Addis Ababa University

College of Education and Behavioral Studies

Department of Special Needs Education

A Comparative Study on Academic Achievement of Students with Hearing Impairment in Selected Regular and Special Schools: Addis Ababa

By:

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A Thesis Submitted to the Department of Special Needs Education in Partial Fulfillment of the Requirements for Masters of Art Degree in Special Needs Education.

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Abbreviations and Acronyms

ANAD –American National Association of the Deaf

ENAD –Ethiopian National Association of the Deaf

ESDP – Education Sector Development Program

ETP – Education and Training Policy

FDRE – Federal Democratic Republic of Ethiopia

IDEA – Individual with Disability Education Act

MOE – Ministry of Education

NGO – Non Government Organization

SPSS – Statistical Package for Social Science

UDHR – Universal Declaration of Human Rights

UNCRPD – United Nation Convention on the Rights of People with Disability

UNESCO – United Nations Educational, Scientific, and Cultural Organization

Abstract

This study attempts to investigate the status of academic achievement of Deaf pupils with particular reference to Alpha Special School for the Deaf and Yekatit-23 primary school. Non-experiment comparative study design was used to examine the academic achievement that scored by the Deaf pupils in special and regular schools with their first semester roster score and teacher-made tests result. The empirical data was based mainly on classroom tests and first semester score of the academic year. To achieve the purpose of the study, 98 grades 5, 6, 7, and 8 pupils with hearing impairment and 24 teachers a total of 122 participants, were included in the study. In the study included different instruments to collect the relevant data. The findings of the study show that special school Deaf students have better academic achievement than regular school Deaf students. Particularly in Amharic, English, and Mathematics subjects the special school Deaf students classroom tests result is better than regular school Deaf students classroom tests result. In addition, the Alpha special school for the Deaf school facility that has influence on academic achievement of Deaf students is better than Yekatit-23 primary school facility. Hence, the result suggests that regular school is unfavorable for Deaf students' academic achievement; and in regular school Deaf students' academic achievement is unsatisfactory. Further research is also required to examine the factors that affect the Deaf students' academic achievement.

Chapter One

1. Introduction

1.1 Background of the Problem

Since the United Nation Universal Declaration of Human Rights (UDHR) was released in 1948, there has been legislation on providing education for all children. The right to education is universal part of basic human rights and should be extended to all groups in society, including to all children, youth and adults with disabilities. Education is the backbone to almost every society in the world. It creates opportunities for individuals to gain independence, citizenship rights, appropriate employment, and economic power. Article 24 of the United Nation Convention on the Rights of Persons with Disabilities (UNCRPD), adopted in 2008 focuses specifically to education and the role individual government (United Nation Convention on the Rights of Persons with Disabilities [UNCRPD], 2008).

Article 24 states that "persons with disabilities are not excluded from the general education system on the basis of disability, and that children with disabilities are not excluded from free and compulsory primary education, or from secondary education, on the basis of disability." The principles of this treaty placed obligation on countries that ratified this treaty, including Ethiopia, to provide programs that are inclusive of and accessible to persons with disabilities (UNCRPDs, 2008).

In Ethiopia, formal education structure was established in the early 1900's. A decade after the institution of the first school, Imperial Menilik II School, special education

school for the children with disability was opened in Ethiopia (Tibebu, 1995). However as a result of political, social, and economic disturbances in Ethiopia, education for students with special needs have been neglected by the government. Education of children with special needs depended on foreign NGOs and Missionaries to provide them with education services. It was not until the 1980's that the Ministry of Education began to take part in the provision of special education (Tilahun, 2002).

Special school for the Deaf is one of the predecessor schools for Deaf education. It has great contribution for Deaf education in the world. Persons with hearing impairment who were learn at special school can be academically successful teacher, economist, sculpture as well as many of them can do handcraft, dressmaker, and wood worker (UNESCO, 2000). However, there is dissatisfaction on the type of education for student with hearing impairment as they have continued to lag behind their hearing counterparts in all academic achievements particularly reading and writing language, and math subject (Tilahun, 2002).

In Ethiopia many people lack formal education and that also influences their attitudes towards children with hearing impairment. Many people in society have mostly negative attitudes toward Deaf children. A student who is Deaf may have difficulty in communicating with peers, developing relationships and friends and accessing the social intercourse so critical to psychosocial development (Gearheart, 1988). As a result, a lot of Deaf students experienced social and emotional problems in different social contexts.

As a way of improving Deaf education, suggestions have currently been offered shift from special education setting to inclusive education. Inclusive education is meant to reflect the values and objectives of the general society and as a way to prepare students for the future. Other approaches for educating children with disabilities are segregation and integration.

Foreman (2001) and Ashman and Elkins (2002), describe “integration” as referring to as children with disabilities attend special classes or units in mainstream schools; “segregation” as an approach where children with disabilities are educated in special schools or in residential schools; and “inclusion” is described as the outcome of a process whereby schools attempt to provide for the personal, social, and learning needs of all their students.

Ethiopian education policy is currently advocating for inclusive approach. Inclusive education starts from the belief that the right to education is a basic human right and the foundation for a more just society. It also reduces exclusion within and from education that it is the responsibility of the regular system to educate all children. It is a process of reforming schools and attitudes, which ensures that every child receive quality and appropriate education with in the regular schools. In this way, inclusion is more complex than a mere physical placement of children with special needs in the regular classroom. Inclusion implies that the regular classroom should change to accommodate all different learners and in the process, desirable services be offered to all children with in the regular classroom (UNESCO, 1994). One major assumption is that in an inclusive setting, the class room teacher than the special needs educator has the primary responsibility for educating all children in the classroom (UNESCO, 2000).

According to Tirussew (2005), there is a general trend towards creating welcoming school environment in order to provide equal opportunities and participation for all children in regular school. Some schools in Addis Ababa have begun mainstreaming students with hearing impairment in regular classroom with special facilities and interpretation services. However, Ethiopian National Association of the Deaf argues the inclusion of Deaf students in regular

classroom in terms of work in an equal partnership to provide Deaf children with relevant and adequate education within the regular classroom (Tirussew, 2005).

Children with hearing impairment in traditional regular school may have low academic performance (Tirussew, 1998). Most individuals perceived pupils with hearing impairment as "dull" and unable to learn and to be educated like the other students. As consequence, some teachers tend to display low expectation of Deaf students which undermines their potential (Feleketch, 2000). However, hearing loss by itself does not affect intellectual ability even though the limiting environment for interaction may affect their intellectual ability (IDEA, 2006).

According to Mayberry (2002) cognitive development in Deaf children:

> The delayed and depressed language development of Deaf children, as a group, is not caused by, and does not cause, general intellectual deficiencies in cognitive domains that function independent of language. This fact demonstrates that language and non-language cognitive development is dissociable to a large degree. Deaf children show normal early play behavior and conceptual development in comparison to hearing children. Deaf children also show normal performance on nonverbal IQ tests (para.7).

The different educational provision may facilitate or detract academic achievement of pupil with hearing impairment. Academic achievement 0f pupils with hearing impairment has been considered as an interactive function of many family and demographic variables and the available school services and special support for individual students. The support Deaf students require in the classroom may range from minor modifications such as altering seating

arrangements to major adaptations and considerable assistance such as using sign language interpreters, hearing aid, and health service(Antia, Reed, & Kreimeyer, 2008).

Schools in Ethiopia generally lacked disability specific educational support. Mainly they lacked special instructional materials and aides needed by the Deaf are scarce or not available at all. Teachers also have inadequate training to teach and deal with Deaf pupils. Majority of the teachers faced serious communication problems since they did not know sign language (Tilahun, 2002). Communication is at the heart of everything we do as humans and without this any academic, cognitive, emotional or social development becomes difficult. Another hurdle Deaf students' face is attitudinal barriers both on the part of the teachers as well as students without hearing impairment (Abebe, 2000).

Thus, from this information it can be said that the majority of the student with hearing impairment in the world in general and in Ethiopia in particular are still directed largely toward struggling for academic success. With this information in mind, it can be assumed that the academic achievement of students with hearing impairment in different educational settings below their age mate hearing students.

In investigating the academic achievement of pupils with hearing impairment at special school for the Deaf and regular school, this paper has tried to assess the status of academic achievement of pupils with hearing impairment in three subjects such as Amharic, English, and Mathematics, as well as the impact of instructional approach and school facilities on the students with hearing impairment academic achievement. In the remaining part of this paper the terms pupils with hearing impairment, students with hearing impairment, Deaf students, and children with hearing impairment may also be used interchangeably.

1.2 Statement of the Problem

Hearing loss can affect a child's performance in traditional academic (Tirussew, 1998). Most individuals perceive hearing loss adversely affect intellectual ability which suppress the opportunities for pupils with hearing impairment to have access to education. However, research findings indicate that the nature of cognitive development is essentially identical for Deaf children as well as hearing children; that differences in academic achievement and intellectual testing reflect deficiencies in linguistic development and not inherent capabilities. Academic achievement of students with hearing impairment depends on the appropriateness of the school services and medium of instruction. Schools provide education for students with hearing impairment in varying degree from the least restrictive settings, such as inclusion, to the most restrictive settings, such as special school for the Deaf.

Hearing impairment in children does not only make it difficult for them to communicate with other hearing people; it also slows down, or even prevents altogether, their learning (UNESCO, 2000).Children who are hearing impaired don't spontaneously develop spoken language, so they need very special help in order to learn sign language to develop social skill. For the academic success of Deaf child, sign language ability is invaluable. In addition to the academic results attained by the students through the successful completion of final exams and other quantitative measures a school system where all children are welcome and where diversity and flexibility are seen as important ingredients for the development and personal growth of all learners (Mayberry, 2002). Therefore, the comparison of academic achievement of students with hearing impairment in special school with their counter parts in regular school is a very crucial issue to understand the educational setting where Deaf students are well served. Furthermore, it is very hard to find research that compared the academic achievement of Deaf

students in special school for the Deaf with their peers in regular classroom in Addis Ababa generally in Ethiopia.

Currently, Deaf education has controversial issues. Like Hegarty and Alur (2002), experiences of integrating children with hearing impairment mainly rely on sign language for their communication have often been discouraging. As a result children with hearing impairment receive their education in special schools. On the other hand, professionals raise inclusion of pupils with hearing impairment in regular school is human right of the child's and effective so to get equal and appropriate opportunities Deaf child should learn in regular school. Bearing this idea in mind, the major purpose of this study is to investigate the status of academic achievement of students with hearing impairment attending in Alpha special school for the Deaf and Yekatit-23 primary school in Addis Ababa. The research is intended to seek answer to the following questions:

1. What is the status of academic achievement of pupils with hearing impairment in special School for the Deaf and regular school?
2. Is there statistically significant difference among academic achievement of pupils with hearing impairment in special and regular schools in terms of their performance on teacher-made tests result and classroom teachers' assessment?
3. Is there a significant difference between schools' first semester roster marks of the academic year and teacher-made tests result in regular and special schools?
4. Is there any significant instructional approach and school facilities difference between Yekatit-23 primary school and Alpha special school for the Deaf?

1.3 Objectives of the Study

The study is aimed to investigate the academic achievement of pupils with hearing impairment learning in special school for the Deaf and regular school. More specifically, the objectives of the study are:

1. To investigate the status of academic achievement of pupils with hearing impairment in special and regular educational settings.
2. To examine the regular and special schools' instructional approaches and school facility for students with hearing impairment.
3. To suggest in which educational setting pupils with hearing impairment are well served.

1.4 Significance of the Study

The low educational achievement of children with hearing impairment in the Ethiopian school system could be an indicator that there is a lot to be done in this area (Tirussew, 1999). It is a serious problem; teachers and parents of children with hearing impairment complain about low academic achievement of children with hearing impairment. This kind of investigation has not been done before in Ethiopia context to knowledge of the researcher. Therefore, it is vital to investigate the status of academic achievement of students with hearing impairment in regular school and in special school for the Deaf in Addis Ababa before embarking on inclusive programs at once all over the country. The results of the study are expected to:

- Show the status of academic achievement of the pupils with hearing impairment in special school for the Deaf and in regular school.
- Provide basic information for the concerned bodies like policy makers, planners and interested groups to realize and overcome barriers, which operate against the academic success of students with hearing impairment.

- Serve as a stepping-stone for further research in the field.

1.5 Scope of the Study

The study is delimited in Alpha special school for the Deaf and Yekatit-23 primary school in Addis Ababa on the basis of availabilities of the participant in heterogeneous educational setting. The study did not also include other special schools for the Deaf and regular schools that integrated students with hearing impairment in the city, but addressed the only a government special school for the Deaf and an integrated setting in Addis Ababa. It is also delimited by grade level, that is, children below grade 5 are not involved in the study because it was assumed that relatively subject matter knowledge emphasis in the second cycle of primary school (grades 5, 6, 7, and 8) and precise test result might be obtained from upper grade students who communicate and understand better.

1.6 Limitation of the Study

The study has the following limitations.

- Academic achievement is a wide topic and can be related to many factors. But, it was difficult to include all components in the area of the study due to scarcity of resources and time.
- Due to the limited number of participants in regular and special schools the sample is limited to 24 teachers and 98 students from both schools totally 122 participants. So it may be difficult to generalize the finding of the study.
- Due to lack of previous research that conducted to compare on academic achievement of Deaf students in regular and special schools. So, sufficient evidences were no presented to supplement the study in the Ethiopian context.

1.7 Definition of Key Terms

Academic achievement: is the degree of learning that has taken place as a result of exposure to a defined learning experience and what a student has learned (Black-Hawkins, Florian, & Rouse, 2008).

Deafness: Having a hearing impairment which is so severe that the student is impaired in processing linguistic information through hearing (with or without amplification) and which adversely affects educational performance (Friend, 2010).

Hearing Impairment: An impairment in hearing, whether permanent or fluctuating, that adversely affects a child's educational performance, in the most severe case because the child is impaired in processing linguistic information through hearing (Friend, 2010).

Prelingual deafness: refers to the condition of children whose deafness was present at birth or occurred prior to the development of spoken language (Moores, 1996).

Postlingual deafness: refers to the condition of children whose deafness occurred following the spontaneous acquisition of language (Moores, 1996).

