own camp. However the snag still remains that not all the children with hearing impairment will benefit if oral, manual or cued speech is used alone. This is because manual method of teaching children with hearing impairment involves the use of signs (sign language and finger spelling) while oral method uses (speech and lip-reading) to teach or communicate with the pupils with hearing impairment.

Sign language is a language that is used by people with hearing impairment to communicate. It is a language that uses manual symbol to represent ideas and concept. According to Riekelhof (1993), it is a term used to describe the language used by deaf people in which both manual signs and finger spelling are employed. It was observed by Riekelhof (1993) that signs usually represent ideas and not single word. They use a visual image for signing the idea. Some clear examples that fall into these categories are animals, for instance, the antler of the deer, is signed for

deer; the trunk of elephant is for elephant; the ears of donkey are signed for donkey and host of others. Signs are also represented by action, such as in the following; milking a cow is signed for milk, giving a hug is signed for love, growth; coming out from ground.

Experts in the field of deaf education such as Relkeholf (1993) and Abang (2005) have modified and invented different types of sign languages which are useful in the education of children with hearing impairment. For instance, American Sign Language (ASL) is one of the most popular sign languages in use all over the world. According to Relkeholf it is a visual-gestural language used by deaf people in America. Since its introduction in Nigeria, it has been the official medium of instruction to children with hearing impairment throughout the schools for the deaf. This sign language mode does not appeal to all the sense organs.

Local sign language (LSL) is another sign system developed and used by children with hearing impairment and others in their localities. According to Abang (2005), LSL is a natural sign and therefore very easy to use and help children with hearing impairment achieve success in their academic works

Though the uses of all these signs have assisted children with hearing impairment, for a long time, it has been observed that they have not adequately improved the learning ability of pupils with hearing

impairment. Abang (2005) has noted that it was because of the ineffectiveness of the sign language system used in the teaching of the children with hearing impairment that made them to perform low in their academic works. It was equally demonstrated in a study carried out by Fleer cited in Ugwuanyi (2009) that children with hearing impairment perform significantly poorer than their normal hearing counterpart when tasks were presented to them in English through the use of American Sign Language.

In view of the above shortcomings, Osuchukwu, (1986) Eleweke (1990) and Mba (1995) advocated for the use of total communication (TC) which is distinct from these methods explained earlier. Osuchukwu(1986) admitted that TC is the only theory of communication that stresses the right of the teacher and the children with hearing impairment to use all available forms of communication to develop a bank of concepts and knowledge. This should continue to be the goal of every teacher for every child. Eleweke (1990) explains that total communication is a philosophy of instruction not a method. This is because T.C does not advocate for the use of any single method but the combination of different modes at the same time in teaching. Similarly, Mba (1995) in his own view noted that the use of TC gives children the opportunity to understand what they are being taught through speech or signs, gestures or lip reading, facial expression and body movement

among others. Total communication uses different methods to teach children with hearing impairment. Riekelhof (1993) explained it as a philosophy that advocates for the use of any or all means of communication to provide unlimited opportunity to develop language competencies in children with hearing impairment.

For the purpose of this work total communication is a means of communication whereby children with hearing impairment are taught in a manner that involves using various methods of communication to all the sense organs. Here they are given the opportunity to exploit any means available to them to communicate, understand and pass messages to one another, especially those that have knowledge of signs.

Some studies such as Ugwuanyi (1999) have investigated the effectiveness of TC in teaching children with hearing impairment. For example, he carried out a study on the teachers perception of the communication strategies (manual, oral and TC) used for the education of children with hearing impairment in Enugu State. The findings revealed that TC was favored by teachers more than oral and manual strategies. The assumption is that with the use of total communication, there is likely to be an improvement of the academic achievement of children with hearing impairment. This is because if they don't understand through sign, they may understand either through speech, gesture or any other

means that are available for them. Naturally, enhancement of academic achievement is the key issue in every teaching method.

The term academic achievement means the attainment one gain at the end of undergoing a particular course or program in understanding what is taught to him. According to Lee (2005) academic achievement requires drives and in many cases single – mindedness. This means that when a child comes to school with a goal to achieve, he or she works towards such a goal. This is easier for children who can hear sound but for children with hearing impairment, it is going to be a difficult task because of their impairment in the use of sound.

Another area of interest is on the issue of gender and academic achievement of pupils with hearing impairment. According to Okoye cited in Ademokoya (2007) the influence of gender on language use and school learning has become an object of debate among some authorities in the field of psychology and education. It has been observed that various biological differences in human make up that are inherent in male and female students may be responsible for some disparities in the two groups. The argument is that since no two human beings are the same in physical and intellectual attributes, then one should not expect both male and female students to perform uniformly in their academic endeavors. Writing on this issue, Conger, Conger & Elder (1997) explained that gender is one of the factors that determine academic achievement. They

carried out a study on family economic hardship and adolescent adjustment and found out that males were reported to have significantly lower cumulative grade point average (CGPA's) than females in 10th grade after controlling a number of background factors. In a contrary view, Smith (1990) in her analysis of a sample of 7th graders who were followed through 9th grade found that females' growth in verbal achievement test performance was greater than that of males.

Gender characteristics on academic achievement of children with hearing impairment was also investigated by Coerts and Mills cited in Ugwuanyi (2009) and the findings reveal that boys who are hearing impaired achieve better than girls who are also hearing impaired in school subjects. The understanding of language of instruction is critical in determining the academic achievement of children with hearing impairment. A study carried out by Ugwuanyi (2009), on the influence of gender on reading comprehension of pupil with hearing impairment showed that gender has no significant influence on the pupils' reading comprehension

In a related development, Crouch (1997) has shown that gender plays no significant role in their academic work since all hearing impaired children experience diminished language skills. Also in a study carried out by Eze (2010) on the effect of training of teachers on the use of local sign language showed that gender has no influence on the

academic performance of children with hearing impairment. In view of these controversies, there is the need for a new study to contribute in resolving the issue concerning gender influence on academic achievement of children with hearing impairment.

Statement of the Problem

Studies have shown that children with hearing impairment have not been performing very well in schools due to inadequate acquisition of language. The assumption as revealed by most literature reviewed showed that the poor performance might be caused by factors one of which is a method of teaching by Nigerian educators for children with hearing impairment which do not take into consideration the means of communication that will appeal to all the senses of children with hearing impairment. According to Abang in Eze (2010), it has been observed that for about 46 years that the special educators for children with hearing impairment started using ASL to teach these children, there has been consistent poor academic performance. The evidence of this poor academic ca achievement can be seen in the children's internal result of 2009/ 2010 session at Special Education Center Ogbete in Enugu State. (Appendix H, page 90). It has also been discovered through personal interview with the head teachers of Oji-River Special Education Center and Special Education Center Ogbete all in Enugu that the sign language mode used in these schools is ASL. The concern now is to find out if the

poor performance was as a result the sign language method the schools use.

It is believed that this sign language mode may not afford them the opportunity to interact or relate well with their peers and families, as well as improve their academic work. In addition to this, the issue of gender influence in academic achievement of children with hearing impairment has not been resolved since there is a controversy on whether male or female would perform better academics.

In view of this development, there is a need to find out whether the use of total communication could affect the academic achievement of children with hearing impairment. Could the introduction of a method which appeals to all the senses of children with hearing impairment influence their academic achievement and does gender predict the academic achievement of children with hearing impairment? It is based on this that the researcher wants to carry out a study on whether there will be an increase in academic achievement of children with hearing impairment in primary five pupils in Enugu State if they are taught English through the use of total communication mode.

Purpose of the Study

The purpose of this study is to determine the effect of total communication on academic achievement of pupils with hearing

impairment in primary schools for the deaf in Enugu State. Specifically, the study intends to:

i. determine the effect of total communication on academic achievement of pupils with hearing impairment in English language;
ii. determine the influence of gender on academic achievement of pupils with hearing impairment exposed to total communication;
iii. examine the interaction effect of gender and total communication on academic achievement of pupils with hearing impairment in English language.

Significance of the Study

Theoretically, the findings will assist in determining whether the existing theories in language acquisition are relevant with regards to the use of T.C. It will also benefit theorist of language acquisition by helping them understand

The ways children with hearing impairment acquire language and then incorporate it in propounding their theories.

The findings of this study will be of immense benefit to teachers of children with hearing impairment, curriculum planners, and policy makers, children with hearing impairment, parents of children with hearing impairment and researchers. The result of this study will be

valuable to teachers of children with hearing impairment since the results will highlight the impact of using total communication on such children, and by so doing, the teachers will be in a better position to adopt a new approach that will impact positively on the children and they will also use sign without difficulty and interact easily with the pupils. The findings may be made known to them through workshops and conferences.

The result of the study will also be a useful guide to the curriculum planners. The findings of the study would assist them to determine the need to incorporate the use of total communication in the curriculum of the children with hearing impairment. The impact can be made known through sensitizing curriculum planners and policy makers on the need to include TC in the education of children with hearing impairment during their curriculum planning.

The findings of the study will also have direct impact on children with hearing impairment since the outcome of the study will assist both teachers and parents to adopt a better communication strategy as a way of improving their communication ability in and out of classroom. When their communication ability is improved, their academic achievement will also be improved.

The findings of the study will be useful to parents of children with hearing impairment since they would now rely on the findings to know the most effective methods of helping their children benefit maximally in

the educational activities. It will contribute in no small measures in guiding them on how to handle their children at home which by extension will help to improve the academic performance of the children in the school. Parents also can be informed and educated on how to use TC through organizing sensitizing workshops for them. The findings of the study will equally be useful in determining whether gender has any significant influence on the academic achievement of children with hearing impairment.

Besides, the study will be of immense value to other researchers with interest in the use of total communication in the teaching of children with hearing impairment. Such researchers will use the findings as reference in situating their own research. By implication, the study would have contributed in the growth of human knowledge.

Scope of the Study

The study was carried out in the two primary schools for the deaf in Enugu State. They are the Special Education Center Ogbete and Oji-River Special schools for the deaf. The choice of these two schools is based on the fact that they are the only public schools for the deaf in Enugu State. The scope will be limited to the pupils with hearing impairment in primary five classes. The study covered the topic “present and past tense” selected from the third term scheme of work in English language. The choice of grammar is because it is the key to understanding

of any language and children with hearing impairment do not speak or write exact English which makes it difficult for them to perform well in their academic works. The dependent variable in the study is academic achievement while independent variables are total communication and gender. The researcher therefore, will focus on the effect of total communication on academic achievement of pupils with hearing impairment.

Research Questions

The study was guided by the following research questions:

1. To what extent does the use of total communication (TC) affect the academic mean achievement scores of pupils with hearing impairment as measured by Achievement Test on English Language? (ATEL)
2. To what extent does gender influence the academic mean achievement scores of pupil with hearing impairment?
3. What is the interaction effect of gender and TC on academic achievement scores of children with hearing impairment?

Hypotheses

The following null hypotheses were tested in the study:

1. There is no significant difference in the mean achievement scores of the pupils taught English language using TC and those not so exposed.

2. Gender has no significant influence on the academic achievement of pupils with hearing impairment as measured by their means scores on ATEL.
3. There is no significant interaction effect of gender and TC on academic achievement of pupils with hearing impairment (hi) as measured by their post-test mean achievement scores on ATEL.

CHAPTER TWO

REVIEW OF LITERATURE

In this chapter, work related to the study are reviewed, organized and presented under the following subthemes: Conceptual Framework, Theoretical Framework, Empirical Studies and Summary of Literature Review.

