

Signed Language Proficiency and Reading Comprehension Skill of Deaf Children in Special and Integrated Primary Schools in Addis Ababa

Dr. Tesfaye Basha Ludago

Dilla University

P. O. Box 419, Dilla, Ethiopia

E-mail: tesfayeask@yahoo.com

Abstract

The purpose of this study was to investigate the signed language proficiency and reading comprehension skill of deaf children in special and integrated primary schools in Addis Ababa City Administration. This study used mixed research methods to collect diverse types of data. The study contained administering Signed Amharic and English proficiency task and reading comprehension task, questionnaire, classroom observation and interviews. For quantitative data collection (n = 76) deaf participants were involved. A total of 20 participants were involved in the qualitative part of the study. The participant included teachers of the deaf, deaf students and school principals. The finding revealed that in teaching and learning process, limitation of sign language is prevalent problem of signing and reading. This shows that the schools are not linguistically rich to facilitate sign language acquisition for deaf learners. Furthermore, the finding of the study revealed that the contribution of Signed English and Amharic in the development of natural sign language for deaf children were unsatisfactory. The results also indicated that special schools deaf learners performed better sign language proficiency and reading comprehension than those of the integrated schools. Besides, the findings revealed that the high signed proficiency

group demonstrated higher reading comprehension than the low proficiency group. This shows that signed language skill is highly associated with reading skills. If we need our deaf students perform better in sign language, Amharic and English reading comprehensions and to keep quality education introducing bilingual education system is essential and early intervention in both skills. In addition, to empower deaf learners in sign language and literacy the teacher training institutions must produce competent teachers with these skills.

Key Terms:

Signed Language proficiency, Signed Amharic, Signed English, Reading comprehension, Total communication

Introduction

In Ethiopia, a number of reform initiatives have been undertaken in general education to promote school improvement and student's achievement. The reforms have given priority to general education and have served the larger majority of pupils. Ethiopia's education system ignored reform in the deaf education. In other words, the field of deaf education has not given due attention to a similar reform to improve the education of its

learners but for the hot discussion of inclusion or segregation. Due to lack of early appropriate sign language and literacy intervention and receipt of proper accommodation, deaf children have reached high school age without learning to read, write and understand subject matters they need to acquire (Tesfaye, 2004; Marshark & Spencer, 2003).

Hence, appropriate educational services can be detrimental to the academic and social outcomes of all deaf students. In this regard, Siegel (2008) states communication is at the heart of what human beings do; it defines and gives meaning to our emotions, beliefs, hopes, creativities, and life experiences. The effective development, understanding, and expression of language are fundamental to any educational and social experience and are particularly crucial for deaf children (Girma, 2008).

Seemingly, (Cummins, 1986) explained that... "Sign languages allow deaf people to match the skills and abilities of hearing people in communication, cognition, and to empower deaf child in learning. The sign language should be the first language of deaf children and be regarded as their primary language. In his other work, he tried to say "concepts and knowledge developed in the first language transfer easily to the second language; school performance and curriculum attainment are raised when the first language is celebrated rather than devalued" (Cummins, 1986, P. 20). In support of Cummins, Ahlgren (1984) too, says "school administration must, therefore, ensure that in these circumstances, the school

environment is linguistically rich to facilitate rapid and easy Sign Language acquisition while at the same time using it to deliver curriculum content".

It is well documented that the language skills of a child strongly affect the achievement of literacy (Hoffmeister, 2000; Mayer & Akamatsu, 2003). Sadly, the average reading level for today's deaf students at the time of their high school graduation remains at the fourth grade level (Livingston, 1997; Singleton, et al, 2004). It is equally unfortunate that several reforms in deaf education have produced only minor changes in the English reading skills of deaf students (Hoffmeister, 2000; Singleton et al, 2004). Given this, one has to ask how deaf children with limited reading skills can participate as full-fledged citizens of society, contribute to the diverse interests of our community. A number of studies have documented that pupils still finish school semi-illiterate. The difficulty in finding an appropriate classroom communication system that effectively provides access to curriculum content has remained an issue for an extended period.

Supporting the ideas stated by the scholars above, Moats (2000) gives emphasis to literacy as the most important goal of school education. He further explains it as follows: The ability to read and write is an important component of one's potential academic and vocational success. Students, who experience difficulty in learning to read and write cannot fully participate in classroom learning, are at high risk for school failure, for lifelong problems with employment, and have diminished avenues for pleasure. For students

who are deaf, the list of potential negative outcomes increases because of the essential role that literacy plays in interacting with deaf and hearing peers. Hence, a deaf student to be able to function effectively in teaching and learning process, an appropriate level of English/Amharic language proficiency is essential.