Regular school: is a classroom designated for "regular," or academic, work as opposed to classroom for "special" work (UNESCO, 2000).

Special school: a school established for the purpose of caring for the educational needs of atypical children; offers special education to exceptional children of a single classification (for example Deaf or blind children) or to children with many different types of exceptionality (UNESCO, 2000).

Students with hearing impairment: Both Deaf and hard-of-hearing children. This term, used mainly in education, indicates a child who needs special services because of a hearing loss (Heward & Orlansky, 1988).

Chapter Two

2. Review of Related Literature

2.1 Overview of Education of Children with Hearing Impairment

In early times, Greek philosophers, like Aristotle, considered the ear as an organ of instruction and hearing was taken as a major factor contributing to intelligence (Moores, 1996). His bad standing is in large part undeserved. His statement, taken out of context, was distorted and misinterpreted. As a result, owing to misconceptions attached to hearing impairment, children with hearing impairment had been denied of their educational rights for many years (Moores, 1996).

Initial, the major concerns were centered on defining the legal and religious rights of the children with hearing impairment and "Education for the children with hearing impairment was not a consideration in societies in which the majority of the population was illiterate" (Moores, 1996, p.32).In the long run, educators and other professionals began to have an insight in to the possibility of educating the children with hearing impairment.

As noted by Goldstein (1989), in the 16^{th} century, there was a renewed interest in Europe and institutions were opened to educate even the profoundly Deaf children. As a result, most children with hearing impairment began to attend their education separately either in residential schools or in day school for the Deaf. Even when the schools were publicly supported; little or no connection existed between general education and education of the Deaf (Goldstein, 1989).

As reported by Smith and Luckasson (1995), a Spanish monk, Pedro Pona de Leon was known to be the first teacher of children with hearing impairment, and by the1700s segregated schools for the children with hearing impairment were opened in England, Edinburgh, France,

and in Germany. In 1817, the first special school for the Deaf was opened in the United States. However, around the beginning of 1968, their came a reaction against increasingly segregated educational provisions for children with hearing impairment (Moores, 1996).

In fact, referring to its historical background "for more than three hundred years, the primary emphasis among educators of the Deaf has been communication by giving secondary attention to academic achievement" (Moores, 1996, p. 8). It is unrealistic to expect deemphasize on training in communication skills, but a reevaluation of priorities is in order. Today, the majority of children with hearing impairment are educated in schools where hearing students are attending as well. With the use of sign language interpreters, more students with hearing impairment are spending at least part of the school day in classes with hearing students (Antia, Jones, Reed, & Kreimeyer, 2009).Now, legislation, technological advances, improved educational services, and the towing public awareness have brought a remarkable progress in the area of children with hearing impairment education (Moores, 1996).

However, in spite of the achieved progress, the field of Deaf education has been full of "bitter controversy and conflict" and the educational achievement is said to be far below what it should be (Antia, Jones, Reed, & Kreimeyer, 2009). Furthermore, Smith and Luckasson (1995) on their part stated that the best educational methods for students who are with hearing impairment are still matters for debate by those who are adult Deaf and by professional educators. It is believed that children with hearing impairment deserve to be placed in an environment where they can communicate with peers, and meet their academic, social, emotional, and cultural needs. They deserve to be in an environment where they are truly included in every aspect of the school (Smith and Luckasson, 1995). On the other hand, Smith and Luckasson (1995) noted that for students who use sign language as their primary means of

communication, the regular school environment where administrators, teachers, and classmates are not fluent in sign language can result in considerable isolation.

As a general truth, the progress of ideas through educational research has been slow, particularly in the field of education for the Deaf (Powell & Finitzo et al., 1985). Education for the Deaf itself has also been the subject of many disputes (Swain & Finkelstein, 1994). Aside from the existing constraints, depending upon the severity and types of disability, regular education classrooms, resource rooms, special classes, special day schools and residential schools were used as placement options to educate children with special needs (Smith & Luckasson, 1995). Croll and Moses (1985) on their part claimed that it was perhaps in the field of hearing impairment that most progress has been achieved towards integration of children with disabilities into regular schools. While discussing about this same issue, Smith and Luckasson (1995) informed that along with acquiring educational benefits, students with hearing impairment acquired social skills in regular classrooms.

As noted by Biklen (1992), being integrated into regular classes can play a crucial role in advancing better academic performance for children with disability will do better when they sense that they are accepted and valued by their "normal" peers. This suggests that there can be a situation where the students with hearing impairment can benefit from their being integrated into regular classes; provided that the situations are well structured to facilitate social interaction.

2.2 Education of Deaf Students in Ethiopia

The traditional services for children with special needs education in Ethiopia used to be carried out exclusively by the individual families and religious organizations (MOE, 1994). However, the trend of development of the education of children with special needs education in

general and the children with hearing impairment in particular is similar to that of developing countries. In Ethiopia, for many people, special needs education is only for children with disabilities. Some are aware of the diverse needs of all children, with or without visible disabilities. Still others think that the education of children with disabilities is humanitarian activity. It all depends on the level of individual awareness.

In Ethiopia according to the base line survey conducted by the Institute of Educational Research at Addis Ababa University, the general public have misunderstandings and misconceptions about the potential and contribution of persons with disabilities, and negative attitudes tend to be more dominant in rural areas, among people with no education and among people who are engaged in agriculture (Tirussew et al., 1995).

The majority of Deaf people in Ethiopian who live in rural areas spend their lives in extreme isolation. They are looked down upon as mentally deficient because of their lack of speech. In many places they are misunderstood as being a result of sinful behavior, or some forms of supernatural curse. They are not seen as suitable marriage partners and may even result in the entire family's loss of status (Tilahun, 2002). For this reason, they are frequently sheltered even further from the outside world and communicate only with their families or those close to them through small amounts of writing or signing, if they are able.

In towns more awareness has been generated regarding the Deaf. Many parents are eager to send their children to schools; although the resources available are not sufficient for the number of potential students. Missionaries, and more so lately, the government, have established several schools for the Deaf, and integrated Deaf students in regular schools (Feleketch, 2000).

With these perspectives, the existing provisions in Ethiopia include residential schools, special schools, special classes, and regular classes. All forms of educational provision are available for students with hearing impairment in Ethiopia. Of course the schools are not available in all part of the country; most schools are found at urban area so most Ethiopian children with hearing impairment do not have education access. Now, it appears that the opening of special classes for students with hearing impairment is at a growing rate bringing students into closer physical proximity for a possibly better social interaction.

Special schools for the Deaf were first opened by the non-governmental organization in 1949 Mekanisa and in 1952 Alpha both are found in Addis Ababa by the Church of Christ Mission and by the American Mission respectively (Tilahun, 2002).The schools taught either in sign language or oral language. In addition, the schools were not established with the idea of making the children with hearing impairment literate citizens who can participate as equal citizen in the work life of the society. The aim was rather to teach them Bible (Tibebu, 1995). According to Tilahun (2002), the first method of communication of the Deaf in Ethiopia was the American manual system, which was used for ten years from 1975 to 1986, was a combined method of Amharic signs and speech. The second, "oral method" of communication was introduced by British Sister Barbara from 1986 to 1989. This was "Deaf children can talk" method. Generally, recognized throughout the world children need and have a right to education. Children with hearing impairment share that need and right.

The Salamanca Frame Work for Action as cited in UNESCO (2000) states that education policies should take full account of individual differences and situations. The importance of sign language as a medium of communication among the Deaf, for example,

should be recognized and provision should made to ensure that all children with hearing impairment have access to education in their own native sign language.

In this regard the Ethiopian Education and Training Policy (ETP, 1994) outlines the principles of special needs education by stating that all children, including the children with disabilities and gifted children, learn in accordance with their full potentials and needs. The Policy (Article.3.3.1), recognizing the need in identifying potentials and limitations of students at all levels, has indicated that "continuous assessment in academic and practical subjects, including aptitude tests will be conducted". The education and training policy further confirmed that special education and training will be provided for people with special needs (ETP, 1994).

The Ministry of Education has adopted a Special Needs Education strategy regarding the provision of the service within the existing structure and in the framework of inclusive education. The final goal of the strategy is to ensure access and quality education for marginalized children particularly for children with special needs education such as the ones with disabilities (Education Sector Development Program IV [ESDP IV], 2010).

Aside from what has been stated in the education and training policy, the Ethiopian constitution under Article 41, declared that "Every Ethiopian national has the right to equal access to publicly funded social services" (Federal Democratic Republic of Ethiopian [FDRE], 1995, p.164). Moreover, under Article 90, it is stated as follows: "To the extent the country's resources permit, policies shall aim to provide all Ethiopians access to public health and education" (FDRE, 1995, p.214).

Although empirical study and literature on the situation of persons with disabilities in general and on persons with hearing impairment in particular in Ethiopia are scarce, the existing few studies indicated that a stereotype attitude of the majority of the people and their orientation

towards the inabilities rather than the potential of persons with disabilities is very prevalent (Mikre, 2000 as cited in Tilahun, 2002).

2.3 Developmental Characteristics of Children with Hearing Impairment

Deep knowledge in the developmental profile of children with hearing impairment in terms of their cognitive and language development will enable educators to provide appropriate and relevant education service for students with hearing impairment (Abebe, 2000).

2.3.1 Cognitive Development of Children with Hearing Impairment

In the first part of the twentieth century, individuals with hearing impairment were perceived as “inferior in intelligence” (Moores, l996, p.160). As Hallhan and Kauffman (1991, p.275) put it, “the intellectual ability of children with hearing impairment, particularly those classified as Deaf, has been a subject of much controversy over years”. It is indicated that some professionals were also equating conceptual ability deficits to children's language deficit. For many years, professionals believed that the spoken language of individual with hearing impairment was a sign that they also had intellectual deficiencies. As was noted earlier, however, we now know that they might not have a spoken language with its own rules of grammar.

When the work of researchers on the issue of cognition and deafness is consulted, there appear to be different out-looks about the cognitive abilities of children with hearing impairment. As noted by Mayberry (2002) the line of thinking which considered the child with hearing impairment as inferior had a great influence on people's perception in the first part of the twentieth century.

Adhering to this same view, Pintner and Patterson (1917) as cited in Moores (1996) claimed that children with hearing impairment or Deaf children lag behind their age mate hearing children in “lower digit-span memory”. Pinter and his associates too, went on to say that “Deaf children are inferior in intelligence” (as cited in Moores, 1996, p. 160).

On the other hand, by reviewing the research out-comes conducted since the time of Pinter’s summary; Myklebust and Burtton (1953) as cited in Moores (1996, p.161) confirmed that "children with hearing impairment are not generally inferior in intelligence". In fact, though Myklebust appears to consider children with hearing impairment as generally not inferior in their intelligence, he "qualified his stand by arguing that even if Deaf children are quantitatively (in terms of IQ points) equal to hearing children, ... they are not necessarily qualitatively equal"(Moores, 1996, p.160) and he insisted further saying that it is difficult for the child with hearing impairment to function in as broad and in as subtle and abstract a manner as the hearing child.

Conversely, after examining several studies on the children with hearing impairment, it was reported that "no differences had been found between individual with hearing impairment and hearing individual in conceptual performance when the linguistic factors presented were within the language experience of the samples of children with hearing impairment" (Moores, 1996, p.161).

Thus, as pointed out by Moores (1996, p.162) by the 1960s, "leading researchers had concluded that people with hearing impairment are not intellectually deficient". After grasping important points from studies of intellectual functioning of the children with hearing impairment, Moores (1996, p.165) concluded that "in cases where the Deaf have shown inferior performance, the simplest explanation may be neither lack of language nor experiential

deficiency. The very real possibility appeared to be that the experimenters were unable to communicate effectively with the deaf subjects".

The performance of the matched groups of children with hearing impairment and hearing children on four Piagetian conservation problems was examined by Rittenhouse, Morreau, and Nejad (1981) as cited in Moores (1996) and no significant performance differences in either qualitative or quantitative, were seen between the two groups when standard Piagetian procedures were modified by substituting new phraseology. Hence, it was believed that previous research showing cognitive deficit in Deaf children was likely marked by instructional problems; particularly problems of a linguistic nature (Friend, 2010).

More recently, a variety of tests of cognitive ability have been developed that include non-verbal performance measures, such as tracing from a starting point to a stopping point on an increasingly complex maze and identifying the correct geometric form to put next in a sequence. The results of these studies indicate that a hearing loss in and of itself imposes no limitation on the cognitive capabilities of an individual (Friend, 2010). Moreover, any intelligence testing of people who are with hearing impairment must take their English language deficiency in to account. Performance tests, rather than verbal tests, especially if are administered in sign language, offer a much fairer assessment of the IQ of a person with hearing impairment. When these tests are used, there is no difference in IQ between those who are Deaf and those who are hearing (Print, 1996, as cited in Hallahan, Kauffman, & Pullen, 2012).

In general, results obtained from recent investigations in the area of cognition and deafness supported "the idea that individuals with hearing impairment have normal intellectual capabilities, although performance deficits may sometimes appear" (Moores, 1996, p.169).

Therefore, referring to the research outcomes, it is possible to say that some deficits may appear in some activity areas not due to deafness itself in its strict sense but due to inappropriate instructions or procedures that are employed in the testing process.

2.3.2 Language Development of Children with Hearing Impairment

Language is central to everything that we do because it is the means of communicating with others, thinking, and learning (Schirmer, 2001 as cited in Friend, 2010). Many studies had been conducted over years concerning the nature of language development of the children with hearing impairment and their hearing peers. As a general rule, children move through a series of developmental stages in their acquisition of language (Webster, 1996).

As to language development of children with hearing impairment, it is noted that the vocalization of babies with hearing impairment at months of age are similar to those of hearing infants (Webster, 1986). Similarly, Eisenson (1986) informed that Deaf or children with hearing impairment begin to babble at about the same age and under the same conditions as children who hear “normally”. Moreover, it is further stated that Deaf babies sound much the same as compared to the "normal" ones, with of course making fewer sounds at the end of fifth or sixth month than the hearing children (Eisenson, 1986). Lack of adequate and normal feedback from hearing their own speech and that of others is assumed to be the main constraints that hinder the transformation of babbling stage to the next successive developmental stages (Eisenson, 1986).