Conceptual Framework

Concept of Hearing Impairment

Concept of Total Communication

Concept of Academic Achievement

Theoretical Framework

Theories of Language Acquisition

Noam Chomsky's Theory of Language Acquisition

B. F. Skinner's Theory of Language Acquisition

Lev Vygotsky's Theory of Language Acquisition

Empirical Studies

Academic Achievement of Children with Hearing Impairment

Total Communication and Academic Achievement of Children with Hearing Impairment

Gender Issues and Academic Achievement of Children with Hearing Impairment

Summary of Literature Review

CONCEPTUAL FRAMEWORK

Concept of Hearing Impairment

Hearing is the ability of the ear to receive and interpret sound or message. Hearing impairment is therefore the inability of the sense organ (ear) to receive and interpret message or sound. According to Okeke (2001), hearing impairment is a serious sensory deprivation that has been noted to hinder the afflicted persons' development in general and their academic achievement in particular

Hearing impairment as viewed by Ojile (2006) is a generic term indicating a hearing inability which may range in degree of severity from mild to profound. In line with Ojile's definition, Okeke (2001) further explained hearing impairment as a generic term used to qualify anyone with hearing loss. It is a degree of hearing loss, which may range from minimal hearing loss to profound deafness. Ojile and Okeke's definition have similarities with the explanation given by Conference of the Executives of the American School for the Deaf (cited in Obi 2006) which described hearing impairment as a generic term indicating a hearing disability that may range in severity from mild to profound. This also includes subset of deaf and hard of hearing. The views of these authors have shown that hearing impairment is in degrees with regard to language, there are pre- lingual and post- lingual hearing loss.pre lingual

hearing loss is a hearing loss at birth or before the child has learned language while post lingual hearing loss occurs after the child has developed language. This classification is based on the point of language acquisition.

Moreover, Okeke further explained that hearing impairment is a disability that affects the total personality no matter the period of onset. When it affects the total personality it means that it affects the well-being of a person which includes his social, physical, psychological and mental state. Supporting the above view, Ozoji (2005) described children with hearing impairment as those whose sense of hearing are defective and this could range from ability to hear partially to not hearing at all.

In the same line of thought, Mills (1990) explained that hearing impaired persons are those who have partial hearing loss, which means that they may or may not be aware of sounds. The views of Hallahan and Kauffman cited in Obi (2006) provided an insight in differentiating the levels of impairment. These include; 0-27(sound pressure), 27 - 40dB (normal hearing), 41 – 55dB (moderate hearing loss), 56 - 70dB (sever hearing loss), 71 - 90dB (profound hearing loss or anacrusis) in education, slight or mild and moderate hearing loss are referred to as hard of hearing while sever to profound hearing loss are referred to as deaf

According to them, a deaf person is one who cannot process linguistic information through audition with or without hearing aids. A

hard of hearing can process linguistic information with or without hearing aids, they have residual hearing sufficient to process linguistic information through audition. What this implies is that children who cannot process linguistic information even with hearing aid will definitely find learning difficult especially where oral method of communication is used. Supporting the above view, Olawale (2000) argued that persons with hearing impairment are those who have lost some, but not all of their hearing and who can or cannot benefit from the use of hearing aids in order to understand the use of speech.

In their own contributions, Paul and Quiqley (1990) remarked that hearing impairment is any hearing loss ranging from mild to profound. This therefore implies that hearing impairment comprises both those whose sense of hearing even though defective, can process sound or message partially and those who cannot hear at all. Corroborating this, Abang (2005) affirms that children with hearing impairment are those children with slight hearing loss, mild hearing loss, and moderate hearing loss, sever to profound hearing loss. Similarly, Heward (2000) argued that hearing impairment or hearing loss implies a disability category label of individuals who require special education and related services to function and achieve relative achievement in academic and other life endeavours.

In another study, Abang (2005) agreed with others that hearing impairment is in a continuum ranging from mild to profound. Consequently, the extent of hearing loss in an individual learner would to some extent interfere with his or her school performance. Individuals with significant degrees of hearing loss find it too difficult to understand speech as they would depend heavily on their sight to engage in communication for academic and non-academic purposes (Heward, 2000). On the other hand, a person with mild or moderate degrees of hearing loss could with some amplification meaningfully engage in verbal communication. Those who are moderately hearing impaired have better prospect in school learning than the former in school since a great deal of school instruction are done orally than manually (sign language). Heward therefore observed that hearing loss with its limiting effects does influence an individual behaviour in educational and socio-emotional development. It is also assumed that students with hearing disability experience more ego distorting experience than their hearing peers. This is due to disadvantaged position which their disability has placed them as well as abuses they suffer from the hearing counterparts.

In a related development, Davis and Hardic (1986) pointed out that those children who have mild to moderate hearing losses often portray mis-articulation of words and experience difficulties in speaking clearly. They further stated that those with severe to profound hearing loss

experience phantom articulation and rhythmic problem which according to them affect intelligibility of these children which in turn affects them academically. Limited ability to hear sound and its impact on language is one of the main characteristics of children with hearing impairment (Ozoji, 2005). According to him, the problem is manifested in two ways; non-response when talked to and difficult in language expression. Behaviours that are also associated with this

characteristics include; asking for repetition of question, cupping of the ear in order to hear better, straining to hear and pitch problem.

In a more vivid explanation, Olawale (2000) identified these as some of the characteristics of children with hearing impairment: lack of response to spoken words, general indifference to sounds, and response to noise as opposed to words as well as monotonic quality of voice. According to him, the manifestation of these characteristics depends upon the type and degrees of the impairment. For instance, a person who has slight or mild hearing loss will not manifest these characteristics as a person who has severe to profound hearing loss.

Contributing to this, Obi (2006) posited that early identification of hearing loss is very important in order to achieve as normal development as possible. This is because the handicapping effect of hearing impairment could lead to increasing difficulties in attaining developmental milestones. It is imperative therefore, that parents and

teachers should be watchful of behaviors that affect communication. He enumerated some of the following as the traits of children with hearing impairment. receiving inadequate feed back when sounds are made, tend to speak in loud voice, tilt to hear or direct the ear towards the speaker, may seem disinterested in oral conversation, more aggressive, ask for repetition of question, make poor pronunciation and vocabulary, understand better when watching the speaker, perform below in school and a host of other characteristics.

In a related development, Jartau and Uzo cited in Obi (2005) stated that early symptoms and characteristics of children with hearing impairment need urgent attention from parents and teachers. They noted that some characteristics of children with hearing impairment are paying more attention to movement than sound, low tolerance to noise or change in sound pattern, stamping of foot, yelling at people because they cannot hear their voices, showing no sign of startling situation that would normally disturb others. Okeke (2001) also enumerated the signs with which to identify hearing impaired persons but pointed out that these vary from person to person because the signs are dependent on the type and degree of impairment. Mba cited in Okeke (2001) equally mentioned these characteristics of hearing impaired person; they do not show surprise or become startled in a situation that would normally evoke such response patterns; they also rub their ears frequently or turn the head in

one direction as if they are trying to locate sound. Frowning or bending forward in order to hear or understand what is said to him, not responding when called from distance, complaining that a normal sound or noise is two loud, gazing at the lips of a person speaking to him instead of the persons eyes, avoiding situation that may require him/her to listen or talk.

Speech is the most conventional and most used form of communication in any human settlement. According to Ademokoya (1996) this is the greatest of the communication potentials which hearing loss deprive a child with hearing impairment and the greatest asset any one could wish him or her. That is why in many schools for the student with hearing impairment, efforts are usually made to provide a way of assisting the students to improve this communication abilities. The use of hearing aids or sign languages are among the forms of communication mechanism to serve as speech substitute and to permit him to learn as much as possible. Going by what is obtained in the special education programmes, Ademokoya (2008) fears that a child with hearing disability in many developing countries would hardly have a future to cheerfully hope for. This is because his/her educational programmes are grossly deficient to adequately compensate for his deficits and meaningfully equip him to face life challenges in future. Ademokoya, indentified lack of proper audiological assessment procedure and necessary therapeutic interventions, inappropriate school placement and instructional practices,

failure to comprehensively identify and manage some latent disorders and unfavorable cultural norms as some of the problems characterizing the education of the child with hearing impairment in Nigeria.

Consequently, this education has been described as a rudimentary one. As a result of this, those who graduate from it can only occupy the bottom of their societal socio-economic ladder. He therefore recommended that the educational programme should be reviewed and made more effective by administering it with some frame work provided by the Education for All in 1990 and Special needs Education in 1994 world conferences.

Similarly, Nwazuoke in Ademokoya (2008) had earlier noted that it is very disturbing to imagine the failure of special education practices in Nigeria to develop the potential ability of individual with hearing impairment. The quality of the educational program has evidently failed to offer any significant contributions to their communities and the nation. This he attributed to lack of necessary supportive services, negative attitude, weak education policy and poor funding.

In a related development, Alkali (1991) had located the problem at the improper assessment and placement of children with hearing impairment in schools. These problems culminate in the lack of appropriately differentiating curriculum and instructions for the varying categories of school children with hearing disability. Other issues

impeding the programmes for hearing impaired students according to him are inappropriate professional programmes required for providing sound education and rehabilitation services for the school children with hearing disability and a poor organizational and administrative procedure for facilitating an efficient running of special education programmes for the children.

The consequence of these problems associated with education of children with hearing impairment is low performance of the students academically. For instance, according to Powers (2003), deaf students in general are underachieving. This was known from research evidence from the United States particularly from Gallaudet Research Institute, which has been regularly gathering data for the last 30 years. Also Allen, 1996 and Traxler cited in Powers (2003) stated that deaf learners lag several years behind hearing learners in mathematics achievement and in reading achievement although the mathematics difference is not so great.

In a study carried out by Karcher (1978) students with hearing impairment whose parents are also hearing impaired have been shown to perform better than their peers who have normal-hearing parents on various measures of academic and social adjustment. Many have attributed this superiority to effects of early manual communication. However the problem with this interpretation is that the group of children with hearing impaired parent differs from the group with normal hearing

parents along many educationally significant dimensions in addition to communication history. Of the issues related to the education and development of hearing impaired children, none has generated more interest than the question of the effect of early manual communication. For some many years, steady streams of studies have compared hearing impaired children of normal parents for a variety of educational and psychological measures. By and large, the results of these studies have been consistent by such measures as IQ, achievement test scores as well as various indices of special adjustment. Children of deaf parents (who are presumed to communicate manually at home) perform better than children of normal hearing parents (most of who probably communicate orally within the family.

Another factor that affects the learning ability children with hearing impairment is psychosocial problems. According to Ezewu (1987), common psychosocial problems among school children with hearing impairment involve activities which school children often manifest regardless of their conditions in the school. However, Ademokoya (1995) noted that children with hearing impairment exhibit their own psychosocial problems in two ways. The first type are problems which all children exhibits (disability not withstanding) Such problems are absenteeism, coming to school late, leaving before the time, dropping

out of the school, cheating in the class, sleeping in the class, inability to get along with mates and teachers, fighting in the class and stealing or extortion. The second are problems which result from the child's hearing impairment and they include; hyperactivity, aggressiveness, indifference, mistrust, low self concept and low achievement motivation. Consequently the listed problems are usually caused by human/material factors. It is believed that these problems could be reinforced within certain social context such as home, school and community.

However, no matter the degree of hearing impairment, adequate care should be given to the child to help him develop maximally. Supporting this assertion, Okeke (2001) cautioned that any child with hearing loss, no matter the degree needs some assistance for maximum function. It is as well very important that pregnant women should be given advice or be educated on how to prevent giving birth to babies with hearing impairment (i.e. congenital hearing loss, care should also be given to little children so that they do not sustain any injury that could lead to hearing loss (i.e. adventitious hearing loss).

Concept of Total Communication (TC)

Total communication was introduced during the late 1960's by Roy Holcomb, a father to a deaf child in California and was adopted by the Maryland School as the official name for this educational philosophy. According to Riekeholf (1993), total communication is a philosophy of

teaching the deaf child which advocates for the use of any and every means of communication to provide unlimited opportunity to develop language competence. It includes; speech, signs, amplification (hearing aids) auditory training, spelling, pantomime, reading, writing, pictures and any other possible means of conveying ideas, language and vocabulary.