Berger (1983) on his part indicated that although Deaf babies babble the same sounds at 6 months as hearing babies, lack of reinforcement from their own sounds and others' responses tend to lead the Deaf child to communicate with gestures rather than sounds. As a result, the early babbling disappears rather than turning into speech. Harris and Butterworth (1994) on the other hand reported that children with congenital hearing impairment or children who became

hearing impaired in the first year of life have considerably more difficulty in language development than children who became hearing impaired after the first year. It is suggested that Deaf children with Deaf parents are generally far better than Deaf children with hearing parents, for the reason that Deaf parents have a much greater insight into the communicative needs of the child with hearing impairment, particularly in the child's early years (Harris & Butterworth, 1994).

Children with congenital hearing impairment do not have the opportunity to practice the listening skills essential to develop speech and language which are basic for a person's academic development. Inevitably, congenital impairment affects every aspect of communication development from birth onwards (Sanders, 1988). Children who acquire hearing impairment after they develop speech and language may find it easier to develop communication skills; hence, they are socially adjusted to the hearing world. The later in life deafness occurs, the greater, the child's linguistic capabilities are likely to be developed.

Because the age of onset is critical to speech and language development, educators classify children according to this factor. Children with prelingual Deafness are those who were Deaf prior to the development of language. Children with postlingual Deafness became Deaf after the development of speech and language (Moores, 1996). The cut of point is often set at two years of age (Webster, 1996).

Infants, who are with hearing impairment, have, like their hearing peers, the same capacity to learn language, as well as a desire to communicate. However, the infant who has a congenital or early onset hearing loss whose parents use a spoken language (e.g., English, Amharic, etc.) will not experience the same acoustic language environment as infants without hearing impairment. Indeed, this is the case for the vast majority (93%), where one or both

parents of children with hearing impairment themselves hear normally and communicate using a spoken language (Gallaudet Research Institute, 2002). Although visual input influences speech perception, only a limited amount of information is available from the lips and face to distinguish among phonemes. Only about 40% of speech sounds are visually distinguishable (Gravel & O'Gara, 2003).

Therefore, developing spoken language through speech reading or lip reading alone is challenging at best, and often unachievable. Children who are congenitally hearing impaired or Deaf and are raised in families who are also Deaf and use a signed language also develop visual language effortlessly. Any degree of hearing loss restricts access to some or all of the acoustic features of speech. Thus, hearing loss may delay the acquisition of expressive and receptive spoken language, limit academic performance (in particular, the development of literacy skills), and later constrain an individual's opportunities for vocational choice and advancement (Gravel & O'Gara, 2003).

As to the rate of language acquisition, in children with hearing impairment, recent studies indicated that children with hearing impairment grown up in a signing environment from birth, appeared to acquire at much the same rate as spoken language. It is further stated that the learning of early sign combination is also comparable to the learning of early word combination; and it has been observed that the first signs appear at a similar time to first words (Gravel & O'Gara, 2003).

The creation of unique signs for objects at the same time that normal hearing children speak their first word is taken as an indication that "genetic program appears to propel" the child with hearing impairment to create a symbol that represents an object (Gleitman, 1986 as cited in Meisels & Shonkoff, 1993). In fact, when hearing children (around age 2) are in a position to

add crucial closed classed words (such as: in, on, the, and) to their production, the untrained children with hearing impairment do not create them.

Educators generally believed that there should be an appropriate language input using sign language as an alternative system being applied at the same age as in oral languages (Meisels & Shonkoff, 1993). It is real language for individual with hearing impairment, can be used to express everything that spoken languages express, and has its own grammar. It has to be learned like any other language. Hearing children learn by listening to the language spoken around them. Children with hearing impairment need to see sign language used around them in order to learn. They find it as easy to learn to use sign language as hearing children find it to talk (Gravel & O'Gara, 2003).

In view of this, UNESCO (2000) noted that parents, family members, the community and teachers can all learn sign language from adult Deaf people. Teachers need to learn sign language properly and know it well, if they are to teach Deaf children. But if they have children with hearing impairment to teach before they have an opportunity to learn sign language well, they can help the children by learning some signs and using them when they talk. This is not sign language and should be replaced by sign language as soon as possible. Deaf adults may come in and help with the Deaf children.

Researchers in these areas have consistently demonstrated that many individuals who are Deaf or hard of hearing are able to acquire the skills to access and use print. Conversely, many students who are Deaf or hard of hearing have significant problems in this area (Traxler, 2000). These challenges impact students' ability to master content subject material, learn independently, and use technology. Deaf children also need to learn to read and write the language that is spoken in the community, just as hearing children learn to read and write. They

will need special help to do this. They can learn all these, and all other school subjects too, with the help of sign language.

2.4. Concepts of Academic Achievement

Academic achievement is the educational goal that is achieved by a student, teacher or institution achieves over a certain period and academic achievement is a term used in school when a student does well in academics. According to Walker-James, Jurich and Estes (2001), Academic achievement refers to the goals which teachers hope their students reach to them such as: to read at grade level or above, to do well in sciences and mathematics to persist for high school, to be appropriately identified and served for any special needs, obtain good mark, have access to and do well in academically challenging content, have opportunities to apply their knowledge while the students are in school. For this study academic achievement is defined as "on grade level" with hearing peers. This is measured either by examinations or continuous assessments and the goal may differ from an individual or institution to another. Academic achievement is a term used in school when a student does well in academics.

2.4.1. Assessment of Academic Achievement

To assess and evaluate is to gather, interpret and reflect on a variety of information in order to adjust the direction of action towards future aim. Educational assessment and evaluation consists of considerations and judgments about teaching and learning environments, process and results, and about their contextual relations. The very restricted perception of continuous assessment as continuous exams needs a revision. The purpose of assessment and evaluation is neither to give marks nor to place pupils in segregated environments. Rather its

purpose should be to identify the needs, interest, capacity and problem areas of each individual child and act accordingly.

The academic achievement of students with hearing impairment is traditionally measured through the use of standardized test scores (Traxler, 2000). Standardized tests are a valuable tool to compare the academic achievement of students with hearing impairment to national norms for typically hearing students. However, academic achievement can also be measured through teachers' assessments of students' academic functioning (Power & Hyde, 2003). Classroom status can be measured by obtaining teachers' perceptions of students' achievement and ability to learn expected academic content.

2.4.2 Variables Associated with Academic Achievement

Apart from the obvious effects of the degree, type and quality of instruction, five variables appear to be closely correlated with the academic achievement of students with hearing impairment (Paul & Quigley, 1990):

1. The severity of hearing impairment – The greater the hearing loss, the more likely the child will experience difficulty in learning language and academic skills.
2. The age of onset of hearing loss – A child who loses his hearing before acquiring speech and language (usually before age 2) is at a much greater disadvantage than a child with a post lingual hearing impairment.
3. Intelligence test scores – As with children with normal hearing, higher scores on standardized tests of are correlated with greater amounts of academic success.

4. Socio-economic status of the family – A child with hearing impairment whose parents are affluent and college educated is more likely to achieve academic success than a child with hearing impairment from a low-income and less educated family.

5. The hearing status of the parents – A child with deafness from parents with deafness is considered to have better chances for academic success than a deaf child born by hearing parents, particularly if the parents are highly educated.

Communication factors are also associated with academic achievement. For students with hearing impairment in general education classrooms, participating in classroom communication and having good receptive and expressive communication skills are variables reported to promote academic success (Antia, Jones, Reed, & Kreimeyer, 2009).

In general variables associated with academic achievement are categorized in three forms such as demographic variables, personal variables, and institutional variables.

2.4.3 Academic Characteristics of Children with Hearing Impairment

Deaf people can do anything except hearing (Christiansen & Barnartt, 1995). This statement, made famous in 1988 by I. King Jordan, the first Deaf president of Gallaudet University, has frequently been used to inspire members of the Deaf community and Deaf children alike. But how true is this assertion? Deaf students currently lag substantially behind their hearing peers in all academic areas (Moores, 2001 as cited in Hallahan, Kauffman, & Pullen, 2012). Low academic achievement is an obstacle that severely limits the potential of Deaf children and makes the “anything” that they may want to do extraordinarily more difficult to accomplish.

Academic achievement in education are often considered to be a set of minimum performance criteria that specifies what all students know and be able to do by certain class ages and levels (Black-Hawkins, Florian, & Martyn, 2008). The academic achievement of students with hearing impairment is the results of quality of provision rather than whether it takes place in mainstreaming or special school, that really matters. The primary consequence of childhood deafness is that it blocks the development of spoken language both the acts of speaking and comprehending. This fact leads us to ask what spoken language contributes to the child's cognitive development. Be-cause deafness impedes the development of spoken language (Moores, 1996). These performance patterns illustrate the great difficulty experienced by Deaf children perceiving and language learning spoken language and visual representations of speech, namely written and read language. Indeed, the effects of deafness on spoken language development increase as degree of hearing loss increases.

The most common impact of a hearing loss on academics is in the area of literacy skills. Successful reading depends on multiple factors including vocabulary, listening and reading comprehension, understanding questions, exposure to language and early literacy, and experience with print. Writing is dependent on good reading skills. Literacy competency is the heart of educational performance. The ability to read with comprehension and tread for information is the center of academic success, and children who are with hearing impairment often experience challenges in this academic area (Heward & Orlansky, 1988).

As Moores (1996) stated students with hearing impairment have low academic achievement as a result of difficulties in understanding and expressing instructional medium. Achievement, then, tends to be highest in the area that rely relatively little on language skills

and lowest in area that depend heavily on language. Thus, in typical achievement test batteries, scores on reading and writing scores are relatively very low.

According to Hallahan, Kauffman, & Pullen (2012), most children with hearing impairment have large deficits in academic achievement. Reading ability, which relies heavily on English language skills and is probably the most important area of academic achievement, is most affected. Several studies have demonstrated that children who are Deaf have higher reading achievement and better language skills than do those who have hearing parents; researchers do not agree about the cause (Power, 2003 as cited in Hallahan, Kauffman, & Pullen, 2012). However, many authorities speculated that the positive influence of sign language is the cause parents who are Deaf might be able to communicate better with their child through the use of sign language. The presence or absence of early communication has important consequences for the children's developments of academic skills. During first year of life, basic language skills are acquired children who do not acquire age-appropriate language skill face both immediate challenges in being able to communicate with others as well as long term struggles to acquire information. Friend (2010) simply stated, a hearing loss presents a potential barrier to communication which in turn influences most areas of development, including those related to academic achievement.

2.4.4 Comparison of Academic Achievement of Students with Hearing Impairment in Regular and Special Schools.

As mentioned by Moores 1996, Jensema compared the academic achievement of Deaf students in different educational setting. He found that children with hearing impairment in integrated settings achieved above average. However, the groups exhibited differences in terms of other variables rather than educational placement. He conclude that school placement peruse

had little or no effect on academic achievement. Allen & Osborne (1984) examined demographic and achievement data for 1,465 students with hearing impairment and hearing students and found higher academic achievement among children in integrated settings. They reported that student ability was the major factor in academic achievement, but integration did have a positive effect (Mayberry, 2002).

Moores (1985) reported that Deaf students in different educational programs who attended regular math class accompanied by sign interpreters showed greater gains in achievement than did similar students in the same schools who were in self-contained math classes for Deaf students. They suggested that the differences were related not to class placement peruse but to instructional variables. In the integrated classes, there was a higher level of expectation as well as more exposure to a greater quantity of demanding material. Also, the regular class room teachers were content area specialists. In addition, they investigated the influence of placement on mathematics computation and mathematics concepts. They reported that academic placement was not a factor. Higher academic achievement was related to the level of content covered regardless of school placement (Moores, 1996).

On the other hand, Mishra and Singh (2012) reported that the level of academic achievement of students with hearing impairment in special and regular schools showed significant difference. According to their study academic achievement of students with hearing impairment in special school is better than students with hearing impairment in regular school.

The Gallaudet Research Institute regularly collects and analyzes demographic data on the academic achievement of Deaf children in the United States based on the Stanford Achievement Test (Allen, 1994).The median math computation skills of 15- year-old Deaf children in the USA are at the 7th grade level. Age-matched hearing children perform at the

10th grade level (Allen, 1994). These statistics show that deafness, by itself, does not impede the child's ability to learn and manipulate abstract symbols and symbolic relations. By contrast, the median reading achievement of Deaf students from 17 year old to 21year old leaving American secondary schools is at the 4th grade level (Allen, 1994).

There is a wide performance gap between language tasks as compared to non-language tasks is a common profile among Deaf children worldwide (Mayberry, 2002). These academic performance patterns illustrate the great difficulty experienced by Deaf children perceiving and learning spoken language and visual representations of speech, namely written and read language. Indeed, the effects of deafness on spoken language development increase as degree of hearing loss increases. For example, students with mild to moderate hearing losses read at lower levels than do students with normal hearing. Furthermore, students with severe to profound hearing losses read more poorly than do students with moderate losses but on math computation they show equivalent achievement (Allen & Schoem, 1997).

The primary effect of degree of hearing loss on language development, in turn, interacts with factors extraneous to deafness, such as socioeconomic and ethnic status and additional disabilities. Deaf children who have motor or sensory impairments in addition to deafness, such as poor vision or cerebral palsy, perform less well as a group than Deaf children without additional impairments (Allen,1994).Together these data indicate that the academic achievement of Deaf students is predicted to a large extent by the same factors that predict the academic achievement of normally hearing students in North America, that is, social class, ethnic, and racial background, and other disability conditions. This means that deafness, by itself, does not determine academic success or failure but rather interacts with many other factors in complex ways (Mayberry, 2002).

In general, academically, group difference existed in different educational setting that educating students with hearing impairment because of difference instructional variables, individual ability, and the level of content covered. A number of research studies have linked mainstreaming placement with higher academic achievement but many of these studies have not accounted for confounding factors. Even where other factors are taken in to account direction of cause and effect between placement options and academic achievement is often not known (Mayberry, 2002).

2.5 Comparison of Language Skills of Pupils with Hearing Impairment in Regular and Special Schools.

A child is unable to hear sounds clearly; significant language and communication problems may develop. For example, if a child has a problem of hearing certain speech sounds, he or she will not be able to produce those speech sounds later in life. This can have a direct and adverse effect on communication interaction, which eventually leads to academic problems.

A student who is Deaf may have difficulty in communicating with peers, developing relationships, and accessing the social intercourse so critical academic development (Gearhert, 1988). From the above facts, it can be said that Deaf individuals lose not only their ability to use spoken language, which is a basic means of communication, but also their ability to hear sounds. This makes the situation for Deaf individuals very difficult to have effective interaction with the hearing, which in turn may bring about a feeling of inadequacy and confusion.

The Deaf persons' greatest effect on the developing child occurs with regard to language, both with receptive and expressive system. Students with hearing difficulty lag in vocabulary skills when compared with hearing students of comparable age (Meadow, 1980). This slow development of spoken language may be attributed to lack of necessary stimulation for the Deaf

to develop language skills, which directly affects the language and cognitive development. Meadow (1980) is also of the opinion that Deaf children are often viewed as lagging behind their peers in their linguistic development. This implies that Deaf individuals are at a great disadvantage in acquiring the basic elements of spoken language for effective communication.

Even though children who are Deaf have the same cognitive ability to learn language as their hearing peers, to achieve their linguistic potential they need to interact with adults and other children who consistently took and(or) sign with them. The experience of seeing, hearing and forming words stimulates brain development in ways that help the child communicate more effectively (Diamond & Hopson, 1998 as cited in Friend, 2010). Consequently a clear relationship exists between children's progress in language learning and the amount of conversation they have with sophisticated language users (Hart & Risly, 1999 as cited in Friend, 2010).

According to Friend (2010), communicating with others enables children to plan, explore, problem solve, question and discuss, unfortunately, many children who are Deaf do not engage in conversations with their family members, peers and neighborhood. When they do not have conversations those interactions often are controlled by adults and consist of question and answer interchange that are linguistically simple, concrete and literal. This pattern of limited conversations can have negative long term effects on the ability of individual who are Deaf to acquire reading skill, writing skill, relate cause and effect, solve problems and make thoughtful decisions about behaviors. Reading is a complex skill that challenges most students with hearing impairment, primarily because of the communication and language development connection (Friend, 2010). Acquisition of a first language and language development throughout early childhood and elementary school are necessary for individuals to become

skilled readers. Many students with hearing impairment are learning to read at the same time that they are learning to communicate and use language and difficulties result.

Research on the performance of students with hearing impairment using standardized tests of reading comprehension suggests that on average they encounter great difficulty in processing Standard English in print (Friend, 2010). Many children with hearing impairment do not have books read to them by adults, which has been determined to be an essential component in literacy development (Adams, 1990 as cited in Friend, 2010). As mentioned by Mayberry (2002), the median reading level of the Deaf, high school population does not reach the level required for a person to be considered literate (i.e., the 6th to 8th grade level and beyond). Indeed, the median reading levels of the Deaf student population have not changed much over the past century (Mayberry, 2002).

This discouraging, but often replicated, finding suggests that something about deafness creates a barrier to reading development. However, if the barrier were insurmountable, no Deaf students would read proficiently. It is important to remember that these reading statistics are median reading levels. Half of Deaf high school students read below the fourth grade level but half also read above this level (Allen, 1994). These results show that highly developed sign language skill is related to high levels of reading achievement in Deaf individuals for whom sign language is a primary means of communication. Spoken language is not the only path to literacy development.

The relationship between sing language ability and reading achievement was investigated by Chamberlain (2000) who hypothesized that well developed reading skill is predicated on well-developed language skill, even sing language. The results suggest that the low median reading levels of the Deaf school-aged population are likely caused by low levels of

primary language development, in sign language as well as in spoken language. Reading must be taught to Deaf children, certainly. But in order to benefit from reading instruction, Deaf children must have a well-developed primary language upon which to base the reading task.

Another important language skill is writing; writing can pose challenges for students with hearing impairment. In fact, research suggests that the problems faced by these students in mastering written English are even more formidable than those they encounter in developing reading skill (Friend, 2010). The problem that students with hearing impairment often experience with writing have to do with the fact that writing is considered a secondary form of linguistic expression, and that it is highly dependent on primary language system, such as speech or sign, as a foundation. Additionally, many students who are Deaf struggle with the mechanical as well as the organizational aspects of writing. In general, researchers find that students with hearing impairment continue to make slow improvement in written language throughout their educational program (Friend, 20210).

As noted in the research on reading students who are Deaf comprise a highly heterogeneous group of writer. Many students have become successful and some even have become award-journalists (Friend, 2010).

2.6 Comparison of Mathematics Ability of Pupils with Hearing Impairment in Regular and Special Schools.

The low achievement levels of Deaf students in the area of mathematics have been well documented by multiple studies over a wide span of years and across national boundaries. Results from a mathematics achievement test given by Wood, Griffiths, and Howarth (1986) to 500 Deaf children in England indicated that the Deaf students, on average, lagged 3.4 years behind their hearing peers. In the United States, data from the Stanford Achievement Test, 9th

edition indicate that by the end of high school, Deaf students achieve, on average, just a fifth grade level in mathematics computation and a sixth grade level in problem solving (Traxler, 2000). Deaf students also exhibit great difficulty in tasks involving reasoning (Allen, 1995). Even when non-standardized forms of assessment are used, Deaf students perform significantly lower than hearing students (Marschark & Everhart, 1999). Given the demands of the current information-age, and the performance requirements mandated by the national law "No Child Left Behind," (U.S. Department of Education, 2002) this low performance is not acceptable.

Research indicates that an understanding of formal mathematics skills and concepts is built upon a foundation of informal mathematical understanding (i.e., the mathematical ideas and concepts that are acquired outside of the school setting) (Ginsburg & Baroody, 2003). Young children construct this informal understanding even before they enter kindergarten (Ginsburg & Baroody, 2003). Furthermore, research findings indicate that early academic ability, particularly in the domain of mathematics, correlates with later achievement (Jimerson et al., 1999) and that early school experiences, family interaction and the home environment are important predictors of later academic success (Jimerson et al., 1999).

It is possible that the achievement gap for Deaf students begins prior to school age. Hearing loss has a substantial impact on the learning experiences to which young Deaf children have access. Deaf children do not benefit from the everyday auditory experiences that are taken for granted with hearing children. Deaf children's already restricted opportunities for incidental learning are compounded when access to the language used in the home is restricted (Marschark et al., 2002). Only some families with a Deaf child report regular use of sign language (Gravel & O'Gara, 2003). The majority of Deaf children, therefore, are missing out on valuable learning

opportunities at home that are relayed through use of a visual language. A late identification of hearing loss, which leads to delayed language acquisition, only contributes to this problem.

Due to the pervasive ramifications of hearing loss, and the number of learning opportunities that Deaf children miss, it is possible that they do not enter school with the same understanding of basic concepts (i.e., color, letters, numbers /counting, sizes, comparisons, shapes, direction/position, self/social awareness, texture/material, quantity, time /sequence) or mathematical knowledge as their hearing peers. This could influence their learning of mathematical information and have a substantial impact on later academic performance.

An early study Kluwin and Moores (1985) found that after matching or controlling for factors deaf students who received math instruction in general education classes had higher scores in math computation than students who received math instruction from teachers of Deaf in special classes. As a result, students in general education class rooms demonstrate higher math achievement than those in special classes (Lee & Smith, 1999).

Students with hearing impairment learn mathematics with sign language as medium of instruction in the school and other students with hearing impairment learn mathematics with the help of sign language interpreters. However, communication is additional burden for students with hearing impairment who learn in the help of sign language interpreters because some mathematics terminologies and symbols are not easy to translate to sign language. In math class is then frequently used to teach Deaf students grammatical constructs and word translates in addition to specific academic content. As a result, the Deaf child generally devotes far less time to academic subjects than does the hearing child. There is evidence that even in preschool. Deaf children spend less time on math than do hearing children. Their math scores at seven years of age reflect this difference (Moores, 1985).

Students with hearing impairment achieve at a higher grade level in mathematics than in reading or writing (Moores, 1996). Although their academic achievement level generally still is problematic. As Traxler (2000) reported that the median grade level in mathematics for eighteen year old students who were Deaf was just below a sixth grade level for computation and a fifth grade level for problem solving.

2.7 Instructional Approaches for Pupils with Hearing Impairment.

Like breathing, food, water, and sleep, communication is a basic human need. Communication is fundamental to everything we do every day (Friend, 2010). It defines and gives meaning to our emotions, beliefs, hopes imaginations and life experiences. Human infants are uniquely born with the ability to interact with their caregivers (Schore, 2000 as cited in Friend, 2010). Communication between infants and their caregivers is essential for two reasons. First, communication develops emotional bonds between children and their caregivers. Secondly, children acquire language as a result of early conversations with their caregivers. Through these interactions children learn the underlying rules of the language used by the adults in their lives (Schirmer, 2001 as cited in Friend, 2010).

For children who are Deaf the quality and quantity of interactions and communication parents tend to differ significantly from those of other children. Most children who are Deaf are born to hearing parents who generally use spoken language as their primary means of communicating with others. Children with hearing impairment parents' and teachers' face additional burden of having to decide what communication approach they will use with their child (Friend, 2010).

Educational programmers and techniques for students with hearing impairment are special primarily because of the many challenges involved in teaching communication to

children who cannot hear normally. Educators, scientists, philosophers, and parents- both hearing and Deaf-have for many years debated about the most appropriate instructional methods for children with hearing impairment. Today, this controversy is as lively as ever.

The fundamental disagreement concern the extent to which children with hearing impairment express them-selves through speech and perceive the communication of others through speech reading and residual hearing. These oralists often discourage the use of sign languages and gestures. Other educators believe that sign language, gestures, cues, and other manual means are a more natural way of communicating and enabling children with hearing impairment to express themselves and to understand other people. Methods of communication receive so much publicity that this is often interpreted as the sum total of methods of teaching.
For children who have a considerable hearing loss, thus, three mode of communication have been advocated: the oral approach, the manual (sign language) approach, and total communication approach.

The oral approach: - This approach takes advantage of residual hearing, and the ability to lip-read in context. It encourages the use of the residual hearing while the presentation of the material emphasizes the student's visual and auditory attention. This method emphasizes speech-reading and oral speech as the primary means of communication (Moores, 1996).

The proponents of the “oral only” method suggest that the use of manual communication will interfere with the child's motivation for developing oral skills. Second, they maintain that the integration of the Deaf child into the dominant hearing community will be hampered. Third, they suggest that manual languages do not have the capacity for expressing abstract ideas and that people using manual languages will be limited to concrete thinking (Sinkonnen, 1994).

However, the biggest problem with teaching only oral communication is that it slows down a child's language development at the age when children learn language fastest (age 1 to 7 years). For instance, a deaf child usually learns to lip read and speak only 5 to 10 words by age 5 or 6. By that age, the same child can learn over 2,000 signs as many words as a hearing child speaks. But, oral communication usually works well for children who can hear the differences between many words or for children who became deaf after they learned to speak (Werner, 1994).

The manual approach: - In the light of recent scientific findings, the manual method seems to have more advantages than the oral only approach to the intellectual and emotional development of the Deaf child (Sinkonnen, 1994; UNESCO, 2000).

The manual method usually includes sign language and finger spelling. However, since all sign languages include a way of spelling the letters of spoken language (UNESCO, 2000) and the manual communication systems range from simple home-made gestures to sign language, the term Sign languages is used for the purpose of this paper.

Hearing children learn by listening to the language spoken around them. However, hearing impaired children, need to see sign languages used around them in order to learn. They also need to learn to read and write the language that is spoken in the community, just as hearing children learn to read and write. They can learn all other school subjects too, with the help of sign languages. However, they will need special help to do this.

The sign language that families develop with their deaf children is usually not very complete. Using the signs of the sign language with talking is helpful until sign language has been learned by the child and the family and community. This is not sign language but it is signed language the natural language of Deaf people when they communicate with one another

(Werner, 1994). However, people have joined together to create sign languages which are much more complete.

Generally, it is understood that hearing-impaired children's brains are not affected by their impairments, they can learn about the world around them and all the school lessons through sign language. They use their eyes to see the language, and their hands, face and body to produce the language.

Total communication: - Total communication is an approach that encourages a child to learn and use all the different methods that work well for that child in his or her particular community (Werner, 1994). The children receive input through speech reading, amplification, finger spelling, and sign language.

Total communication does not mean that all the above methods are used for every child. It means that we try all the methods that might work for a child. “Then we work with whatever methods will help the child communicate as easily, quickly, and fully as possible with his or her family and community” (Werner, 1994; Moores, 1996, p.13).

Moreover, research does indicate that no one method or collection of methods can meet the individual needs of all children. Depending on the particular child and situation, the teacher uses a combination of such techniques as auditory training, speech-reading, sign language, and finger spelling (Hallahan & Kauffman, 1988). We must adapt our methods to the needs of the particular child and to the realities of the community where he or she lives. To shed more light on this point, it is helpful to see individual differences among children hearing impairment themselves in some detail.

If a child is only partially deaf, sometimes we can help him or her to hear more clearly, to understand more speech, and perhaps learn to speak. A child who has no hearing ability at all

usually cannot be helped to hear. But if they became deaf after beginning to speak, perhaps he or she can be helped to read people's lips and to improve speech. However, it is difficult for even the best lip readers to get the full content of a lesson or conversation from lip-reading by itself since many sounds that are used in talking are not visible so words may look alike but be different. It is not also easy for persons who became deaf after many years of listening and talking to learn sign language. This is mainly because they have relied for so long an auditory perception that to change to visual perception is not easy (Werner, 1994).

Werner (1994) indicated that learning sign language and other forms of communication first actually makes it easier for a child to learn, to speak, and to read lips. For all these reasons, therefore, more and more experts and organizations of people with hearing impairment recommended teaching most children with hearing impairment a combination of methods.

2.8 Comparison of Mode of Communication for Students with Hearing Impairment in Regular and Special Schools.

The need to consider communication needs in designing appropriate educational programs for Deaf children was classified by the 2006 amendments to the IDEA. Consider the communication needs of the child, and in the case of a child, who is Deaf, consider the child's communication needs, opportunities for direct communication with peers and teachers in the child's communication mode, academic level, and full range of needs, including opportunities for direct instruction in the child's language and communication mode.