In a similar view, Walz (1999) noted that this approach involves relying not only on oral language to build communication skills but introducing gestures, sign language and other visual communication. According to him teaching speech and sign language at the same time will increase the likelihood that the child will speak. Unfortunately, many behavior therapists teach only speech because they feel that sign language will become a crutch and the child will rely on signs rather than speaking. However, it appears that there is no empirical evidence to support this notion.

Total communication strives to provide easy, least restrictive communication methods between the deaf child and his/her family, teachers and peers. Hansen (1980) explained total communication as an approach to create a successful and equal communication between human beings with different language perception and production and so, amounts to willingness to use all available means in order to understand and be understood. It is about communicating in any way you can. Total

communication allows both teachers and children to use all available forms of communication to develop a bank of concepts and language. This implies that total communication combines two or more modes at the same time for teaching and learning. It does not advocate for the use of any single method but the combination of different modes at the same time in teaching and learning. That is why Eleweke (1990) explains it as a philosophy of instruction, not a method. It has also been observed in Ugwuanyi (2009) that the use of TC leads to improved educational achievement in deaf students especially in areas where meaningful language is involved.

Total communication is therefore, a sign system that involves all the sense modalities in signing words, concept or ideas. The assumption is that children with hearing impairment are psychologically, socially and educationally improved when taught with total communication. According to Werner (1988), TC is an approach that encourages a child to learn and use all the different methods that work well for that child in his community. He further observed that this method involves finger spelling, drawing, reading, writing and whatever residual hearing the child has to develop. He was also of the view that TC is an approach that is friendly, flexible and adaptable to the individual and his needs. This approach considers the child's immediate environment. These sign systems help hearing impaired individuals to participate effectively in

their classroom environment and their community at large. This is possible because they can use any means available to them in their immediate environment to communicate or convey messages.

In his own contribution, Olawale (2000) described it as the simultaneous use of speech, fingers spelling and signs. The approach is to provide abundant opportunities for children with hearing impairment to communicate and use speech aid for possible acquisition of skill necessary for social interaction. In the same line of taught, Eleweke (1990) described TC as a philosophy that advocates the use of two or more modes to provide unrestricted opportunities in developing children. It entails combining speech, writing, drawing, lip reading and other means of conveying messages and concepts to children with hearing impairment. In using total communication it is important to engage with the required skills so that it will be not be misinterpreted by the children with hearing impairment.

Owing to this, Ugwuanyi (2009) cautioned that a lot of factors have to be considered in the use of TC in the teaching of children with hearing impairment. For instance, eye contact, posture and body movement, gestures, voice and facial expression are very essential when it is being used. Voice is used simultaneously with signs or gestures, raising voice high or low is not allowed. Signing very fast or very slowly, shouting and unfriendly mood are to be avoided. The reason for all this

precaution is because it may be misinterpreted by the children. For instance, when one is signing ‘yes’ in terms of agreement, he or she should nod his head up and down together with voice and a smile on his face. While ‘no’ is signed by shaking head from side together with voice and face frowned. If a person signs ‘yes’ and frowns face while doing that, the children with hearing impairment may be confused because they do not know whether there is agreement or not.

The use of total communication is important because, it uses different methods to communicate to children with hearing impairment individuals. It combines a lot of sign systems. For instance, Ugwuanyi (2009) observed that to sign “yes” in local sign language (LSL) we nod up and down. “No” is made by shaking head from side to side. In American Sign Language (ASL) yes is made by closing the right first and shaking it severally while “no” is by touching the tip of index finger on the thumb. But TC combines some of these signs. For instance, you nod with smile together with speech or voice and stern face. So, if the person does not understand it through gesture and sign, he understands it through facial expression and body movement or speech.

Another advantage of TC is that children with hearing impairment stands a better chance to grasp what is being said either through signs, finger spelling, voice, gestures, lip reading, and facial expression. It also gives teachers or special educators and their students the opportunity to

discover the means that work well for a particular child by trying all the different methods in teaching.

TC also grants both parents and their children with hearing impairment opportunities to communicate with one another. According to Ugwuanyi (2001) a child who is taught with all the modalities in TC at a course of instruction will be able to learn. The reason is because the child is in a better position to grasp what the teacher is teaching either through signs, finger spelling, lip reading, facial expression, body movement, pictures, speech or writing. TC also takes care of individual differences among children with hearing impairment.

Total communication is also very important in an inclusive education since it will accommodate both able-bodied learner and learners with disability especially learners with hearing impairment. According to Ademokoya (2008) total communication is identified as the functional communication mode considered most appropriate for use in an inclusive class for hearing and non hearing learners. He also noted that total communication provides unlimited opportunities for developing language competences for children with hearing impairment as well as facilitating interactions between them and their hearing counterparts. Total communication is not only good for children with hearing impairment in special school but also work better than other communication alternative in an inclusive education arrangement since it

allows for a resourceful use of verbal and non-verbal communicative skills. It therefore facilitates better social interactions among member of an inclusive class. According to Ekwama cited in Ademokoya (2008) total communication will benefit deaf blind, the speech disordered plus the hearing pupils and teachers.

However, a major limitation of total communication is that if the speaker fails to begin signs or finger spelling with voice, there will be a problem as the children may not learn. Moreover, Signing, finger spelling, facial expression, talking, pointing at a word while mouth is closed or facing another place is meaningless to the children. Another disadvantage is that some words are not visible on the lip as in the lip reading. Children may also get confused because of combining so many sign systems. In spite of these shortcomings of TC; observations have shown that it has been successfully used in so many schools for the deaf.

Concept of Academic Achievement

Academic achievement can be seen as something one do or achieve at school, college or university, in a class, laboratory or field work. It is accomplishing whatever goals or task which has been set. It is a pursuit and actualization of dreams in the academic set up. According to Lee (2005), academic achievement requires drives and in many cases single-mindedness. This therefore, means that when a child or student comes to school with a goal to achieve success, he or she works towards such a

goal especially pupil that can hear but for children with hearing impairment, it is going to be a problem because of their impairment.

Studies have shown that several socio-biological factors predicts academic achievement, for instance, Redd, Cochran & Moor (2001) noted that a lot of factors determine or predict academic achievements. For example, prior achievement can serve as a predictor of later achievement. The students with higher levels of achievement during adolescence are more likely to complete high school and to attend and complete college than their peers with lower levels of achievement.

Similarly, a study carried out by Teo, Carlson, Mathieu, Egeland, and Srouret (1996) revealed a link between adolescents' childhood IQ and their later academic achievement. In the study, they examined the effect of IQ and other individual factors on academic achievement at ages 11 and 16. They found that of all the variables examined, IQ was the strongest predicator of individual's reading and mathematics achievement in grade 6 and age 16.

Another factor that determines academic achievement is gender. Conger, Conger and Elder (1997) carried out a study and found out that male were reported having significantly lower GPAs than females in 10^{th} grade after controlling a number of background factors. However, Smith (1990) in her analysis of a sample of 7^{th} graders who were followed through 9th grade found that females' growth in verbal achievement as

measured by their language test performance was greater than that of males. In the same vein, Guo (1988) also found out that females scored higher than males in reading recognition and comprehension test, after controlling family background factors. However, other studies showed that male perform higher than females in their academic achievement. For instance Jordan and Wettles (1999) in analysis of data from the National Educational Longitudinal Study of 1988 (NELS) found that girls had lower scores on mathematics and science tests in the 12th grade than boys. In line with this, Garman (1992) discovered that girls scored lower on a test of mathematics and verbal achievement. Apparently therefore gender seems to be a major variable in the determination of academic achievement of children with hearing impairment.

It is also believed that individual's psycho-social adjustment, determines academic achievement both within and outside the academic realm. Adolescent's individual choices, such as their use of time during non-school hours have been found to predict academic achievement. Some studies have found out that adolescents who are involved in extra-curricular activities have higher levels of achievement than those who are not. For instance, in an examination of a sample of 1,259, Eccles and Barber (1999) found that adolescents 10th grade participation in team sports, school leadership or school spirit activities, academic clubs were each independently related to having a higher 12th grade GPA, after

controlling student's gender, verbal, mathematics ability and parental education.

It has also been observed that time spent in doing domestic chores also determine or predicts academic achievement. Children or adolescent who spend much of their time in doing household chores instead of learning are likely to perform very low in their academic work. The implication therefore is that children who spend more time in their school academic exercises may likely perform better than those who have a lot of domestic chores to do at home.

Another important determinant of adolescents' academic achievement is the amount of time they spend viewing and using different forms of media. The type of programs that they watch may be important as well. For instance, Smith (1992) found that adolescents who spend greater amount of time listening to the radio or music recordings are more likely to have lower levels of growth in reading achievement between the 7^{th} and 9^{th} grades.

Employment as another common use of out-of-school time among adolescent has been found to be predictor of academic achievement. Those who engage in other job after school hour are likely going to perform lower because they do not have enough time for their studies. Steinberg and Kauffman (1995) reviewed several studies that examine the relationship between adolescent employment and their educational

development. They found out that work intensity was the most consistently predictive variables for educational outcomes among adolescents.

Similarly, family background also predicts adolescents' academic achievement. Children who come from well organized fairly rich families are likely to perform better than their counterparts. This is because they can have access to many educational materials such as textbooks and other materials that can make learning more effective. Added to this, Conger, Conger, and Elder (1997) found out that adolescents who were poor during some point in the four year study period had lower GPAs in 10th grade than those who were not poor during any point of the study.

Another family related variable that can predict academic achievement is the family structure, including marital status and family size as well as parent's levels of involvement and monitoring of the children. According to Nyaroko (2010) parental home involvement refers to the school related activities, actions, and behaviors that parents perform at home that impact on the academic success of the children. It includes activities such as helping children with their home works, discussion with the child about their school progress, provision of words of encouragement and host of others have been identified as one of the most productive ways of promoting and enhancing educational achievement of children.

Studies have also shown that maternal cognitive ability is also related to adolescent achievement. For instance Guo (1988), in National Longitudinal Survey of Youth(NLSY), found that adolescents whose mothers scored higher on cognitive test had higher achievement test score, after controlling for maternal education and a number of other background characteristics. There is also evidence that adolescents living with biological parents are more likely to have higher level of achievement than those who are not living with their two biological parents. For example Conger, et al. (1997), found that adolescents living in a house hold with a separated or divorced mother reported lower 10^{th} grade GPA than adolescent with two biological parents.

Research has also documented that there is a relationship between adolescent's family size and their academic achievement. For instance, Conger, etal (1997) found that adolescent living with a greater number of siblings had significantly lower GPA's in 10^{th} grade than those living with fewer siblings in a sample of white adolescents in Iowa. Hanushek (1992) also found negative relationship between family size and achievement among a sample of low- income Black through 6th graders. In the study Hanushek demonstrated within a sample of large families that those who fell early in the birth order had higher levels of achievement in the elementary to middle school years than those falling later in the birth order. Hence the implications of having in a large family

seem to be most severe among those who come along later, having experienced the larger family size during the younger years of life than their siblings. The interaction found between number of siblings and parental resources may provide support for a parental resource dilution theory- a theory that posits that as the number of siblings' increases, availability of parental resources, including time, interpersonal resources and economic resources decreases.

Involvements by nonresidential fathers are related to adolescent academic achievement. For instance King (1994) in an analysis of National longitudinal Survey of youth (NLYS) data, found that greater levels of child support but not visitation from non- residential fathers was related to higher scholastic competence and higher mathematics and reading scores within a national sample of both children and adolescents whose parents were not married. This study controlled the child's sex, race, birth order, region of residence, distance from father, mother's education, religion and household income, current marital status and time since divorce. In summary, adolescent's families have been consistently found to affect their academic achievement outcome. Adolescence achievement levels vary by their family background including parental level of education, parental monitoring and involvement levels, number of siblings and family structure.