The mode of instruction used is may related to school placement. Schidroth and Hotto (1993) analyzed the primary teaching method used with children with hearing impairment in four types of placement. Rather than use terms such as special school, special class, and regular school, they used descriptor such as day school, local not integrated, and local integrated

placement. According to their report, in residential schools, 92 percent were taught through sign language speech compared (total communication) to only 38 percent in local integrated settings, where the majority received auditory/ oral instruction. In other setting, 72 percent of children were instructed through sign and speech. There is big difference between residential and local integrated schools in mode of instruction with students with hearing impairment.

2.9 School Facilities for Children with Hearing Impairment

Facilities are designed and maintained to enhance the provision of instruction and services to meet the unique communication, education, and safety needs of children who are Deaf in school.

The impoverishment of facilities, lack of instructional materials and declining quality of teachers has contributed to the decline of educational standards in general and the impact was bad on the quality of teaching in Science, Mathematics and English in particular (ETP, 1994). Schools inputs that have primary importance in policy decisions are allocation of resources in terms of teachers' quality, student teacher ratio, availability of boarding accommodation, and facilities like library, resource room, and other instructional (ETP, 1994).

According to Reed and Bargeman (1995) an educational instruction is effective when:

- There is a positive ethos where student and teacher are expected to achieve and are told they can; standards for achievement are related to individual differences; lines of communication among teachers, students, parents, and community are kept open; students, from various back grounds, disability, and cultures, study and socialize together;
- There is a clearly understood goal where student parents and administers agree on goals for academic achievement.

- There is classroom climate conducive for learning.
- There are effective teachers
- Good communication, active student involvement, positive incentive, and reward.

Thus, in the following paragraphs, some of the highlights of the variables related to teachers of deaf students and instructional facilities for the Deaf students are compared in regular and special schools to examine where students with hearing impairment get appropriate services.

2.9.1 Comparison of Qualification of Teachers in Regular and Special Schools

Teachers of the Deaf have to be trained as teachers of hearing children, but have to have an additional qualification to children with hearing impairment. Most frequently, these are separate courses, general training first and then the special training either immediately after the initial training or after some years teaching experience (Reed, 1987; Kirk, et al., 1993) There is a need for specialization in sign language, in speech-reading, in the development of speech, in anatomy and physiology of the ear and of the organs of speech, as well as mastery of the fields of subject matter (Heward & Orlansky, 1988).

Based on recent reports, it has also emphasized that teachers of Deaf children need to learn sign language and know how to use it very well in teaching (UNESCO, 2000). But if they have Deaf children to teach before they have opportunity to learn sign language well, they can help the children by learning some signs and using them when they talk. This is not sign language and should be replaced by sign language as soon as possible.

According to Corbett and Jensema (1981) as cited in Moores (1996) study teachers of the Deaf students in the united State tend to be young, well-educated, white female. Moores

(1996) reported highly similar results. Consistent with Corbett and Jensema's findings, teachers of the Deaf were found to be predominantly white, hearing, female, and highly educated (Mooores, 1996). Deaf professionals, both teachers and administrators, tended to work in residential schools. Teachers of Deaf students need to have the necessary skills to help their Deaf students to enable them to use their potentialities. They are required to positively interact with these students.

To the effective teaching of Deaf children, the following points according to Heward and Orlansky (1988) are the most important, hence, must be followed by teachers.

1. Provide language instruction

2. Teaching small groups of Deaf students who function on different levels.

3. Developing and adopting instructional materials and enhancing positive self-concept.

4. Using information from various assessment procedures to develop individualized educational program and dealing with crisis calmly and effectively. In practical processes the teachers of deaf children according to Ysseldyke and Algozzine (1995) should pay attention to the following topics:

a. Reduce distance between students as much as possible

b. Speak slowly and stress clear articulation

c. Reduce background noise as much as possible

d. Seat students near the center of desk arrangements and away from distracting sounds.

e. Use face-to-face contact as much as possible

f. Use complete sentences to provide additional context during conversation or instructional presentations

g. Use visual cues when referring to objects in classroom and during instructional presentations

h. Encourage independent activities, cooperative, and social skills.

2.9.2 Comparison of Equipment Facilities for Students with Hearing Impairment in Regular and Special Schools.

The problems of instruction for the children with hearing impairment are such that the best of facilities should be available. The rooms and general atmosphere must be cheerful and have plenty of illumination so that the speech-reading and other visual needs shall be well provided (Tilahun, 2002). Physical equipment such as audiometers of all kinds, hearing aids, and similar material should be at hand.

According to UNESCO (2000), all necessary materials like audiometer, otoscopy, visual materials, and sign language books may be available in special school for the deaf. Moreover, there are more teachers and a bigger range of subjects and skills can be taught. However, regular schools that designed for hearing children may not have specialist equipment, and sign language and related books.

2.10 Concepts of Educational Setting for Children with Hearing Impairment

Schools are required to ensure that "a continuum of alternative placements is available to meet the needs of children with disabilities for special education and related services" (IDEA, 2006). The range of educational options might include general education classes (inclusion or integration), itinerant programs, resource rooms, special day classes, special day schools, and residential schools (Moores, 1996). Students who are deaf can be found in setting ranging from general education class rooms to residential institutions. Even though students with hearing impairment are now included to a very high degree in general education class rooms, they are still served in special schools or residential settings more than most other disability categories

(Moores, 1996). Deaf schools are not just an educational option, but are the only beneficial placement for many Deaf children (Antia, Kreimeter, & Reed, 2008).

The American Annuals of the deaf data suggest some interesting trends. First, the deinstitutionalization movement seems to have had a significant impact on residential schools and day schools for the Deaf (Moores, 1996). The use of manual interpreters in regular classrooms has led to an increase in the number of children with hearing impairment in regular classrooms. Students with hearing impairment enrollment in residential and day schools each dropped by more than 50 percent. However, local schools or regular schools attendance now accounts for 70 percent of enrollment in programs for the Deaf (Moores, 1996).

According to American National Association of the Deaf (ANAD), no other educational setting can offer the spontaneity and freedom of communication found in schools for the Deaf. Schools for the Deaf are unique and provide a community of genuine membership for many Deaf children. Students in these schools develop emotional, social and cognitive abilities that are crucial to realizing human potential and identity. Many people within the community have been critical of the degree of inclusion that is occurring (Aldersley, 2000 as cited in Hallahan, Kauffman, & Pullen, 2012). Several organizations including the National Association for the Deaf, have issued statements supporting the full continuum of placements. They argue that residential schools have been a major influence in fostering the concept of Deaf culture and the use of sign language. Inclusion they believe, forces students who are Deaf to lose their Deaf identity and places them in a hearing and speaking environment in which it is almost impossible for them to succeed.

In particular, critics of inclusion argue that when a student who is Deaf is placed in a setting with children who do not have a disability, she or he is usually the only student with a

hearing impairment in the class. This lack of a “critical mass” of students who are Deaf can lead to a lack of peers with whom the student who is Deaf can communicate and a high degree of social isolation. Some evidence shows that this social isolation is experienced most acutely at the middle and high school levels (Oliva, 2004 as cited in Hallahan, Kauffman, & Pullen, 2012).

According to Feleketch (2000) the major academic problems in regular schools are lack of trained man power on special needs education and problem related to instructional methods since sign language is the medium of instruction and it is not well developed to express concepts, technical words, and new ideas to students with hearing impairment.

Chapter Three

3. Methodology

3.1 Research Design

The general methods employed in order to achieve the objectives stated in the earlier chapter were a survey based on non-experimental comparative design. A research design is the logic that links the data to be collected (and conclusion to be drawn) to the initial questions of the study (Yin, 2003).This non-experimental comparative design included different instruments of data collection by tests from Deaf students that were collection of data on Deaf students' academic achievement and questionnaire to teachers of Deaf students to gather data about teaching approach, mode of communication, and school facilities for Deaf students. The purpose was to get adequate information so as to be able to 1ook into the academic achievement of students with hearing impairment they have in their schools. Besides record analysis instrument was used to obtain information about three subject areas such as Amharic, English, and Mathematics mark and average first semester scores of grades 5, 6, 7, and 8 students with hearing impairment by teacher assessment of the schools and information about age of onset of hearing loss of Deaf students obtained from students' profile that recorded by selected schools for this research.

3.2 Research Site

The study was conducted at Yekatit-23 primary school and Alpha special school for the Deaf in Addis Ababa. The main reason for selecting these schools for the study was that the researcher has experience with Deaf education and the schools are selected purposively for the study. Hence, the researcher believed that adequate information could be obtained.

3.3 Sources of Data

The major data sources for this study were pupils with hearing impairment in grade 5, 6, 7, and 8 at Alpha special school for the Deaf and at Yekatit-23 primary school. In addition to this, teachers who taught in the above selected schools were also used as a source. Schools' document (roster and students' profile) was also used.

3.4 Population and Sampling Techniques

The population for this study consisted of two groups. This included regular school second cycle Deaf pupils and teachers who assigned second cycle from Yekatit-23 primary school and special school second cycle Deaf pupils and teachers who assigned second cycle from Alpha special school for the Deaf. The number of regular school second cycle Deaf students was 49; all of these were included in the study and the number of teachers who teach from grades 5, 6, 7, and 8 was 11; all of these were included in the study. The number of special school second cycle was 64, out of this 49 (76.56 %) were participated in the study. Because in the study the number of regular and special schools participant should be equal. The number of special school teachers who teach from grades 5, 6, 7, and 8 was 13. From regular school Deaf students and teachers, and special school teachers, appropriate participants were drawn by using comprehensive sampling technique whereas special school Deaf students, appropriate sample was drawn by using simple random sampling technique. Hence, to constitute the population, one hundred twenty two subjects (49 Regular School Deaf students and 49 Special School Deaf students; and 11 regular school teachers and 13 special school teachers) were assigned. The table below shows the number of participants in the main study.

Table 3.1

Number of Deaf Student Participants in the Main Study

Grade levels	Study groups					
	Regular school deaf students			Special school deaf students		
	F	M	T	F	M	T
5	5	3	8	5	2	7
6	5	4	9	5	6	11
7	7	6	13	6	6	12
8	7	12	19	8	11	19
Grand Total	**24**	**25**	**49**	**24**	**25**	**49**

Table 3.2

Number of Teacher Participants in the *Main Study*

Study groups	sex	frequency
Regular school teachers	M	8
	F	3
Special school teachers	M	9
	F	4
Grand Total		**24**

Age of onset of hearing loss of the informant Deaf students is concerned. Out of 98, the majority that is 79 pupils whose deafness were presented prior to the development of spoken language they are prelingually Deaf, while the rest 19 pupils whose deafness occurred after they develop spoken language they are postlingually Deaf. From 49 special school Deaf students 42 are prelingually Deaf, while the rest 7 pupils are postlingually Deaf. From 49 regular school Deaf students 37 are prelingually Deaf, while the rest 12 pupils are postlingually Deaf (see table 3.3 below).

Table 3.3

Distribution by Age of Onset of Hearing Loss

Study groups	**Age of onset of hearing loss**	
	Prelingually Deaf	Postlingually Deaf
Regular school Deaf students	37	12
Special school Deaf students	42	7
Total	**79**	**19**

As far as the qualification of the teachers is concerned, out of 24, the majority that is 14 teachers are diploma holders, while the rest 10 teachers are degree holders. From 11 Regular School Teachers 3 teachers are degree holders while 8teachers are diploma holders. From 13 Special School Teachers, 7 teachers are degree holders while 6 teachers are diploma holders. In both study groups qualification disparity is observed. That is, more teachers in special school were degree holders than teachers in regular school (see table 3.4 below).

Table 3. 4

Distribution by Teachers' Qualification

Study groups	**Qualification**	
	Degree	Diploma
Regular school teachers	3	8
Special school teachers	7	6
Total	**10**	**14**

Out of 24 teachers, 7 teachers did not have any special education training while the remaining 17 teachers had the training. From 11 Regular School Teachers, 5 teachers did not get any form of special needs education training whereas the rest 6 teachers had the training. From 13 Special School Teachers 11teachers had got special education training whereas the rest 2 teachers did not (table 3.5 will reveal this fact).

Table 3.5

Distribution by Special Needs Education Training

Study groups	**Special Education Training**	
	Who get	Who do not get
Regular school teachers	6	5
Special school teachers	11	2
Total	**17**	**7**

From the 24 teachers, almost half of them that are 10 teachers have served for less than 5 years in teaching Deaf students, 10 teachers have above 5 years and less than 15 years of teaching experience in teaching Deaf students, and the rest 4 teachers have served for above 15 years in teaching Deaf students. From 11 Regular School Teachers 7 teachers have served less than 5 years in teaching Deaf students the rest 4 teacher have above 5 years and less than 15 years of teaching experience in teaching Deaf students. From 13 special school teachers, 3teachers have served for less than 5 years in teaching Deaf students, 6 teachers have above 5 years and less than 15 years of teaching experience in teaching Deaf students whereas the rest 4 teachers have served for above 15 years in teaching Deaf students.

Table 3.6

Distribution by Teaching Experience

Study groups	**Teaching experience**		
	0 – 5 years	6 – 15 years	>15 years
Regular school teachers	**7**	**4**	**_**
Special school teachers	3	6	4
Total	**10**	**10**	**4**

3.5 Variables Included in the Study

3.5.1 Independent Variable

The independent variables are taken from the assumption that educational settings have an effect on the students' with hearing impairment academic achievement. To study this effect various educational settings have been studied particularly special school for the Deaf and regular school which mainstreaming Deaf students. In this study, too, these two educational settings were studied.

3.5.2 Dependent Variable

Dependent variable in this study is academic achievement. It includes compensatory subjects such as Amharic, English, and Mathematic in grades 5, 6, 7, and 8. Each dependent variable is treated independently and finally as one composite variable presented as academic achievement of students with hearing impairment in special and regular schools.

3.6 Instruments

Data that have quantitative value were gathered from recorded data and through instruments that were developed by a group of teachers who are teaching in the selected schools. Before developing the teacher-made tests table of specification were prepared for each grade level subjects. To develop the questionnaire the relevant and related literature on teaching approach, mode of communication, and school facilities for children with hearing impairment were thoroughly reviewed.

3.6.1 Teacher-Made Test

Teacher-made tests are classroom tests and are developed by the teachers. These tests assess students learning after a particular unit of study (Quenemoen, Thomeson, & Thurlow, 2003). It helps the researcher to assess the students' academic performance. Before the teacher-made tests prepared table of specification or blue prints were prepared for each grade subjects that the study emphasized. Teacher-made tests that multiple choice tests were prepared in basic area of curriculum such as English, Amharic, and Mathematics by English, Amharic, and Mathematics subject teachers from both schools collaboratively. To adequately cover the first semester entire content and to give better chance for students the teacher-made tests were comprise 50 items for each subject and administrated for the students with hearing impairment in both schools in two sessions. The administration of printed question sheet in which the student was to fill in and return within a maximum of 40 minutes following this in the same time for both schools the practical activity was carried out on the same base there was sufficient time for students to response. The results were evaluated and complied.

3.6.2 Questionnaire

The questionnaire included closed ended questions. It had three parts: Part l Contains items to collect demographic data of the teachers; Part 2 Contains rating scale items in order to assess teaching approaches and mode of communication that used the teachers to interact with the students with hearing impairment. Each informant was required to mark each statement by choosing one of the five alternatives: Always, Often, Sometimes, Rarely, and Never. The individual statements are clearly favorable or clearly unfavorable. Responses were given the values 5, 4, 3, 2, and 1for always, often, sometimes, rarely and never respectively, to each score by crediting 5, 4, 3, 2, 1 respectively, to each alternative from the favorable to the unfavorable end. The sum of the values constitutes individual's total score. Part 3 contains Likert-scale items in order to assess the schools facilities for Deaf students. Each informant was required to mark each statement by choosing one of the five alternatives: Strongly Agree, Agree, Undecided, Disagree, and Strongly Disagree. The individual statements are clearly favorable or clearly unfavorable. Responses were given the values 5, 4, 3, 2, and 1for Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree respectively, to each score by crediting 5, 4, 3, 2, 1 respectively, to each alternative from the favorable to the unfavorable end. The sum of the values constitutes individual's total score.

3.6. 2.1Construction and Development of Items of the Questionnaire

Before writing down items of the questionnaire, a rigorous search for relevant concepts from related fields and disciplines was made. Based on this, items were written and rewritten. In this study 3 graduate students were used to judge a total of 35 items. The items were presented to the judges on a 5-point continuum. Judges were instructed to mark (√) under the number they believed corresponded to the value of the item along the continuum. And then the items were

given for two instructors in the Department of Special Needs Education at AAU for general comments.

3.6.2.2 Instrument Reliability and Validity

Whatever instrument and procedure for collecting data is selected, it should always be examined critically to assess what extent it is likely to be reliable and valid. Reliability is the extent to which a test or procedure produces similar results under constant conditions on all occasions. Validity tells us whether an item measures or describes what is supposed to measure or describe (Bell, 1999). Proper consideration had been taken in order to make the data collected to be valid and reliable. The researcher has taken two major steps to make the collected data valid and reliable.

The first step was preparing blue print or table of specification for each grade level subjects that include the study and the test items, which gave a chance to check and recheck the items and made proper corrections before they were administered and pilot testing for the questionnaires. The questionnaires prepared for teachers were pilot tested by choosing sample randomly from the assumed respondents. 9 special school teachers (100%) and 12 regular school teachers (13.63%) of the total assumed respondents. And the result of pilot study for the reliability was found to be $\alpha = 0.86$, which can be regarded as an indication of quite high reliability. Therefore, the questionnaire items were used to measure favorable condition for deaf students' academic achievement. The second measure was using different data collecting instruments; tests, questionnaire, and record analysis (triangulation of instruments) to collect data.

These being the major steps taken towards ensuring the validation and reliability of the data, in addition I believe the following points strengthen the validity and reliability of the data collected:

- Time and effort exerted to prepare the instruments.
- The instruments were thoroughly discussed with advisors.
- The respondents are those who have direct relationship with the teaching- learning process.
- Most of the data collection was conducted in the presence of the researcher.

3.6.3 Document Analysis

The information about the Deaf students' first semester result of the academic year and age of onset of hearing loss were obtained from the schools record office.

3.7 Recruitment of the Field Work

Twelve teachers who are teaching Deaf students in regular and special schools were employed to prepare the tests. Out of twelve teachers, eight teachers who know sign language very well were recruited to administer the tests to Deaf students. Four of them were assigned in regular school the other four were assigned in special school. Training or orientation was given to participants before they administer the tests to Deaf students to familiarize them with their duties.

3.8 Pilot Study

Pre-test of the questionnaire was conducted before the actual fieldwork. The purpose of the pretest was to find out ambiguities in the instruments. It also helped to correct awkward sequences of the items in the instruments and other weaknesses. For the test pilot study, 9 special school teachers and 12 regular school teachers were chosen as subjects. The sample was

drawn by using simple random sampling technique for regular school whereas special school census sampling used. The two sample schools were selected purposively. Teachers who were teaching in the second cycle (grades 5, 6, 7, & 8) were included in the sample.

Table 3.7

Number of Participants in the Pilot Study

Study Group	**Teachers**		
	F	M	Total
Victory special school for the Deaf teachers	3	6	9
Menilik II primary school teachers	4	8	12
Total	**7**	**14**	**21**

On the basis of the given responses, the internal consistency reliability of the questionnaire items was calculated by using the Coefficient alpha was used to check the reliability of the homogeneousness in its questionnaire items (refer to appendix E). The computed reliability coefficient Cronbach's Alpha was found to be o.86.

Thus, the instrument was found valuable to collect the data for the main study and hence it was administered as scheduled.

Table 3.8

Comparison of Instructional Approach and School Facilities (Pilot Study)

Variables		Mean	Std.dev	df	Sig(2-tailed)	t
Instructional approach	Regular school	79.85	2.27	19	0.008	-3.27
	Special school	84.00	2.00			
School facility	Regular school	47.43	1.13	19	0.000	-18.94
	Special school	63.00	1.73			

The result of the pilot study indicated that instructional approach the mean scores of regular and special schools are 79.85 and 84.00 respectively with standard deviations of 2.27 and 2.00 respectively. The p-value for 20 degree of freedom assuming a two-tailed test is 0.008. Thus, there is a statistically significant difference in the instructional approach that favorable condition for students' with hearing impairment academic success between regular and special schools. This may imply that special school has more favorable conditions for deaf students academic achievement than regular school.

Regarding school facilities the mean score of regular and special schools are 47.43 and 63.00 respectively with standard deviations of 1.13 and 1.73 respectively. The p-value for 20 degree of freedom assuming a two-tailed test is 0.000. Thus, there is a statistically significant difference in the school facilities that favorable for pupils' with hearing impairment academic achievement between regular and special schools. This may imply that special school is more favorable for pupils with hearing impairment academic achievement than regular school.

3.9 Procedures

3.9.1 Data Collection

Before the onset of data collection, locations of the study (regular school and special school which are found in Addis ketma sub city and in Bole sub city respectively) were visited and rapport was built with the schools' principals. Then, the subjects were told that the purpose of the study was to investigate the level of academic achievement of students with hearing impairment in regular and special school. And the tests and questionnaire were administered in each school by the researcher and her assistants. Assistants were briefed about administering the instrument beforehand. Likewise, before the informants done the tests and filled out the questionnaire, appropriate instruction was given. In the instruction, emphasis was placed on getting an honest done of the Deaf students and accurate record of the teachers' own reactions and feelings. It was pointed out for the students that this was a test, so there was right or wrong answers as much as they done carefully.

On the other hand, it was pointed out for the teachers that the questionnaire was no a test, so there was no right or wrong answers and the responses were confidential and would not be seen by others. Teachers were not required to write their names on the questionnaire. The questionnaire distributed was collected after two days. It should be noted that all of the initial 24 subjects are returned fully completed questionnaire. No further difficulties were encountered in the administration of the questionnaire. Whereas the administration of tests was so difficult that the main problem was when the test is administer? The test administration process needed long time so the schools' principals argue that the tests didn't administer in the class schedule. Finally they decided the tests administer after class schedule.

3.9.2 Techniques of Data Analysis

To examine the level of academic achievement of Deaf students in regular and special schools and to see the relationship of some demographic variables, instructional approach, and school facilities with Deaf students' academic achievement; some statistical methods were employed. Descriptive data analysis (by using frequency distribution, average, mean score, percentage, and standard deviation) has been used to describe the data on the basis of the reaction of the respondents to questionnaire items and tests. Inferential statistics that t-test was used to see whether there is academic achievement difference or not between Deaf students' who learn in special and regular schools.

Since the items in part two and three of the questionnaire were prepared in such a way that answering either 'Always', 'Often', 'Sometimes', 'Rarely', or 'Never' and answering either 'Strongly Agree', 'Agree', 'Undecided', 'Disagree', or 'Strongly Disagree' is appropriate to indicate mode of communication and school facilities for Deaf students respectively, responses were converted in to a numerical value.

To analyze the obtained data, descriptive statistics such as means, standard deviations and percentages of variables were used extensively. And also t-test was used to see whether or not there is a significant instructional approaches and school facilities difference between Regular and Special Schools. The statistical that was used in the study was SPSS (version 21) program. The level of significance was assumed to be alpha = 0.05.

3.10 Ethical Issue

Proper permission was requested from Alpha special school for the Deaf and Yekatit-23 primary school principals. The school principal was conducted and the whole purpose of the study and area of expected cooperation discussed thoroughly. The teachers and students who

participated in this research were informed about the aim of the research and their consent was obtained. It was made clear to all respondents the information they gave will remain confidential until the end of the study and all materials will get rid off at the end of the study

Chapter Four

4. Results

The sample size (N) for the groups' regular and special school was 122. Of this, 98 (80.33%) were Deaf students and the rest 24 (19.67%) were teachers of Deaf students. From 98 Deaf students 49 (50%) were Deaf students who are learning in Alpha special school for the Deaf and 49 (50%) were Deaf student who are learning in Yekatit-23 primary school. Out of 24 teachers of Deaf students 13(54.17) were teaching second cycle in Alpha Special School for the Deaf and the remaining 11(45.83%) were teaching second cycle in Yekatit-23 primary school. Therefore, on the basis of the given responses by the participants, the main findings of the study are presented in the following manner.

4.1 Personal Information of the Participants

The age of onset of hearing loss of Deaf students who are learning in regular and special schools categorized in to prelingually Deaf and postlingually Deaf. Most of the special school Deaf students are prelingually Deaf. Out of 49 Deaf students 42 (85.71) were prelingually Deaf and the remaining 7 (14.29) were postlingually Deaf. From 49 regular school Deaf students 39 (79.59) were prelingually Deaf and the rest 12 (24.48) were postlingually Deaf.

Information about the teaching staff of Deaf students is important to look into the level of support that can be given to the Deaf students. The major characteristics of teachers of Deaf pupils in both regular and special schools are summarized in the following table.

Table 4.1

Teacher Participants by Sex, Qualification, Teaching Experience, Special Needs Education Training, and Hearing Status

Variables	Category	Study groups			
		Alpha school		Yekatit-23 school	
		frequency	%	frequency	%
Sex	Female	4	30.77	3	27.27
	Male	9	69.23	8	72.73
	Total	13	100	11	100
Qualification	Degree	7	53.85	3	27.27
	Diploma	6	46.15	8	72.73
	Total	13	100	11	100
Teaching Experience	0 – 5 year	3	23.08	7	63.64
	6 – 15 year	6	46.15	4	36.36
	Above 15 year	4	30.77	__	__
	Total	13	100	11	100
Special Needs Education Training	Who got	11	84.62	6	54.55
	Who do not got	2	15.38	5	45.45
	Total	13	100	11	100
Hearing Status	"Normal"	3	23.08	9	18.18
	Deaf	10	76.92	2	81.82
	Total	13	100	11	100

In terms of qualification status, out of 13 special school teachers who are teaching in second cycle 7(53.85%) were degree holders and the rest 6(46.15%) were diploma holders. From 11 regular teachers who are teaching in second cycle 3(27.27%) were degree holders where are the rest 8(72.73%) were diploma holders. Hence, more regular school teachers appeared to be at a lower qualification level than teachers in special school.

Regarding total years of experience in teaching Deaf students, from 13 special school teachers 3(23.08%) have below 6 years of experience in teaching Deaf students, 6(46.15%) teachers have above 5 years and below 15 years of experience in teaching Deaf students, and the remaining 4(30.77%) serve for above 15 years in teaching Deaf students. Out of 11 regular school teachers 7(63.64%) serve for below 6 years in teaching Deaf students and whereas the rest 4(36.36%) have above 5 years and below 15 years of teaching experience in teaching Deaf students. As a whole, it appears that more special school teachers have a relatively higher teaching experience than regular school teachers.

Concerning special needs education training, out of 13 special school teachers who are teaching in second cycle, 11(84.62%) have got special needs education training while the remaining 2 (15.38%) teachers did not have any special needs education training. From 11regular school teachers who are teaching in second cycle, 6 (54.55%) had special needs education training whereas the rest 5 (45.45%) did not get any form of special needs education training. As a whole, it appears that special school teachers have got special needs education training than regular school teachers.

4.2. Results of Teacher-Made Tests and Classroom Teachers' Assessment

The information obtained from Alpha special school for the Deaf and Yekatit-23 primary school first semester roster of the academic year; the Deaf students' first semester academic achievement were compared by using average score. Out of 49 regular school deaf students 3(6.12%), scored below 5o% average in the first semester whereas the rest 46(93.88%), their average is above 50% average. Again out of 49 special school deaf students no one did have got below 50% average all of the 49 Deaf students scored above 50% average academic achievement in first semester of the academic year.