Peers' influence also determines academic achievement. For instance, in a study carried out by Jordan and Wettles (1999) it was revealed that adolescents or children who spent greater time hanging out with their peers had lower levels of mathematics and science achievement in the 12th grade than adolescents that spend less time in these activities. The implication is that the choice of reliable and hardworking peer group will in large extent improve academic achievement of school children.

THEORETICAL FRAMEWORK

Theories of Language Acquisition

In this work, Chomsky, Skinner and Vygotsky's theories of language acquisition were reviewed. According to the Wikipedia, the free encyclopedia (2010) Language acquisition is the process by which humans acquire the capacity to perceive, produce and use words to understand and communicate. This language might be vocal as with speech or manual as in sign language. Language here usually refers to first language acquisition which studies the process by which infants acquire their native language, rather than second language acquisition that deals with acquisition (in both children and adults) of additional languages. A major concern in the understanding of language acquisition is how these capacities are picked from what appears to be very little input. A range of theories of language acquisition has been created in order to explain this apparent problem including innatism in which a

child is born prepared in a manner with these capacities, as oppose to the other theories in which language is simply learned.

Chomsky's theories of language acquisition (1986)

Chomsky believes that children are born with an inherited ability to learn language. He claims that certain linguistics structure which children use so accurately must be already imprinted on the child's mind (Chomsky1986).He reasoned that human grammar acquisition is an innate biological ability that humans possess. Chomsky (1986) argued that there was no way that a child can obtain a language from linguistic data that the child receives from its teacher and environment without an inherent language characteristics embedded in the child. Here he prescribed that a child came into this world with predisposition to learn language fluently and this predisposition is encased in our biological make-up, innate to all humans. He concluded that children must have an in born faculty for language acquisition. Corroborating, this Richard (1999) noted that contemporary linguists have argued that the ability to learn language is more than an ordinary human s kill, it is biological based.

Supporting this, Steven (2003) explained that learning language is something every child does successfully in a matter of a few years and without need for formal lesson. According to him; the human species have evolved a brain whose neural circuits contain linguistic information

at birth. The child's natural predisposition to learn language is triggered by hearing speech and the child's brain is able to interpret what she /he hear according to the underlying principles or structure it already contains. This natural faculty that every child has is known as the Language Acquisition Device (LAD) (Chomsky 1986). Children have then only to learn new vocabulary and apply the syntactic structures from LAD to form sentences. Although this premise was doubted fifty years ago, today biologist and linguist alike accept it. Developing children only need exposure to language if they are to develop adult competence in their native language. In contrast, children with language disorders will need more than exposure to language if they are to develop adult competence in their native language.

This presupposes that children with language disorder would require additional efforts to efficiently use any language. Language acquisition device in human does not select a particular language that would be learnt. For example, Richard (1991) has demonstrated that our innate language capacity does not prescribe a particular language but instead sets the boundaries of the class of possible language, what precisely is the relation between nature and nurture in language acquisition? What do nature (the innate ability) and nurture the linguistic environment) contribute when a child is acquiring language? According to Richard (1999) this question is easy to ask but very difficult to answer.

The clear experiments would involve manipulating a child's linguistic input. For example one might expose a child only to an artificial language that violates the rule of universal grammar. Could the child acquire such a language? Or one might deprive a child of all linguistic input to see if he or she would develop a language in a linguistic vacuum. However, performing such experiments with a human being is unthinkable.

Similar question can be answered by studying deaf children, whose linguistic experiences are very different from those of the hearing population. For example it turns out that a child who has no access to a spoken language will readily acquire sign language, and that a child deprived of both spoken and signed language sometimes invents his or her own gestural system of communication. Chomsky state that all human languages share common principle (for example, they all have words for things and action- nouns and verbs) it is then the child's task to establish how the specific language she hears expresses these underlying principles. For example the LAD already contains the concept of verb tense. By listening to such form as worked'', played and attend, the child will form hypothesis that the past tense of verbs is formed by adding the sound /d/, /t/, /id/ into the base form. This will lead to an error known as virtues error. It hardly needs saying that the process is unconscious.

Chomsky does not envisage the small child in its cot working out grammatical rules consciously. He also points out that a child could not

possibly learn language through imitation alone because the language spoken around is highly irregular. Adult speech is often broken up and even sometimes ungrammatical. According to Richard (1999) evidence derives from close examination of the linguistic input children received when they are learning language. That input appears to be deficient in one key respect. Mature speakers know which are correct and not correct but children are not taught the distinction in any straight forward way. As Roger Broun and Camille Harlon (nd) of Harvard University were the first to show, a child typically is given many examples of grammatical sentences but very little information about grammatical error. Children obviously make grammatical errors but it seems parents seldom correct them. When a child says ‘me want cookie, the parent seldom explains that only the cookie monster on ‘sesame street says it that way. In any case, whether the child obtains the coveted cookie will probably have more to do with the time remaining until dinner than with the grammatical correctness of his or her request. This is in line with Chomsky’s base theory of language acquisition on abstract rules of grammar, which implies that language is learned to get meaning rather than for interactions. He however, did not consider that not every child can acquire language in the same way. He also states that language comes naturally to children provided such children are brought in language rich

environment. He did not however indicate how adult use language in that environment.

Chomsky also based his theory of language acquisition on abstract rules of grammar. In his analysis of Chomsky's theory Ugwuanyi (2009) observed that this will not work out well for children with hearing impairment because to acquire language through the rules of grammar means that they must hear the speech of others. They do not hear or hear very well nor speak and as a result, they are not aware of the presence of speech sounds and rules of grammar can only be followed when one can hear speech of other people. Steven (2007) posited that language acquisition does not require extensive use of conscious grammatical rules and does not require tedious drill. Therefore, when a child with hearing impairment is able to say mama food, he should not be condemned totally but should be understood that he wants food. Children with hearing impairment learn or acquire language through lip reading, gestures, facial expression and body movement as well as sign. These are not the basic method of acquiring language. Chomsky also stated that children acquire language naturally but Children with hearing impairment cannot learn or acquire language in the same manner because they use gestures and signs to represent things and persons they see in their environment.

Relating Chomsky's theory to the way children with hearing impairment acquire language, we will discover that they cannot acquire it

exactly in the same manner with the way children who are not hearing impaired acquire language. For instance he argued that language comes naturally to children but it does not in any way come naturally to children with hearing impairment because they have to learn to represent object and person they see in their environment in signs. However Chomsky stated that children acquire language very fast if they are born in a language rich environment. This would benefit children with hearing impairment more because when people around them use language often the ability to read lips is increased.

B.F. Skinner's Theory of Language Acquisition (1952)

Skinner, a behaviorist psychologist propounded a theory of language acquisition which is anchored on the process of learning involving the shaping of grammar into a correct form through reinforcement of other stimulus. This theory views language acquisition as a building process that results from interaction with the environment. According to Skinner (1990) language is behaviour and because of that, it is subject to the dictates of an environment. Skinner was concerned with observable and materialistic nature of behaviour. To him, there is no underlining meaning to words. This implies that verbal behavior is due to the conditioning that occurs between the words and the reinforcement properties of the stimulus. The reinforcement could be physical (such as

presentation of gifts), or social which could be in form of praise or encouragement.

In their analysis of behaviour in Skinners' theory, Essuman, Nwaogu and Nwachukwu (1990) interpreted it as an action of an individual or any organism that can be seen or not seen. Behaviour can be operant, respondent or learned, it is operant when it is natural, it is not emitted as a result of response from any stimulus, it is also respondent when it occurs as a result of their being, elicited by known stimuli and finally, it is learned when it is learned in an environment.

Therefore, when we say that language is behaviour as noted by Skinner (1990), it means that language can be acquired naturally and can also be learned. It is natural because every human has the ability to acquire it except if there is any impairment. And it is learned because it is when it is spoken that it can be heard and learned by the person. According to Skinner, as cited in Ugwuanyi (2009), children acquire language through selective reinforcement or approval of the children's responses in native language. This encouragement and reinforcement increases the children's responses to sound. That is to say that those children learn language as interplay of reinforcement and imitation. They learn these through the words they hear from their parents, teachers and peers He also noted that children learn language through verbal means and imitation of speech made in their environment. The implication of all

this is that children with hearing impairment do not acquire enough language through verbal means because of their impairment. They are also unaware of the presence of sound because of their impairment in the use of spoken language and as a result may not comprehend verbal instruction nor make use of it.

However, acquiring language through imitation is in line with the way children with hearing impairment acquire language by imitating the speech through observing the lips of the people they interact with in their environment, (that is lip reading).They also acquire language through the language of sign. It is imperative therefore, that whoever that is teaching the child lip reading should use the appropriate lip movement to avoid misinterpretation by the children. This theory is relevant to the present study because total communication has a lot to do with observation and imitation which is critical to Skinner's theory.

Vygotsky theory of language acquisition (1978)

The Vygotskian perspective of literacy/language acquisition emphasizes social interaction but places less emphasis on stages of behaviour. From this perspective, language and cognition emerge in development at about the same time and are intertwined. Vygotsky suggested that learning is a matter of internalizing the language and actions of others. He also believed that children need to be able to talk about a new problem or a new concept in order to understand it and use it.

This can be possible through social interaction. In line with this, the Ecological Theory of Language Acquisitions as viewed by Francisco, Eeva, Lisa, Lisal, &Ulla, (nd) viewed the early phases of the language process as emergent consequences of the interaction between the infant and its linguistic environment. The new born infant is considered to be linguistically and phonetically naïve but endowed with the ability to detect similarity between the multi sensory stimuli it is exposed to.

The initial steps of the language acquisition process are explained as unintended and inevitable consequences of the infants' multi- sensory interaction with the adults. That is to say that a child acquires language through social interaction with children and adult in an environment. Going further, Vygotsky explained that as a child discusses a problem or task with an adult, the adult supplies language to assist the children in solving the problem and gradually internalizes the language until the task can be completed independently. Vygostky placed his language acquisition theory squarely on an interpersonal setting, a context which is determined by the culture in which one is reared. Vygostky(1978) emphasized that when we caution children on the proper way of eating we are giving them instruction on the ways of our culture. According to him, socialized speech improves the children's convention of language use, which according to him is self regulatory when they hear their own. It is in the view of this that Werner(1988) reported that performance in

school is related to the way children use language This assertion does not hold for children with hearing impairment since language use here depends on the extent that children hears or understand language. They do not hear enough or be aware of presence of speech. He also noted that children use gestures, sounds to interact with others. This will not work out very well for children with hearing impairment since they receive limited linguistic input and output. Their inability to receive enough sound makes it difficult for them to interact with people around them. They can only use gestures which they are familiar with. Even though they can use gestures and signs for interaction, such interaction can be possible if the children are familiar with such gestures. Children with hearing impairment do not hear themselves when they speak and lack conversation experience and this in turn affect or influence their language acquisition (Ugwuanyi, 2009). However the theory is related to the present study because T.C also relies in the use of gestures in language learning and social interaction and when children with hearing impairment interacts regularly with others, their chances of spoken language will increase since they will be in a better position to mimic the lips of speakers

Considering the theories, each is either saying that language can be acquired naturally or can be learned through imitation of sound and speech and social interaction with adult in the environment. However,

what is clear is that children with hearing impairment acquire language by the use of signs, lip-reading, eye contact and body movement and the like. Of all these theories it appears that Skinner's theory is more relevant to this study.