Table 4.2

Comparison of Achievement Average Scores of Deaf Students with Three Subjects in Regular and Special Schools

Subject		Mean	Std.dev	df	Sig(2-tailed)	Mean differ.	t
Amharic	**Regular school**	56.07	10.83				
	Special school	63.47	11.32	96	0.001	-7.14	-3.28
English	**Regular school**	55.07	9.80				
	Special school	58.08	10.34	96	0.088	-3.51	-1.72
Mathematics	**Regular school**	51.48	9.11				
	Special school	58.64	7.46	96	0.00	-7.16	-4.26

As shown the above table 4.2, regular and special schools Deaf students average scores calculated by taking the schools' first semester roster and teacher-made tests result; in all three subjects the mean score of special school Deaf students is greater than regular school Deaf students. However, the mean difference between English academic achievement of the Deaf students in regular and special schools is no statistically significant $t(96) = -1.72$, $p > 0.05$.

On the basis of the students' score in each subject; means and standard deviations were computed in order to describe the level of academic achievement of students with hearing impairment. Consequently, the mean differences between groups (students with hearing impairment who are learning in special and regular schools) were examined by employing t-test.

In order to check whether or not academic achievement of deaf students vary with respect to their hearing loss (age of onset of hearing loss), comparison was made by using t-test.

Table 4.3

Comparison of Achievement Scores of Deaf Students with Three Subjects by Age of Onset of Hearing Loss

Subjects		Mean	St.Dev	df	Sign(two-tailed)	Mean diff.	t
Amharic	**prelingually Deaf**	58.17	10.90				
	Postlingually Deaf	66.26	12.54	96	0.016	-8.08	-2.81
English:-	**prelingually Deaf**	56.36	10.15				
	Postlingually Deaf	58.74	10.32	96	0.374	-2.37	-0.91
Mathematics	**Prelingually Deaf**	54.60	9.06				
	Postlingually Deaf	56.94	8.87	96	0.313	-2.33	-1.01

In table 4.3 above, academic achievement of deaf students who are prelingually Deaf and postlingually Deaf in regular and special schools were compared. The mean score of postlingually Deaf students is greater than prelingually Deaf students in all the three subjects. In Amharic the mean difference between prelingually Deaf students and postlingually Deaf students is statistically significant $t(96) = -2.81$, $p < 0.05$. This implies that postlingually Deaf students' Amharic subject achievement is better than prelingually Deaf students' Amharic subject achievement in both educational settings. However, in English and Mathematics the mean difference between prelingually Deaf students and postlingually Deaf students is no statistically significant $t(96) = -0.91$, $p > 0.05$ and $t(96) = -1.01$, $p > 0.05$ respectively.

Hence, this finding may imply that there is no significant relation age of onset of hearing loss between English and Mathematics subjects achievement of Deaf students in both regular and special schools.

Table 4.4

Comparison of Achievement Scores of Deaf Students with Three Subjects by First Semester Score and Teacher-Made Tests Results in Regular and Special Schools.

Subject		Mean	Std. Dev	df	Sign(2-tailed)	Mean diff.	t
Amharic 1st Semester	**Regular School**	58.24	12.79	96	0.00	-17.04	-6.81
	Special School	75.29	12.05				
Amharic Teacher-Made Test	**Regular School**	54.78	11.55	96	0.51	-1.65	-0.66
	Special School	53.12	12.97				
English 1st Semester	**Regular School**	62.43	12.44	96	0.06	-5.06	-1.99
	Special School	67.49	13.86				
English Teacher-Made Test	**Regular School**	46.33	9.62	96	0.03	-6.47	-3.07
	Special School	52.80	11.18				
Mathematics 1st Semester	**Regular School**	59.41	12.70	96	0.00	-17.16	-4.95
	Special School	70.57	9.35				
Mathematics Teacher-Made Test	**Regular School**	42.59	7.26	96	0.00	-6.16	-3.68
	Special School	48.76	9.19				

As it is indicated in table 4.4 above, an attempt was made to compare Amharic, English, and Mathematics academic achievement of students with hearing impairment in regular and special school for their first semester score and teacher- made tests result by using a t-test as statistical model. The mean scores of regular and special school Deaf students in Amharic by

first semester score are 58.24 and 75.29 respectively with standard deviations of 12.73 and 12.05 respectively. The mean difference between Amharic achievement of regular and special School Deaf students is statistically significant $t(96) = -6.81$, $p < 0.05$. This implies that Amharic achievement of special school Deaf students is better than Amharic achievement of regular school Deaf students. Again Amharic subject achievement of the Deaf students was also compared by teacher-made test result. As it is presented in table 4.4, the mean scores of regular and special schools Deaf students are 54.12 and 53.78 respectively with standard deviations of 11.55 and 12.97 respectively. There appeared no statistically significant mean difference between Amharic achievement of regular and special school Deaf students $t(96) = -0.66$, $p > 0.05$. Hence, there is no difference in their Amharic achievement.

In table 4.4 above, English achievement of regular and special schools Deaf students that assessed by their teachers in first semester roster were compared. The mean scores of regular and special schools Deaf students are 62.43 and 67.49 respectively with standard deviations 12.44 and 13.86 respectively. English achievement mean difference between regular and special schools Deaf students is no statistically significant $t(96) = -1.99$, $p > 0.05$. On the other hand, English achievement of regular and special schools Deaf students that assessed by teacher-made test were compared. The mean scores of regular and special schools Deaf students are 46.33 and 52.80 respectively with standard deviations 12.44 and 13.86 respectively. The mean difference between regular and special schools deaf students academic achievement is statistically significant $t(96) = -3.07$, $p < 0.05$.This implies that Special School Deaf students' English achievement is better than regular school Deaf students' English achievement by teacher-made test result.

Again in table 4.4 above, Mathematics achievement of regular and special schools Deaf students that assessed by their teachers were compared. The mean scores of regular and special schools Deaf students are 59.41 and 70.57 respectively with standard deviations 12.70 and 9.35 respectively. Mathematics achievement mean difference between regular and special schools Deaf students is statistically significant $t(96) = -4.95$, $p < 0.05$. This implies that Special School Deaf students' Mathematics achievement is better than regular school Deaf students' Mathematics achievement by their first semester result of the academic year. Again, regular and special schools Deaf students' Mathematics achievement that assessed by teacher-made test were compared. The mean scores of regular and special schools Deaf students are 42.59 and 48.56 respectively with standard deviations 7.26 and 9.19 respectively. The mean difference between regular and special school Deaf students Mathematics achievement is statistically significant $t(96) = -3.68$, $p < 0.05$. This finding shows that Special School Deaf students' Mathematics achievement is better than regular school Deaf students Mathematics achievement by teacher-made test result.

4.3 Responses of the questionnaire

Based on the responses given for the items of the questionnaire, the teaching and communication approach and school facilities of the schools were computed. The school that has greater mean score value was considered as school has favorable condition for academic achievement of students with hearing impairment and the school that has less mean score value was considered as school has unfavorable condition for academic achievement of students with hearing impairment. The objective of this section of the study was to provide basic background information about the selected schools of the study.

Table 4.5

Comparison of Instructional Approaches and School Facility in Regular and Special Schools

Variables		Mean	St.Dev	df	Sign(2-tailed)	Mean differ.	t
Instructional approaches	**Regular School**	78.72	3.31				
	Special School	80.23	6.43	22	0.49	-1.50	**-0.69**
School facility	**Regular School**	39.18	6.40				
	Special School	53.84	2.67	22	0.00	-14.60	**-7.54**

As it is indicated in table 4.5 above, an attempt was made to compare regular and special Schools instructional approaches and school facilities that have influence on academic success of students with hearing impairment by using a t-test as statistical model. The mean scores of instructional approaches in regular and special Schools are 78.72 and 80.23 respectively with standard deviations of 3.31 and 6.43 respectively. The mean score of instructional approach in special school is greater than regular school. However, there appeared no statistically significant mean difference between regular and special schools $t(96) = -0.69$, $p > 0.05$ in the schools' instructional approaches.

The mean scores of school facilities in regular and special Schools are 39.18 and 53.84 respectively with standard deviations of 6.40 and 2.67 respectively. The mean difference between regular school facilities and special school facilities is statistically significant $t(96) = -7.54$, $p < 0.05$.This finding may imply that special school has better school facilities than regular school facilities for students with hearing impairment academic achievement.

Chapter Five

5. Discussion

As indicated in the earlier chapter, the purpose of this study was to examine the academic achievement of students with hearing impairment who are learning in regular and special schools in grades 5, 6, 7, and 8.

Some demographic variables contributing to academic achievement of deaf students were also considered. Furthermore, the study has also aimed at comparing the perceived factors that may predispose the educational settings to favor or disfavor the academic achievement of students with hearing impairment.

5. 1. Discussion of the Findings

In this section, major findings of the present study are going to be discussed in line with the major questions raised earlier; and examine the result in relation to findings of previous research.

5.1.1. The Status of Academic Achievement of Students with Hearing Impairment in Special and Regular School.

The emphasis here was to determine the level of academic achievement of students with hearing impairment in Alpha special school for the Deaf and in Yekatit-23 primary school. The first semester average score comparison made to determine the level of Deaf students' academic success in regular and special schools. The obtained result indicated that Deaf students in regular school out of 49 Deaf students, 3(6.12%) Deaf students scored below average minimum requirement while the remaining 46(93.88%) Deaf students scored above average. On the other hand, in special school almost all of 49(100%) Deaf students scored above average in first

semester of the academic year. According to Ethiopian Education and Training Policy (1994), in order to get promoted from one level to the next, students will be required to have a minimum of fifty percent (50%) achievement.

In addition, the results that obtained from teacher-made tests have shown the same academic achievement that the special school Deaf students test results was better than regular school Deaf students test results. However, the teacher-made tests result was lower than their first semester score in all three subjects particularly in Mathematics 70% of them scored below average in both special and regular schools (refer to appendix D). The results of this finding indicated that Deaf students in which educational setting have difficulty to perform paper-pencil test so the school teachers, administers, parents and special needs educators expected to do more in the area of Deaf education.

5.1.2 Relation of Academic Achievement of Students with Hearing Impairment in Special And Regular Schools in terms of Their Performance on Teacher-Made Tests Result and Classroom Teachers' Assessment.

The intention here was to see whether there is difference or similarity in academic achievement between regular and special schools Deaf students. And it is believed that at least it serves as an indicator of a possible area of intervention.

The statistical procedure, which was used to indicate the difference in three subjects' the average mean scores of regular and special schools Deaf students' first semester mark and teacher-made tests result, conveyed that there is statistically significant difference at alpha = 0.05 in most subjects between the two groups special and regular schools. More specifically, special school Deaf students have a mean of 63.42, 58.58, and 58.64 in Amharic, English, and

Mathematics respectively which is greater than the average mean score of regular school Deaf students that is 56.07, 55.07, and 51.48 in Amharic, English, and Mathematics respectively.

This finding seems to contradict with Kluwin and Moores (1985) found that after matching or controlling for factors Deaf students who received math instruction in general education classes had higher scores in math computation than students who received math instruction from teachers of Deaf in special classes. As a result, students in general education class rooms demonstrate higher math achievement than those in special classes (Lee & Smith, 1999). However, in this study Deaf students in special school exhibit higher mathematics mean score than those in regular school Deaf students' mathematics mean score by both schools' first semester roster and teacher-made tests result (see table 4.4).

As Moores (1996) reported that Jensema compared the academic achievement of Deaf students in different educational setting. He found that children with hearing impairment in integrated setting achieved highest on average. However, in this finding special school' Deaf students appeared to show a relatively higher mark in all three subjects than regular school Deaf students. On the other hand the study result appeared similar to Mishra and Singh (2012) report that the level of academic achievement of special school Deaf students is better than regular school Deaf students' academic achievement. The different educational placement has different school facilities, teaching approach, and mode of communication. The Deaf students' academic achievement difference may the result of other variables rather than educational placement itself. This idea supported by federal republic democratic of Ethiopian education and training policy, the impoverishment of facilities, lack of instructional materials, and declining quality of teachers has contributed to the decline of educational standards in general (ETP, 1994).

In studies conducted by various researchers in the previous years it was shown that the experience of seeing, hearing and forming words stimulates brain development in ways that help the child communicate more effectively (Diamond and Hopson, 1998 cited in Friend, 2010). The interaction of Deaf children with their hearing peers has vital role. Hallahan, Kauffman, and Pullen (2012) state:

> Communicating with others enables children to explore, problem solve, question and discuss, unfortunately, many children who are deaf do not engage in conversations with their family members, peers and neighborhood. When they do not have conversations those interactions often are controlled by adults and consist of question and answer interchange that are linguistically simple, concrete and literal. This pattern of limited conversations can have negative long term effects on the ability of individual who are deaf to acquire reading skill, writing skill, relate cause and effect, solve problems and make thoughtful decisions about behaviors. Language is a complex skill that challenges most students with hearing impairment, primarily because of the communication and language development connection. Acquisition of a first language and language development throughout early childhood and elementary school are necessary for individuals to become skilled readers. Many students with hearing impairment are learning to read at the same time that they are learning to communicate and use language and difficulties result. (p.227)

Research on the performance of students with hearing impairment using standardized tests of reading comprehension suggests that on average they encounter great difficulty in processing Standard English in print (Friend, 2010). Many children with hearing impairment do

not have books read to them by adults, which has been determined to be an essential component in literacy development (Adams, 1990 as cited in Friend, 2010).

In this study the results appeared similar to those mentioned in the literature. The results that obtained from teacher-made tests lower than from minimum requirement to promote class to class particularly in Mathematics subject. While compared the Deaf students Amharic and English mean score in both schools; the Deaf students' Amharic mean score was higher than English. The results may be depend on various variables such as teaching approach, mode of communication and age of onset of hearing loss of Deaf students. For Deaf students some Amharic subject contents are inappropriate like "matibek ena malalat", and "sem ena werk". These and other don't mention contents are very difficult to understand for Deaf students particularly for prelingually Deaf students so these sub-contents were not included in the teacher-made tests.

Another language area that included in this study was English. The Deaf students English mean score relatively lower when compared with Amharic, but English mean score was greater than Mathematics score in both educational settings by schools' first semester score and teacher-made test result. In second cycle the English text book content and the way of presentation very interested and clear especially the exercises have clear direction and understandable questions. It is favorable condition for Deaf students' academic success.