Empirical studies

Empirical studies were reviewed on the following:

Academic achievement of children with hearing impairment,

Total Communication and Academic Achievement of Children with Hearing Impairment

Gender issues and Academic Achievement of Children with Hearing Impairment

Academic Achievement of Children with Hearing Impairment

So many empirical studies have been carried out on academic achievement of children with hearing impairment. For instance, a study was carried out by Ademokoya and Shittu (2007) on the onset of hearing loss, gender and self concept as the determinants of academic achievement in English language of student with hearing disability in Oyo state. In the study, 100 senior secondary school class 3 students with hearing disability were purposively selected to participate in the study. The study also raised 3 hypotheses to ascertain relationship between onset of hearing loss, gender, and self concept and English language achievement. Adapted English language Test and Audio Logical Reports

were used for the study. Findings showed that students with high self-concept outclassed those with low self-concept of adolescent personal data inventory. It was also revealed that post-lingual, hearing disabled students were superior to their pre-lingual hearing – disabled colleagues, male students did better than female students and students with high self concept out classed those with low self concept.

A study was also carried out by Mohammed (2007) on the effect of Sign Writing on academic achievement and vocabulary acquiring for deaf students at Al amal school for deaf in Amman city. In the study, the researcher developed and applied a training program by using Sign Writing lesson which was created by Valerie Sutton, to teach Sign Writing for deaf students at the fifth grade at Al amal school for deaf in Amman city, and to teach them a selected part of science book from the second semester.

The study was conducted at a purposive sample contained of 21 male and11 female students from the 5th grade , they were divided into two groups, one of them was randomly assigned as an experimental group which contained 15 students (10 male ,5 female) , the second was a control group which contained 17students (11 male, 6 female). Two tools were used to collect the data; the first was a multiple choice test which was built according characteristics table, the validity and reliability for this tool was verified. The second tool was a list of vocabulary that was

selected randomly from the science lessons, validity and reliability for this tool was also verified. The two tools were conducted as pre and post test for the two groups .The data collected were analyzed using mean and standard deviation for research question and hypotheses were tested at 0.05 level of significance using (ANCOVA). The results obtained indicated significantly differences between the two groups in favour of experimental groups in achievement and vocabulary. Also, the findings showed the effect of the interaction between the group and gender in vocabulary.

Another study carried out by Anita, Jones, Reed and Kreimer (2009) on academic status and progress of deaf and hard of hearing students in general education classroom used 197 deaf or hard of hearing students with mild to profound hearing loss who attended general education classes for 2 or more hours per day. Scores on standardized achievement test of Mathematics, reading language, writing and standardized teachers rating of academic competence annually for 5 years, together with other demographic and communication data were generated. Results on standardized achievement tests indicated that over the 5-year period, 63% - 79% of students scored average or above average range in Mathematics, 48% - 68% in reading and 55% - 76% in language and writing. Average student progress in each subject area was consistent with or better than that made by the norm group of hearing

students' and79% - 81% of students as average or above average in academic competence over the 5 years. Findings showed that majority of these students are achieving within the normal range (i.e. between +1 and -1 SD) of hearing students on standardized tests of mathematics, reading, and language/writing. Similarly, most of them are perceived by their teachers as performing academically within the range of their classmates Findings also revealed that most of the students are also making one (I)year's progress in one (I) year's time and in the area of language/ writing, many are making more than I year progress in a year time

A study was also carried out by Richardson, Long, & Foster (2009) on academic engagement of student with a hearing loss in distant education. In the study, the researcher did performance comparison between students who had a hearing loss and those who did not have hearing loss were taking courses by distant learning. The study however did not define distant learning, whether it is through the internet, video, television or phone. The first group were students who had hearing loss and it included 267 students. The second group was 178 students without hearing loss. The result of the study showed that students who had hearing losses and who received distant learning were lower achievers than the students who were not hearing impaired.

In a study carried out by Moller, (2000) on the relationship between age of enrollment in intervention and language outcomes at 5

years of age in group of deaf and hard of hearing children. Vocabulary skills at 5 years of age were examined in a group of 112 children with hearing loss who were enrolled at various ages in a comprehensive intervention program. Verbal reasoning skills were explored in a subgroup of 80 of these children. Participants were evaluated using the Peabody pictures, vocabulary Test and a criterion referenced measure, the preschool language assessment instrument, administered individually by professionals skilled in assessing children with hearing loss. A rating scale was developed to characterize the level of family involvement in the intervention program for children in the study. The findings showed a statically significant negative correlation between ages of enrollment and language outcomes at 5 years of age. Children who were enrolled earlier (e.g. by 11 months of age) demonstrated significantly better vocabulary and verbal reasoning skills at 5 years of age than did later- enrolled children. Regardless of degree of hearing loss, early-enrolled children achieved scores on these measures that approximated those of their hearing peers. In an attempt to understand the relationship among performance and factors such as age of enrollment, family involvement, degree of hearing loss and non verbal intelligence, multiple regression models were applied to the data,. The analyses revealed that only 2 of these factors explained a significant amount of variance in language

scores obtained at 5 years of age, family involvement and age of enrollment.

Another study was carried out by Itano, Sedey, Coulter and Meh (nd) on language of Early and later identified deaf and hard of hearing children. The study compared the receptive and expressive language abilities of 72 deaf or hard of hearing children whose hearing losses were identified after the age of 6 months. All of the children received early intervention services within an average of 2 months after identification. The participants' receptive and expressive language abilities were measured using the Minnesota child development inventory. The result showed that children whose hearing losses were identified by 6 months of age demonstrated significantly better language scores than children identified after 6 months of age. For children with normal cognitive abilities, this language advantage was found across all test ages, socio economic strata. It also was independent of gender, minority status and the presence of absence of additional disability.

Total Communication and Academic Achievement of children with hearing impairment.

Some empirical studies have also been conducted on total communication and academic achievement of children with hearing impairment. For instance, a study was carried out by Ann, Johanna & Jean (1992) on speech perception and production skills of students with

hearing impairment from oral and total communication. The sample consisted of 227, 16 and 17 year old students with profoundly hearing impaired: 127 from total communication programs, 63 with normal-hearing parents and 100 from oral programs. Subject groups were matched in terms of age, unaided residual hearing, and IQ. On average students from oral programs acquire more intelligible speech and made significantly better use of their limited residual hearing than did the TC students. This finding held for all TC students- those with deaf parent as well as those with normal hearing parent. Although result of this study indicates that auditory and speech production skills are comparatively well developed in student who has consistently used spoken language throughout the day as the primary means of communicating, other factors associated with oral sample, such as early education, and parental support, may also be necessary for the development of good spoken language skills.

Another study was also carried out by Geer & Moog (1990) on speech perception (using perception test battery) and by Tyles, Fyaut-Bertshey and Kelsay (1991) on the vowel perception (using vowel perception test) compared 29 hearing impaired children's performance. Two groups of children participated in the study; one group (fourteen in numbers) had cochlear implants, while the other groups (fifteen in numbers) wore hearing aids. All the children were also in educational and

home environment that provided them with total communication (signs, speech and demonstration). The result showed that both groups of children performed a little bit above average.

In the same vein, Quiqley, Power, and Steinkam (1995) carried out a study in the United States on the reading and written language of 428 hearing impaired students age 10 – 14 years, 214 students were judged on the grammatical correctness of simple sentences signed and voiced in TC, while the other 214 were judged on the same task using ASL. The findings revealed that even the youngest student taught through the use of TCM got consistently higher scores than those taught in ASLM on the indices of grammatical correctness. The study also revealed that those taught in TCM were able to read at college level text successfully.

An interesting study was also carried out by Ugwuanyi (2009) on the effect of three sign language mode (which include American Sign Language,(ASL) Local Sign Language,(LSL) and Total Communication(TC)) on reading comprehension of pupil with hearing impairment. In the study, the two primary schools for the deaf in Enugu state were used. The population of the study was 35 pupils from both schools. Twenty four (24) were males while 11 were females. The instrument used for the study was a teacher made Test of Reading Comprehension (TRC) .In carrying out the study; a non- equivalent pre-test –post-test quasi- experimental design was employed. Three research

question and three hypotheses were formulated to guide the study The data obtained was analyzed using mean and standard deviation for research questions while Analysis of Covariance (ANCOVA) was used to test hypotheses at 0.05 level of significance. The results of the study showed that pupils who were exposed to total communication mode performed higher than those exposed to ASL mode and LSL mode.

Gender Issues and Academic Achievement of Children with Hearing Impairment

Some empirical studies have been carried out on gender issues and academic achievement of children with hearing impairment. For instance, a study was also carried out by Akinpelu (1998) on the academic achievement and self-concept of male and female hearing impaired students in Nigeria. In the study, a purposive sampling procedure was employed to elicit responses from 568 (364 males and 204 females) hearing impaired secondary schools student identified in various parts of the country. The Adolescent Personal Data Inventory (APDI) was used to measure self-concept while the respondents' junior secondary certificate examination (JSCE) results were measures of their academic achievement. The data collected were analyzed using the t-test statistical tool. The findings revealed that male hearing impaired students did not achieve better than their female counterparts. The study like the present study was interested in looking at the academic achievement of children

with hearing impairment. However, the population of the study was derived from secondary schools while the population of the present study is derived from primary school.

Furthermore, a study was carried out by Ugwuanyi (2009) on the effect of three sign language mode on reading comprehension of pupil with hearing impairment. In the study, the two primary schools for the deaf in Enugu state were used. The population of the study was 35 pupils from both schools. Twenty four (24) were males while 11 were females. The instrument used for the study was a teacher made Test of Reading Comprehension (TRC) .In carrying out the study; a non-equivalent pre-test –post-test quasi- experimental design was employed. Three research question and three hypotheses were formulated to guide the study The data obtained was analyzed using mean and standard deviation for research questions while Analysis of Covariance (ANCOVA) was used to test hypotheses at 0.05 level of significance. The result of the study showed that gender has no significant influence on the academic achievement of pupils with hearing impairment.

Another study was also carried by Nwangi (2011) on relationship between home environment, and academic motivation and performance of upper primary pupils with hearing impairment in central province; Kenya. The study was based on Atkinson motivation theory. A sample of 75 upper primary pupils classes (5, 6, 7, 8) between the ages of fourteen

and eighteen were randomly selected from three primary schools for the hearing impaired in central province. Survey design was used whereby two questionnaires were used to collect data. The academic achievement motivation questionnaire (sp profile) was used to obtain information on pupil's level of academic achievement motivation. The home environment questionnaire was also used to collect information on pupil's home environment. The result of the end of the year 2005 was used as measure of their academic performance. For data, analysis, statistical soft ware, SPSS was utilized. Pearson's product moment correlation analysis and two – tailed t-test for mean differences were used to test hypotheses. The hypotheses were tested at a significance level of 0.05. The findings showed that sex influence their academic motivation and their academic performance. The mean score for academic motivation score of boys was (x =51.70) higher than that of girls (x=51.13)

Eskay, Onu, Ugwuanyi & Eze (2012) on the effect of training of teachers on the use of local sign language on the academic performance of children with hearing impairment in social studies. In the study, the two schools for the deaf in Enugu Education zone were sampled. The population for the study comprises of 34 pupils with hearing impairment from the schools. The instrument used for this study was Achievement Test on Social Studies (ATS). Research questions and hypotheses were formulated to guide the study. Mean and standard deviation were used to

analyze the data collected from the study. An analysis of covariance was used to test the hypotheses at 0.05 level of significance. The findings revealed that gender has no significance influence on the academic performance of pupils with hearing impairment

Summary of Literature Review

The literature is reviewed under conceptual, theoretical and empirical studies. Children with hearing impairment have been facing a lot of challenges in their academic achievement due to communication strategies adopted by special educators.

Hearing impairment is disability that affects the total personality no matter the period of onset. When it affects the total personality of an individual, it affects the well-being of a person which includes his social, physical, psychological, mental and academic state. It is imperative therefore, that acceptable method should be used in order to improve their social, physical, psychological, mental and academic well being. There has been a controversy among scholars in the field of special education on which method should be used in educating them. It is between the oralist and manualist, the oralist believes in the use of speech and lip-reading in educating children with hearing impairment while the

manualist believe in educating them through sign language and finger spelling.