As Traxler (2000) report students with hearing impairment achieve at a higher grade level in mathematics than in language. However in this study his finding is not true the Deaf students' Mathematics achievement was lower than their language subjects (Amharic and English) achievement. Mathematics by its nature requires doing more exercise and study in classroom, home, and daily life. Students' text book should be flexible enough in order to meet

the need of the individual child; however, the existing practice of preparation of curriculum (Mathematics students' text book) doesn't allow meeting the learning needs of Deaf students. The current second cycle Math students' text book covered wide content. It is very difficult for Deaf students to accomplish the content as their hearing classmate. In every class there most certainly is a need for high degree of flexibility in order to adapt the learning environment to all pupils' level of mastery, learning possibilities and barriers (Johnsen, 2001). Deaf students have not experience as their age mate to discuss and to gain support from their classmate, sibling, and parents. As a result most Deaf students have difficulty to understand, compare, calculate, and solve a problem in all grade level (Johnsen, 2001).

5.1.3. The Schools' First Semester Roster Mark of the Academic Year and Teacher-Made Tests Result of Students with Hearing Impairment in Regular and Special Schools.

To measure the Deaf students' academic achievement several assessment types served. As consider the assessment types have influence on the result of Deaf students' mark. In the comparison of first semester rosters of the schools with teacher-made tests result in both regular and special schools the Deaf students' Amharic, English, and Mathematics achievement has difference.

The statistical procedure show that first semester score of Deaf students was higher than teacher-made tests result in all the three subjects. Classroom teachers assess the students learning accomplishment by using continues assessment that to measures the accomplishments of an individual after a period of learning. In addition, classroom teachers used different method of assessment to assess the degree of student's progress with his or her learning performance with reference to classroom activities. Assessment helps the teachers to assess individual pupil's

strengths and weaknesses and learning needs. It motivates the students to do more and to improve their academic achievement. It was Provide feedback for teachers as to assess the effectiveness of teaching methods. All teachers' assessment features, test administration, and scoring contribute on the students' academic achievement. As a whole continues assessment facilitate the Deaf students' academic achievement was better rather than summative measurement.

In the study the Deaf students' academic achievement was assessed by using multiple choice teacher-made tests. Multiple choice test can measure many of the simple learning outcomes and a variety of the more complex learning out comes. Thus, it is the most flexible of all types of item formats. This leads to its extensive use in achievement testing. Multiple choice tests are measuring all levels of cognitive ability and can provide diagnostic feedback highly reliable test scores. In investigation multiple choice tests in both regular and special schools the deaf students score lower mark in all the three subjects such as Amharic, English, and Mathematics particularly for Mathematics all most all of them score blow minimum requirement to promote from one grade level to the next. Ethiopian Education and Training Policy (1994), in order to get promoted from one level to the next, students will be required to have a minimum of fifty percent (50%) achievement.

Amharic mean score of deaf students in both special and regular schools have a gap when compare the Deaf students' first semester score and the teacher-made test result particularly in special school has a big gap. The special school Deaf students' first semester means score is 75.29 whereas the teacher-made test result means score is 54.78. This indicates that in special school the Deaf students have difficulty to read and understand the meaning of test items and relatively regular school Deaf students have better Amharic language reading

ability. It seems to similar with Biklen (1992) report that being integrated into regular classes can play a vital role in advancing better language and social skills for children with hearing impairment will do better when they sense that they are accepted and valued by their "normal" counterpart.

Deaf students' English mean score in both special and regular schools have a gap when the comparison of first semester score and teacher-made test result. The regular and special schools first semester means score were 62.43 and 67.49 respectively whereas the teacher-made test result means score were 46.33 and 52.80 in regular and special schools respectively. This implies that Deaf students have difficulty in read and understand the tests items concept. Students with hearing impairment have low academic achievement as a result of difficulties in understanding and expressing instructional medium (Moores, 1996). The result of this study seems to similar with Friend (2010) state that the performance of students with hearing impairment using standardized tests of reading comprehension suggests that on average they encounter great difficulty in processing Standard English in print. This finding is also supported by other study (Feleketch, 2000) that students with hearing impairment reported problems in reading and writing. Surveys (e.g., Schulz et al., 1991) indicated that hearing impaired individuals are at risk for reading and writing difficulties because the hearing loss affects their ability to construct accurate representations of sound-letter correspondences.

Mathematics means score of deaf students in both regular and special schools have a gap for both first semester score and teacher-made test result. The regular and special schools first semester means score were 59.41 and 70.57 respectively whereas the teacher-made test results means score were 42.59 and 48.76 in regular and special schools respectively. Deaf students in both educational settings have difficulty to understand formals, operations, and meanings. The

finding seems to similar with Ginsburg and Baroody (2003) mentioned that Mathematics skills and concepts are built upon a foundation of informal mathematical understanding (i.e., the mathematical ideas and concepts that are acquired outside of the school setting). Hearing impairment has a vital impact on learning experience of mathematics skills.

5.1.4 Significance Instructional Approach and School Facilities of Yekatit-23 Primary School and of Alpha Special School for the Deaf.

Teaching students with hearing impairment is not a simple task; it needs special training in addition to regular teacher training; special service and equipment required for students with hearing impairment. This idea conformed by Schulz et al. (1991) that dealing with children with hearing impairment demands qualified and competent teachers with some kind of special training in addition to or beyond that for regular school teachers. Due to various reasons such as difference in capacity, interest, needs children learn through different strategies, activities, media and methods. The method convenient for one child may not be convenient for the other. Each child has his own preference and likes of teaching methods. The teacher is expected to adapt the learning environment, so that each learner is able to develop and use different learning strategies and methods that are suitable for him or her (Johnsen, 2001).

The result obtained from the questionnaire has also confirmed that Alpha special school for the deaf is favor than Yekatit-23 primary school in school facilities, teaching experience, and teachers' qualification. Concerning about teachers'; 84.6% of special school teachers' have got special needs education training; they were well experienced in teaching Deaf students; they were highly qualified, out of 13 teachers, 7(53.84%) teachers were degree holders and the rest 6(46.15%) teachers were diploma holders. In the case of regular school teachers' half of them got special needs education training; they were not well experienced in teaching Deaf students;

out of 11 teachers, 3(27.27%) teachers were degree holders and the remain 8(72.73%) teachers were diploma holders. This finding seems to similar with Moores (1996) study that teachers of the Deaf students in the united State tend to be well-educated.

Regarding instructional approach, t- tests were computed to compare regular and special schools instructional approach that favor for students with hearing impairment. As presented in table 4.5, when regular school instructional approach were compared to special school instructional approach, the special school instructional approach were more favorable than regular school. However, there is no statistically significant difference at alpha =0.05. In this study instructional approach has no effect on academic achievement of Deaf students.

Concerning about school facilities that has influence on academic achievement of Deaf students examined in the study. special services for a child with hearing impairment in special school for the Deaf and regular school setting also include Speech, language, and auditory training instruction from a specialist; special seating in the classroom (placing the child close to the teacher, and the teacher should keep the face in view of the hearing impaired child) to promote speech reading; instruction for teachers and hearing students in sign language or other communication methods used by the child with hearing impairment; counseling; and resource room (Heward & Orlensky, 1988)

The findings of the present study, confirmed that essential school facilities (services) required for the students with hearing impairment such as hearing aids, library, sign language text books, resource room, itinerant teacher, audiometry, professional audiologist, sign language training, vocational training for Deaf students, and other visual teaching aids were available in the Alpha special school for the Deaf whereas in the Yekatit-23 primary school all of these services are unavailable. In addition, the classroom condition in Yekatit-23 primary school

inappropriate in terms of class space, cleanness, and well lightness. As a whole the classrooms are not appropriate for teaching-learning process.

Therefore, although the inclusion approach seems an improvement over isolation of the students with hearing impairment in institutional settings; the reality in regular school settings of this study suggests that their needs are unmet in regular classes designed for hearing students.

In general the study indicated that there is statistically significant difference between those students with hearing impairment in the special and regular schools with regard to their academic achievement. The result students' with hearing impairment academic achievement in special school is better than regular school students' with hearing impairment academic achievement. Information about the school facilities shown Alpha special school for the Deaf is favor than Yekatit-23 primary school. There is statistically significant difference at alpha =0.05. In this study school facility has effect on Deaf students' academic achievement. Even if there are some previous studies that support this finding the modern trend in special needs education is towards inclusion. This implies the need for further study and since there is not much study done in the area, the present study may serve as a steeping-stone.

In the chapter to follow in addition to the summary and conclusion, based on the results obtained and the conclusion drawn from this study some recommendation are suggested.

Chapter Six

6. Summary, Conclusions, and Recommendations

6.1 Summary

The purpose of this study was to compare the status of academic achievement of students with hearing impairment in regular and special school settings. Specifically its aim was to compare Amharic, English, and Mathematics subjects' achievement. To this end the study was aimed to answer the following research questions:

1. What is the status of academic achievement of pupils with hearing impairment in special school for the Deaf and regular school?
2. Is there statistically significant difference among academic achievement of students with hearing impairment in special and regular schools in terms of their performance on teacher-made tests result and classroom teachers' assessment?
3. Is there a significant difference between the schools' first semester roster of the academic year and teacher-made tests result?
4. Is there any significant instructional approaches and school facilities difference between Yekatit-23 primary school and Alpha special school for the Deaf?

Thus, in order to answer the above basic questions, non-experimental comparative research design used. Two schools were selected namely Alpha special school for the Deaf and Yekatit-23 primary school using purposive sampling technique. Pupils with hearing impairment, teachers and schools' document were used as source of information. Teacher-made tests were prepared for Amharic, English, and Mathematics subjects for second cycle Deaf students. In addition to teacher-made tests questionnaire was conducted with teachers of Deaf students in second cycle and also the school first semester roster of the academic year analyzed.

All the secured information tabulated, converted in to percentage, mean, and t-test; interpreted and discussed. The major findings of this study revealed that:

1. The status of academic achievement of pupils with hearing impairment in regular and special schools is average by classroom teachers' assessment first semester result whereas by only pencil-paper test their academic achievement status is below average.

2. The t-test result indicated that there is statistically significant difference between those Deaf students in regular and special schools in their Amharic first semester mark, English teacher-made test result, and Mathematics first semester mark and teacher-made test result. As a whole, when compute academic achievement of Deaf students between in regular and special schools the special school Deaf students' academic achievement is better than regular school Deaf students academic achievement.

3. The results of the study revealed, Amharic, English, and Mathematics subjects teacher-made tests results of Deaf students was unsatisfactory in both regular and special schools. However, when compared regular school with special school the regular school Deaf students score lower than special school Deaf students score. Furthermore, Amharic, English, and Mathematics first semester result of Deaf students in regular and special schools was compared; the special school Deaf students score higher than regular school Deaf students score.

4. Regarding regular and special schools instructional approaches there is no statistical significant difference. Thus, in this study, academic achievement of Deaf students does not has difference by instructional approach effect. However, the study results indicated that in terms of the regular and special schools facilities, there is statistical significant difference between regular and special schools facilities. Special school has favorable condition for pupils with hearing impairment than regular school.

5. Out of 13 special school teachers who teaching in second cycle 10 (76.92%) teachers have experience of above five years in teaching Deaf students. Whereas regular school teachers who teaching in second cycle, out of 11 teachers, 4(36.36%) teachers have experience of above five years in teaching Deaf students. Thus, special school teachers have more experience in teaching Deaf students.

6.2 Conclusions

Examining of the status of pupils with hearing impairment in regular and special schools; compare Amharic, English, and Mathematics achievement of Deaf students between in regular and special schools, using the Deaf students first semester and teacher-made tests results were the main concern of this study.

The study findings indicated that academic achievement of Deaf students in regular and special schools has difference; academic achievement of special school Deaf students is better than regular school Deaf students. Specifically in Amharic, English, and Mathematic result there is statistical significant difference between regular and special schools Deaf students.

From the findings it appears that Amharic achievement of postlingually Deaf students is better than prelingually Deaf students. Postlingually Deaf children have opportunities to develop their language skill by interacting hearing children. Sign language and spoken language proficiency invaluable to successful academic achievement and social interaction wherever the educational placement. And on job training like special needs education, deaf psychology, and about instructional methods for teaching Deaf students have great contribution for academic achievement of Deaf pupils.

The study, furthermore, revealed that the instructional approaches of regular and special schools. There appeared no statistical significant mean difference between Alpha special school for the Deaf and Yekatit-23 primary school in their instructional approach.

With regard to the school facilities, the findings revealed that Alpha special school for the Deaf is more favor than Yekatit-23 primary school for academic success of Deaf students'.

In general the similarity of teacher-made tests, schools' roster and questionnaire results strengthens the findings that special school more favor for pupils with hearing impairment academic achievement than regular school.

Based on the finding of this study it can be conclude that educational setting in general has an impact on the academic achievement of pupils with hearing impairment.

6.3 Recommendations

Based on the findings of the study, the researcher would like to offer the following recommendations:

- Although the data obtained do not allow generalizations to be made about students with hearing impairment in the country, the study suggests that there is a favor condition for students with hearing impairment academic achievement in Alpha special school for the Deaf.
- Activities should be carried out prior to implementation of inclusive education program (serious of discussions with regular teachers, training, adjustment of the environment, arrangement or appropriate class size, arrangement of necessary materials and equipment, getting experiences from other countries which are currently exercising inclusion programs).

- The teachers in the regular schools should take special needs education and sign language training; and regular and special school teachers should work together to solve the problems on academic achievement of Deaf students.
- It is indicated in the study that the mean score for Mathematics mark of the Deaf students in two schools is very low compared to the other academic subjects. This implies that schools, parents, and other stakeholders' must play their role in enhancing the Mathematics achievement of Deaf students.
- Schools, parents, and other stakeholders' should play their role in enhancing the academic achievement of pupils with hearing impairment.
- To this end, the ministry of education, the Addis Ababa education bureau, and the different sub cities education office need to make every possible attempts to equip the regular school teachers and also special school teachers through the provision of continuous professional up grading, adequate teaching resource, installment of special needs education expert at the sub city and "wereda". Moreover, the school ought to exploit the knowledge of teachers who has special training on special needs education in the school to as they share their experiences among themselves.
- It is also good to conduct further studies to find out the possible cause for the differences observed between the academic achievement of Deaf students in regular and special schools.

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