However, despite the fact that children with hearing impairment are been taught with these sign systems, there is still evidence of poor performance in their academic work. Total communication is another sign system which uses any and every means of communication to convey information and message to children with hearing impairment. TC combines every other sign language mode in teaching and learning and it has been observed to be effective. The assumption is that using total communication will not only help children with hearing impairment in their academic work but will also help them to adapt to any environment they find themselves.

Theoretical support on language acquisition which is the basis for learning was reviewed under Chomsky, Skinner and Vygotsky theoretical stance on language acquisition. It also reviewed empirical support on total communication and academic achievement.

The issue of gender and academic achievement was also discussed and the findings showed that there is no significant influence of gender on academic achievement of children with hearing impairment as some authors said that males perform better than females while others said that females perform better than males. Since studies have shown that children with hearing impairment have not being performing well

academically due to the type of method used in teaching them, the researcher deem it fit to carry out a study on the use TC to ascertain if it could improve their academic achievement. From the literature reviewed so far it appears that there has not been any work known to this researcher on the effect of using total communication on the academic achievement of children with hearing impairment in area of English grammar in Enugu state. It is this gap that the present study intends to fill.

CHAPTER THREE
RESEARCH METHOD

This chapter discusses the Design of the Study, Area of study, and Population of the study, Sample and Sampling technique, Development of the Instrument, Validation of Instrument, Reliability of instrument, Treatment Procedure, Control of Extraneous Variables, Method of Data Collection and Method of Data Analysis**.**

Design of the study

This study is a quasi- experimental design which sought to determine the effect of total communication on the academic achievement of pupil with hearing impairment. Specifically the study is a non- equivalent pre-test and post-test design with treatment and control group. The subjects were not randomly assigned to treatment and control group. This was adopted because it is the most appropriate for this kind of study. According to Nwagu (2005), this design is used where randomization is not possible. In a similar view, Ali (2006) explained that this design is used when the researcher cannot randomly sample and assign his subjects to groups. And as such he has to use groups already in existence such as groups already organized as intact classes, trade union among others. The design of the study is systematically represented as shown in the table 1 (see appendix G page 105)

Area of the study

The study was conducted in Ogbete and Oji River special schools for the deaf both in Enugu State. The two schools were used for the study because they are the only special schools for the deaf in the state where pupils with hearing impairment attend classes.

Population of the Study

The population for the study comprised all the thirty three primary 5 pupils in the two primary schools for the deaf. The reason for using primary 5 classes is because it is assumed that at such level, they would have acquired enough knowledge of sign language that will help them in this study.

Sample and Sampling Technique

Due to the fact that the population from the two schools is small, there was no sampling. The thirty three pupils with hearing impairment in primary five in the two primary schools for the deaf in Enugu state were used for the study. The two schools were randomly assigned to treatment and control group through balloting. Seventeen of the pupils are males while sixteen are females

Instrument for Data Collection

Instrument for data collection was Achievement Test in English Language (ATEL) constructed under the guidance of experts in special

education and measurement and evaluation all from University of Nigeria Nsukka (UNN). The Achievement Test consists of 20 questions from English grammar and will be drawn from third term primary five scheme of work for the year 2011/2012 session in Enugu state (. See appendix B page 91). The choice of using English grammar is because the ability to understand and use it properly will assist the pupils in understanding other subjects since English is the language of instruction in the schools. Similarly the understanding of English will facilitate the overall academic performance of the children. The instrument will also be used for pre test and post test.

Validation of Instrument

The Achievement Test was face and content validated by experts from English Education, measurement and evaluation and Special Education all from Faculty of Education University of Nigeria Nsukka. The validates were requested to scrutinize the items to ensure clarity of language of the instrument to the respondents, check research questions and hypothesis to ascertain if they are in line with the purpose of the study, check whether the test items correspond with questions stated, and appropriateness of the items based on the specification in the test of blue print. Based on their advice and input, some items were deleted while some were modified. (See appendix B page 91)

A test blue print was used to ensure content coverage. The content area of English grammar was identified and the educational objectives were specified according the cognitive domains of Blooms Taxonomy (Knowledge, comprehension and application level). The questions were based on the topic selected for the study. The test blue print is shown in table 2. (See appendix G page 89)

Reliability of the Instrument

The reliability of the Achievement Test on English language was established through trial – testing of the instrument on 12 pupils from Therapeutic Day Care Center Abakpa Nike Enugu. The researcher employed Kuder Richardson formula 20 for computing the reliability coefficient of the Achievement Test on English language. This method was used because it is the most appropriate for determining the internal consistency of items that are scored dichotomously. Dichotomous items are scored one or zero for the presence or absence of characteristics under investigation. The internal consistency index obtained for the ATEL using Kuder- Richardson K-R is 0.94. The results showed a high internal consistency. (See appendix E Page 104)

Treatment Procedure

The experimental group was exposed to TC while the control group was treated with the conventional method (American Sign Language) and one school was used for the experiment and the other for control. Two

research assistants who are teachers from the two schools were trained to help the researcher carry out the study. To ensure that the research assistants master the skills needed, they were involved in teaching the pupils used for the trial test. The researcher also supervised them to ensure that they did the right thing. The training was twice every week for 4 weeks. Each contact lasted for 35 minutes. At the end of the last week of the treatment, the research assistants administered the post test using the pretest. The Achievement Test colour paper was changed from white to yellow at this point and numbers were inter-positioned. The change was to make the pupil be unaware that it was the same test, they have written before they were taught. The test helped to determine the effect of the treatment on the academic achievement of pupils with hearing impairment**.**

Control of Extraneous Variables

Teachers' variable

In order to ensure that the teacher's variables are controlled, the two research assistants were given a two weeks pre- experimental training. This helped to establish a common instructional standard among the research assistants. It equally helped the researcher to ascertain the individual problems of the teachers that might introduce errors to the study.

Instructional Situation Variable

The researcher issued out instructional guides to the teachers in each group. This was to ensure that instructional situations are the same for the schools selected for the study .The experiment was administered to all the pupils and the data collected were used for the study.

Pupils Variable

In order to control error that might arise from the pupils, each group stayed in their respective school during the study.

Subject/Class Interaction

The researcher did not select the groups from the same schools. This was to ensure that pupils who were taught with T.C do not mix up with conventional method and also the error arising from intervention and exchange of ideas among the pupils would be controlled.

Hawthorne Effect

This occurs when the subject are aware that they are being studied. In other to reduce or eliminate this effect, the research was conducted in the two schools where one school served as experimental group and the other control group. The questions at this stage were inter-positioned

Pre-test Sensitization

After administering the pre-test, the whole instrument were collected and kept by the teacher until the period of post-test. And they were not informed that such test wouldn't be given to them again.

Method of Data Collection

The scores of the pupils on the pre test were recorded for use after the experiment. At the end of the experiment, post test Achievement Test on English Language (ATEL) was administered to all the pupils in primary five of the two groups. In each groups data for pre test and post test were recorded separately. Each test item was scored five marks and each pupil scored a maximum of 100marks and minimum of zero. Any mark from 40% and above was rated a pass mark but any mark below 40% was considered failure.

Method of Data Analysis

The data collected for the study was analyzed using the mean and standard deviation for the research questions while the hypotheses was tested at 0.05 level of significance using Analysis of co-variance (ANCOVA).The pre-test scores was also used as covariate or control measure to the post- test scores.

CHAPTER FOUR
RESULTS

The result of the study is presented in line with the research questions and hypothesis that guided the study.

Research question one:

To what extent does the use of total communication (T.C) affect the academic mean score of pupils with hearing impairment as measured by Achievement test on English language (ATEL)?

Table 1: Children with hearing impairments pre-test and post- test mean scores and standard deviation on English language using T.C.

Treatment Group	**Pretest**		**Post test**		**Pretest/post test gain score**
	Mean	SD	Mean	SD	
.Experimental Group (N = 15)	31.33	17.57	64	16.82	32.67
Control Group (N = 18)	25.83	21.02	48.33	30.15	22.50

Data presented in the above table indicate the pre-test and post- test mean English scores of children with hearing impairment in the treatment and control groups. The children exposed to total communication had a mean pre-test achievement score of 31.33 with a standard deviation of 17.57. The mean post test score was 64 with a standard deviation of 16.82 giving a mean pre-test/post gain score of 31.67.

For the children in the control group, their mean pretest achievement score was 25.83 with a standard deviation of 21.02 and a mean posttest achievement scores of 48.33 with a standard deviation of 30.25. This gave a pre- test/post- test gain score of 22.50. This result showed that

there was higher increase in the performance of pupils exposed to total communication than those in the control group who used conventional method (ASL)

A corresponding hypothesis formulated to further address the research question is:

Hypothesis one: There is no significant difference in the mean achievement scores of the pupils taught English language using TC and those in control group.

Table 2: 2 way Analysis of Covariance on children's Post treatment on English Language Achievement scores

Source	**Type III Sum of squares**	**df**	**Mean square**	**F**	**Significance**
Corrected model	15514.015	22	705.183	1.194T	400
Intercept	94635.523	1	94635.523	160.286	000
PRETEST	11034.861	12	919.572	1.557	245
TREATMENT	156.250	1	156.250	.265	.618
GENDER	776.325	1	776.325	1.315	.278
TREATMENT* GENDER	590.857	1	590.857	.925	.344
Error	5904.167	10	590.417	590.417	
Total	122900.00	33			
Corrected Total	1418.182	32			

A. R Square = .724 (Adjusted R Squared = .118)

The result presented in table 3 indicates that T.C as a factor in the study had no significant effect on the achievement of children with hearing impairment in English language. This is because the f value of .265 in respect of treatment as main effect is shown not to be

significant at 0.05 level of significant. This suggests that exposing children with hearing impairment to T.C has a non-significant improvement on the achievement in English language. Therefore the null hypothesis of no significant difference in the mean achievement scores of the treatment and control group is retained.

Research question two: To what extent does gender influence the academic achievement of pupils with hearing impairment as measured by their mean scores on ATEL?

Table 3: Pre-test and post-test mean scores and standard deviation in English language Achievement by gender.

Treatment Group	**Pretest**				**Post test**				**Pretest/post test gain score**	
	Male		Female		Male		Female		Male	Female
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Experimental	20.0	10.0	45.0	14.71	56.88	14.87	72.14	16.02	36.88	27.14
Control	30.90	20.71	18.57	28.53	49.09	28.53	47.14	34.86	18.19	28.57

Table 2 presents the result of the pre-test and post test mean English language achievement scores and standard deviation of males and females used in the study. The males exposed to T.C had a pre- test mean achievement score of 20.0 with standard deviation of 10.0.Their posttest mean achievement score was 56.88 with standard deviation of 14.87.Their mean pretest/posttest achievement gain score was 36.88.

The females exposed to T.C also had pretest mean achievement scores of 45.0 with standard deviation of 14.71. Their posttest mean achievement scores was 72.14 with standard deviation of 16.02. This gave a mean pretest/posttest achievement gain scores of 27.14. For those

in control group, the male had a pretest mean achievement scores of 30.90 with standard deviation of 28.53. The mean pretest/posttest achievement gain score was 18.19. The female in control group had a pretest mean achievement scores of 18.57 with standard deviation of 28.53. Their post test mean achievement score was 47.14 with standard deviation of 34.86. This gave a pretest/posttest achievement score of 28.57.

The results implies that male exposed to total communication improved more than those in control group (those that were taught using American sign language) and female also exposed to T.C also performed better than those in control group. However, the entire result shows that male performed better than the female.

A corresponding hypothesis was further raised to address the research question:

Hypothesis 2: Gender has no significant influence on the academic achievement of pupil with hearing impairment as measured by their means scores on ATEL

Results presented in (Table 2) the mean English Language posttest achievement scores of males and female children with hearing impairment exposed to training in T.C shows that gender has no significant influence on academic achievement of children with hearing impairment as measured by the achievement test. This is indicated by the

calculated f- value of 1.315 which is significant at .278 levels and therefore not significant at 0.05 levels. Therefore, the null hypothesis of no significant influence in achievement as measured by their scores in achievement test on English language (ATEL) is retained. **Research question 3:** What is the interaction effect of gender and T.C on academic achievement scores of children with H.I.?

Table 4: Mean and standard deviation of interaction effect of gender and T.C

Treatment Group	**Gender Subject**	**Mean**	**SD**
Experimental	Males (N = 8)	56.88	14.87
	Females (N = 7)	72.14	16.03
Control	Males (N = 11)	49.09	28.53
	Females (N = 7)	47.14	36.86
Difference in treatment and control groups	Males	7.79	
	Females	25	

Data presented above in the table indicates the interaction effect of gender and T.C on academic achievement of pupil with H.I. The mean achievement scores across the two gender group for the treatment and control group differ. The difference for the male is 7.79. In this group the males in the treatment group had a higher mean achievement score of 56.8 as against the mean score of 49.09 for the males in control group. In another development, the difference between the mean achievement scores for treatment and control group among the female children with

hearing impairment is 25. The female in the treatment group had mean achievement score of 72.14 as against 36.86 for those in control group

The result implies that female interacts more than male. A corresponding hypothesis raised to further address the research question is:

Hypothesis Three:

There is no interaction effect of gender and T.C. on academic achievement of pupils with H.I as measured by their post-test mean achievement scores on ATEL.

Data presented in table 2 indicated that the interaction effect of T.C and gender on the mean achievement scores of children with hearing impairment in English language as measured by their scores in the ATEL was not significant. This is shown by calculated f- value of .925, which is significant at .334 level and therefore not significant at 0.05 level.

Thus the null hypotheses of no significant effect of treatment and gender on achievement test is upheld, since there was no significant interaction effect of treatment using T.C and gender on the achievement scores of the children with hearing on the Achievement Test on English Language (ATEL).

Summary of Results

The results of this study are presented as follows:

1. Children with hearing impairment exposed to the use of T.C in English Language performed better than those in control group.
2. Gender has no significant difference on the academic achievement of pupils with hearing impairment.
3. Training in T.C and gender has no significant interaction effect on the academic achievement of pupils with hearing impairment.

CHAPTER FIVE

DISCUSSION OF RESULT, CONCULUSION, RECOMMENDATION, IMPLICATION AND SUMMARY

This chapter is concerned with the discussion of the major findings of the study. It discussed educational implications of the findings, recommendations, limitations, conclusions, suggestions for further study and summary of the study.

Discussion of Results-

The findings of this study were discussed based on the research questions and hypotheses that guided the study under the following headings.

1. Effect of T.C on academic achievement of pupil with hearing impairment.
2. The influence of gender on academic achievement of pupil with hearing impairment.
3. Interaction effect of gender and T.C on academic achievement of pupil with hearing impairment.

1. Effect of T.C on academic achievement of pupils with hearing impairment.

The findings of the study showed that there was improvement in the academic achievement of pupils with hearing impairment taught using T.C. The treatment group that used T.C performed better than those in control group that used conventional method which is American Sign

Language**.** The result of the study corroborates some findings earlier made on the effectiveness of T.C on the academic achievement of pupils with H.I. For instance, Quigley, Power, and Steinkam (1995) carried out a study in the United States on the reading and written language students who were judged on the grammatical correctness of simple sentences signed and voiced in T.C, and the other group who were judged on the same task using American Sign Language. The findings revealed that even the youngest student taught through the use of T.C got consistently higher scores than those taught in ASL on the indices of grammatical correctness.

The result is also in line with the study of Ugwuanyi (2009) on the effect of ASL, LSL, and T.C on the reading comprehension of pupils with hearing impairment which revealed that those exposed T.C performed higher than those exposed to ASLM and LSLM. However the test of hypotheses showed that the mean scores of the experimental and control group do not significantly differ. This contradicts an earlier study by Ugwuanyi which found a significant difference on the mean score of children with hearing impairment taught with T.C and other sign language modes on reading comprehension. The reason for the variation may be that Ugwuanyi's study was on reading comprehension while the present study was concern with grammar.

Influence of gender on academic mean achievement scores of pupils with hearing impairment

The pretest-post test mean scores in the study showed that male pupils with hearing impairment performed better than females in the achievement test on English grammar. The finding is in line with the study by Ugwuanyi (2009) & Nwangi (2011) that discovered that boys performed better than girls in their academic work. A further study on motivation of children with hearing impairment may be helpful for resolution of this variation.

However the analysis of covariance (ANCOVA) indicated that there was no significant difference in the academic achievement of the male and female pupils. This finding supports earlier studies by Akinpelu (1998) & Ugwuanyi (2009); Eskay, Onu, Ugwuanyi and & Eze (2012). Their findings revealed that gender has no significant influence on the academic achievement of pupils with hearing impairment.

Interaction effect of gender and T.C on academic achievement scores of pupils with hearing impairment

The result showed that there is no significant interaction effect of gender and T.C on the academic achievement of pupils with H.I. This implies that both males and females in the study benefited in the training in the use of T.C equally. This lays credence to the research carried out

by Eze (2010) on the effect of training teachers on the use of local sign language on the academic performance of pupil with hearing impairment. The study found no significant interaction effect based on gender. However, it contradicts an earlier study by Ugwuanyi (2009) who reported significant interaction on gender and communication modes on reading comprehension achievement of pupils with hearing impairment.

Conclusions

The following conclusions were drawn from the result of the study:

1. Teaching children with hearing in the use of T.C. will improve their academic achievement in English language
2. Gender does not influence the academic achievement of children with hearing impairment since males and females exposed to T.C performed equally.
3. Teaching in T.C and gender has no significant interaction effect on the academic achievement of children with hearing impairment.

Educational implications

The findings of this study have educational implication to teachers, pupils, curriculum planners, parents of children with hearing impairment and policy makers.

The result of the study has shown that when teachers continue to use T.C regularly that it will help to improve the academic achievement of pupils with hearing impairment. The findings also

showed that pupils exposed to T.C performed better than those who were not. The implication of this is that children with hearing impairment should be taught using T.C. This is because T.C involves all the senses modalities in teaching children with hearing impairment.

The result of study also shows that parents of children with hearing impairments will be happy interacting with their children when they acquire the skills in T.C and this is possible when the parents are also exposed to T.C through sensitization workshop. Interaction with them at home will help to improve their academic performance because they can teach their children at home using T.C.

The finding of the study has shown that curriculum planners should modify curriculum in all schools starting from primary to tertiary institutions. They can do this by incorporating T.C as a unit of study in all the teachers training colleges and department of education in all the universities in the country. When they acquire the knowledge, they will be able to teach these children at their different levels of their study.

The findings of the study also imply that policy makers should be informed of the importance of T.C. This will make them to include the use of T.C in the teaching of children with hearing impairment as a policy.

Recommendations

From the findings made from this study and its accompanying educational implications, the following recommendations were made:

1. Training institution for teachers should try to incorporate T.C as a unit of study in their curriculum if teachers are to be equipped with the skills of using this T.C in teaching. There should also be an in-service training for teachers who are already in the field to enable them update their knowledge in the use of T.C.
2. The children with hearing impairment should be exposed to the use of T.C whether male or female. When they acquire this knowledge it will help them to develop their potentials and also make them participate effectively in their family and the larger society.
3. Educational institutions, professional bodies or associations in special education and the government should organize enlightenment campaign and sensitization workshop on the importance of using T.C in teaching of children with hearing impairment and also the need to send these children to schools where they will learn effectively.
4. Policy makers should also remember children with hearing impairment when making their educational polices. They should include T.C in the method that should be used in teaching these children. They should also state in their policy that all teachers of

children with hearing impairment must have knowledge of T.C if they should teach them.

5. The curriculum planners should also modify the curriculum to build in the learning of T.C in all schools from primary to higher institution.

Limitation of the study

In Enugu state where the study was carried out, there are only two primary schools for the deaf. There are also few pupils and using data collected from the two schools to generalize for the entire Enugu State could be a limiting factor. Moreover regular teachers from the same schools were used as research assistant and using them could have also introduced teachers' bias in the study.

Suggestion for further studies

1. A related study involving pupils with hearing impairment should be carried out using the same design and instrument in Enugu state.

2. Research should be conducted or carried out in other parts of the country where there is a special school for the deaf, using any subject like mathematics, integrated science or Home economies. In the research the same design could be used to find out the effectiveness of T.C in other areas of study. This will also help to determine the significant effect of T.C in teaching these pupils with hearing impairment.

Summary of the study

This study was carried out to find out the efficacy of T.C in teaching pupils with hearing impairment in English language. Specifically the study was carried out to find out if T.C will improve the academic achievement of pupils with hearing impairment more than the conventional method (ASL).

The study was guided by the following research questions:

1. To what extent does the use of total communication (TC) affect the academic mean achievement scores of pupils with hearing impairment as measured by Achievement Test on English Language? (ATEL)
2. To what extent does gender influence the academic mean achievement scores of pupil with hearing impairment?
3. What is the interaction effect of gender and TC on academic achievement scores of children with hearing impairment?

To address the research question the following null hypothesis were tested at 0.05 level of significance.

1. There is no significant difference in the mean achievement scores of the pupils taught English language using TC and those not so exposed.
2. Gender has no significant influence on the academic achievement of pupils with hearing impairment as measured by their means scores on ATEL.

3. There is no significant interaction effect of gender and TC on academic achievement of pupils with hearing impairment (hi) as measured by their post-test mean achievement scores on ATEL.

The literature review showed that using T.C improved the academic achievement of children with hearing impairment.

The design of the study is a non-equivalent pretest, posttest quasi experimental study. The population for the study includes the entire 33 pupil in the two primary schools for the deaf in Enugu state. There was no sampling because of the sample size. Therefore the entire populations were used.

The research instrument used for the study was an Achievement test on English language (ATEL), constructed by the researcher and validated by expert. The reliability of the instrument was obtained using Kudar Richardson's formula 20.The result obtained for the ATEL was 0.94. The result showed a high internal consistence for the instrument used. This instrument was used for both the pretest and posttest.

The data collected were analyzed using mean and standard deviation. Analysis of covariance was used to test the hypotheses at 0.05 level of significance.

Results of the study showed that:

1. Pupils exposed to T.C were able to acquire the skill and used it.

2. Gender had no significant influence in the ATEL for the pupil with hearing impairment.
3. There was no significant interaction effect of gender and treatment on the academic achievement of pupil with hearing impairment.

The result of the study was discussed in detail, their educational implications and recommendations were presented.

More so, suggestions for further research and limitations for the study were also discussed.

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APPENDIX A: Introductory Letter to the Validates

Department of Educational Foundations
University of Nigeria
Nsukka
September 29, 2011

Dear Sir/Madam,

I am a post graduate student of the above department carrying out a research on "Effect of Total Communication on Academic Achievement of pupils with hearing impairment in Enugu state." An Achievement Test on English language (ATEL) was developed for this study.

Attached herein are copies of the test of blue print, a draft of the Achievement Test on English Language, purpose of the study, research questions, hypotheses and instructional lesson plan.

I humbly ask for your kind assistance with the validation of the research instrument and instructional lesson plan in terms of:

1. The clarity of instruction,
2. The table of specification,
3. Appropriateness and adequacy of the items in addressing the purpose of the study.

Yours sincerely,

Ezema, Edith O.

PG/MED/08/49564.

APPENDIX B

ACHIEVEMENT TEST ON ENGLISH LANGUAGE (ATEL)

Time allowed: 1 hr-30mins

Class:Primary 5

Instructions: Attempt all questions. It is made up of three sections and in written form. Each question is to be answered in total communication and each carries equal marks.

Section A: fill in the past tense of these words.

The teacher signs the words in TC for children in experimental group and in ASL for pupils in control group while the pupils put down the answers in their exercise book. She also re- signs the words the pupils did not get correctly.

S/N	Present Tense	Past Tense
1	Give	_____
2	Read	_____
3	Walk	_____
4	Come	_____
5	Cry	_____
6	Break	_____
7	Clean	_____
8	Get	_____
9	Cook	_____
10	Dance	_____

Section B:

Change the past tense of the words in the brackets to present tense. The teacher writes them on the board and then asks children to sign them using total communication and American Sign Language.TC is for the experimental group while ASL is for the control group.

11. He (broke) a cup.

12. I (went) to the market.

13. Paul (cleaned) her shoes

14. He (walked) like a solider

15. I (ate) yam.

16. The masquerade (danced) around the village square.

Section C:

Write the present tense of the words in the bracket in the spaces provided.

17. They _____ (ate) too much food

18. We_____ (ran) to the school.

19. John_____ (was) my friend

20. The brave hunter____ (killed) the lion

APPENDIX C

A LESSON NOTE ON TOTAL COMMUNICATION

Class: Primary 5

Time: 35mins

Subject: English language

Topic: Simple present and past tense

Instructional Objectives: By the end of the lesson, the pupils should be able to:

1. Construct sentences in present and past tense using TC
2. Write the past tense of selected words as the teacher signs them using TC
3. Solve problems relating to present tense and past tense in TC that will be given to them after the lesson

Instructional Materials: Macmillan Primary English Book 5, flash card, and sentence charts.

Instructional Techniques: Explanation, use of illustrative examples, demonstrations in total communication. (TC)

Entry Behavior: The pupils have been making sentences using American Sign Language (ASL). With the knowledge they have acquired, they will be able to solve problems in total communication (TC) without much problem.

Test of Entry Behavior: The teacher writes out some words on the board and asks them to make sentences with them in ASL. Eg.1. Obi killed a goat. 2. Emeka will come today.

Instructional Procedure;

Step I: use of speech, signs, finger spelling, writing, and flash cards.

Introduction: The teacher introduces the lesson by writing the topic on the chalkboard, thus simple present and past tense. She explains to the pupil that total communication is a philosophy that advocates for the use of any or every means of communication to provide unlimited opportunity to develop language competencies in children with hearing impairment. It includes speech, signs, amplification (hearing aids), auditory training, lip reading, writing, pictures and any other possible means of conveying ideas, language and vocabulary. She also explains to them about the topic using these component of total communication ,that present tense are those tense that tell us what is happening now while past tense tells us what has happened. The teacher explains present and past tense through the use of speech, signing, finger spelling, writing, flash card and host of others. In signing, present tense, it is done by pointing index finger on the ground. Finger spelling means spelling the words that do not have any sign using manual alphabet ,manual alphabets means representing the 26 alphabet through the use of hands, while in flash card the words are written in a card and the teacher gives it to them to see.

The same thing is applied to past tense. It is signed by throwing the hands at the back, it can also be finger spelled by using manual alphabet, written in the chalk board as well as shown in a flash card.

Activity I: The teacher also writes those words in their present form which is one of the component of TC e.g. eat, cook, go, kill, come, dance, cry, walk, run, take, and break. She drills the pupil on present tense words using other components of total communication such as signing, demonstrating, finger spelling and use of picture cards that depict those words. She makes sentences with them using T.C, and then asks them to make their own sentences using any component of total communication .She corrects them were they make mistakes. To buttress more on the words the teachers equally show them the flash cards that contain the words in their present form.

Step II use of signs, speech, finger spelling, writing, and demonstration.

The teacher explains both the present and past tense to the pupils using TC. She drills them on the present and past. She explains in total communication that some past tense are known by putting “ed” while some are not ,example; cooked, ate, cried and ran.

Activity II: The teacher introduces some tense in present and past and drills them to the pupils in TC. This she does through the use of signs

speech and lip reading, finger spelling, writing on the chalk board and demonstration.

PRESENT	PAST
Eat	Ate
Cook	Cooked
Go	Went
Come	Came
Cry	Cried
Walk	Walked
Run	Ran
Take	Took
Break	Broke
Kill	Killed
Dance	Danced
Give	Gave
Read	Read
Is	Was
Do	Did

Pupils listen and ask questions where necessary and the teacher supplies the answer in TC

Step III Use of signs, speech and demonstration.

The teacher makes sentences with some of the past tense using T.C while the pupils watch the teacher sign or demonstrate each word in the sentence.

a) I ate yam yesterday

b) I cooked yam in the morning today

c) John broke the plate and he cried

d) Our headmaster killed five goats

e) Nneka cleaned her shoes. The teacher makes the above sentences through the use of speech, signs, demonstrations, and facial expression. She also marches the sentence strip of the present with the past.

Activity III: The teacher allows the pupils to make sentences with the past tense using TC. She also corrects them where necessary.

General Evaluation: In order to know how far the pupils understood the lesson, the teacher asks them the following questions in TC

1) The teacher asks the pupils in turn to make sentences with the following

words using TC: (i) come (ii) eat (iii) took (iv) ate (v) came (vi) take. While they are doing that the teacher awards marks to correct sentences made.

She also asks the pupils one by one to put the past tense of these words below; she signs them in n TC while the pupils put down the answers in their exercise books.

S/N	Present Tense	Past Tense
I	Kill	_____
Ii	Walk	_____
Iii	Cry	_____
Iv	Cook	_____
V	Carry	_____

Step IV: Summary/Closure: based on their responses the teacher later corrects the sentences and the words both in present and in past tense form, using T.C. she then closes her lesson.

APPENDIX D

A LESSON NOTE ON AMERICAN SIGN LANGUAGE (CONTROL GROUP)

Class: Primary 5

Time: 35 Minutes

Subject: English language

Topic: Simple present and past tense

Instructional Objectives: By the end of the lesson, the pupils should be able to;

1. Construct sentences using present and past tense orally in ASL

2. Write the past tense of selected words as the teacher signs them in ASL

3. Answer questions relating to present tense and past tense in ASL that will be given to them after the lesson

Instructional Materials: Macmillan Primary English Book 5, flash card, and sentence chart, picture cards.

Instructional Techniques: Explanation, illustrations with examples in ASL.

Entry Behavior: The pupils have been making sentences using American Sign Language (ASL). With the knowledge they have acquired, they will be able to solve problems that will be given to them in ASL.

Test of Entry Behavior: The teacher writes out some words on the board and asks pupils to make sentences with the words using ASL. Eg.1. Obi killed a goat. 2. Emeka will come today.

Instructional Procedure;

Step I:

Introduction: The teacher introduces the lesson by writing the topic on the chalkboard, thus simple present and past tense. She explains to them about the topic using American Sign Language (ASL), that present tense is a tense that tells us what is happening now while past tense tells us what has happened. The teacher explains present and past tense through the use of signs and finger spelling. In signing, present tense, it is done by pointing index finger on the ground. Finger spelling means spelling the words that do not have any sign using manual alphabet. Manual alphabets imply representing the 26 alphabets through the use of hands. The same thing is applied to past tense. It is signed by throwing the hands at the back, it can also be finger spelled by using manual alphabet.

Activity I: The teacher writes some words in their present form on the chalk board e.g. eat, cook, go, kill, come, dance, cry, walk, run, take, and break. She drills the pupil on the word using signs. She makes sentences with them in ASL, and then asks them to make their own sentences using ASL. She corrects any mistakes made by the pupils. To buttress more on

the words the teachers equally show them the flash cards that contain the words in their present form.

Step II

The teacher explains both the present and past tense to the pupils using ASL. She drills them on the present and past. She explains in American Sign Language that some past tense are known by putting “ed” while some are not ,example; cooked, ate, cried and ran.

Activity II: The teacher introduces some tense in present and past and drills them to the pupils in ASL. This she does through the use of signs and finger spelling thus;

PRESENT	**PAST**
Eat	Ate
Cook	Cooked
Go	Went
Come	Came
Cry	Cried
Walk	Walked
Run	Ran
Take	Took
Break	Broke
Kill	Killed
Dance	Danced
Give	Gave
Read	Read
Is	Was
Do	Did

Pupils listen and ask questions where necessary and the teacher supplies the answer in ASL

Step III

The teacher makes sentences with some of the past tense in ASL, while the pupils watch the teacher sign each word in the sentence.

(a) I ate yam yesterday.

(b) I cooked yam this morning.

(c) John broke the plate and he cried

(d) Our headmaster killed five goats

(e) Nneka cleaned her shoes. The teacher makes the above sentences through the use of signs, she also marches the sentence strip of the present with the past.

Activity III: The teacher allows the pupils to make sentences with those past tenses using ASL that is signing. She also corrects them where necessary.

General Evaluation: To ensure that the lesson was successfully delivered, the teacher asks them the following questions in ASL

1) The teacher asks the pupils in turn to make sentences with the following words using ASL: (i) come (ii) eat (iii) took (iv) ate (v) came (vi) take. While they are doing that the teacher awards marks to correct sentences made.

She also asks the pupils one by one to put the past tense of these words below; she signs them in ASL while the pupils put down the answers in their exercise books.

S/N	Present Tense	Past Tense
1	Kill	_____
2	Walk	_____
3	Cry	_____
4	Cook	_____
5	Carry	_____

Step IV: Summary/Closure: based on their responses the teacher later corrects the sentences and the words both in present and in past tense form, all in ASL. She then closes her lesson.

APPENDIX E

Reliability Estimate of the Assessment Test on English language.

S/No	No Passing	No failing	Proportion Passing(p)	Proportion failing (Q)	Proportion of passing &failing (PQ)
1.	11	1	0.92	0.0810	.0736
2.	5	7	0.42	0.58	0.2436
3.	12	0	1.00	-	1.00
4.	9	3	0.75	0.25	0.1875
5.	6	6	0.50	0.50	0.25
6.	10	2	0.83	0.17	0.1411
7.	11	1	0.92	0.08	0.0736
8.	0	12	1.00	-	1
9.	10	2	0.83	0.17	0.1411
10.	12	0	1.00	-	1.00
11.	6	6	0.50	0.50	0.25
12.	6	6	0.50	0.50	0.25
14.	11	1	0.092	0.08	0.0736
15.	6	6	0.50	0.50	0.25
16.	9	3	0.75	0.25	0.25
17.	8	4	0.67	0.33	0.2211
18.	10	2	0.83	0.17	0.1411
19.	5	7	0.42	0.58	0.2211
20	8	4	0.67	0.33	**6.1521**

K = $\frac{k}{k-1}\left(1-\frac{\Sigma pq}{\sqrt{x^2}}\right)$

Where

k = 20

∑pq = 6.1521

Variance = 57.61

Substituting, k = $\frac{20}{19}\left(1-\frac{6.1521}{57.61}\right)$

k = $\frac{20}{19}(1-0.107)$

1.05 (0.893) = 0.937

K = 0.94

APPENDIX F

Table 1: Quasi Experimental Design

Random composed grouping	Pretest	Treatment	Post Test
Experimental (1) TC	01	X1	01
Control (2) TC	01	0	01

Table 2: Test of Blue Print for Achievement Test on English Language (ATEL)

Content	Weight %	Knowledge 30%	Comprehension 30%	Application 40%	Total
Changing past tense to present	30	2	2	2	6
Making sentence with present and past tense in T.C.	40	2	2	4	8
Writing the present and past tense of words signed in T.C	30	2	2	2	6
Total	100	6	6	8	20