Kluwin and Stinson (1993) found that adolescents who attended integrated classrooms had higher reading comprehension scores than those who received their instruction primarily in special schools. In the studies conducted by Harris and Beech (1998) and Merrill, et al. (1990), the word identification of special school deaf children was found to be poorer than the word identification of integrated peers. These studies investigate whether the word identification differences between special and integrated students can explain the differences in their reading comprehension.

Deaf children lack the necessary prior knowledge of the context (Ehri, 2000). He further said that "... they are caught in a vicious circle here: their poor vocabulary limits, their reading comprehension, and their poor reading strategies and skills limit their ability to acquire adequate vocabulary knowledge from the context" (Paul, 1996). Ehri (2006) discusses that deaf children start the reading process with less world knowledge, less cognitive and linguistic knowledge, and less knowledge of spoken language. Hearing children have access to the spoken language when they start elementary reading instruction. This implies that they know the sounds and grammatical structures

of the words. For deaf children, however, reading achievements develops simultaneously with sign language. Their lack of spoken language leads to reading problems especially problems of decoding and word recognition. The phonological mediation is a difficult concept for deaf children because they lack spoken language. With the use of signs, a direct connection could be made between word and its meaning. Different research results indicate that the children's knowledge of the sign of the words bears more importance to word recognition than their pronunciation knowledge Wauters et al. (2001).

Deaf children's vocabulary knowledge is often found to be less than that of hearing children (Marschark, Lang & Albertini, 2002). Vocabulary has been found to be an important factor in reading comprehension. Aranoste and Van Leeuwe (1988) found that vocabulary is the mainly predictor of reading comprehension. Deaf children also encounter difficulty with respect to sentence structure, especially with verb inflectional processes; auxiliaries, relative clauses, and sentence types that diverge from the subject- verb-object order.

Statement of the Problem

This study attempted to examine the signed Amharic/English proficiency and reading comprehension status of deaf children in special and integrated schools in Addis Ababa City Administration. Its objective was to investigate the reading comprehension of 8th grade deaf students in four primary schools and the impact of signed language proficiency on reading skill of deaf learners. This study assesses the capabilities of deaf

children and the problems that they may encounter in literacy skills. Thus it is important to assess their skills in the learning process.

For the purpose of this study, Signed Amharic/English mode of communication was used to assess their proficiency. The researcher with the objective of helping to promote and strengthen the future education and sign language development, the findings of this research will be used to fill the gap invaluable information about the relation between deaf students' signed language proficiency and reading skills.

Therefore, regarding the purpose of the study, the following basic research questions are posed.

- 1) Do deaf children in integrated schools differ from those in special schools in the reading comprehension skill?
- 2) Is there statistically significant difference between integrated and special schools signed language proficiency?
- 3) Is there statistically significant difference between high and low signed language proficiency groups in reading comprehension?

Methods Participants

The participants included in the study are deaf students, teachers of the deaf, and principals from the four schools. All of the deaf student participants were from four selected grade eight primary schools. Teachers and principals were working at special schools for the deaf and integration schools in Addis Ababa city Administration. To maintain all affairs of confidentiality, the schools were assigned numbers: 1, 2, 3 and 4.

From School 1, 25 deaf students (15 males and 10 females); from School 2, 19 deaf students (7 males and 12 females); from School 3, and 20 deaf students (10 males and 10 females) and from School 4, 12 deaf students (10 males and 2 females). The sum of 76 deaf students participated in the study. All of the deaf students had hearing losses ranging from severe to profound. They were being educated in programs that stated the use of Total Communication (TC) approach to all instructional system.

From four schools 8 deaf students, 8 teachers and 4 school principals. Totally 20 participants were selected for qualitative study. Generally, 96 participants were taken as sampled for this study.

Participant Selection Procedure

Deaf students were eligible to participate since they met the following requirements at the time of enrollment in the study: (a) they had an identified bilateral hearing loss, (b) they did not have additional disabilities, (c) they attended either integration schools or special schools for two or more years, and (e) they were in grade 8 in 2010/2011 school year, (f) they were all deaf students enrolled in grade eight in four schools and (g) they had severe to profound deafness (70 dB above hearing loss on the better ear). The researcher used non-random sampling technique.

While selecting the teacher participants, the following criteria was addressed: (a) the teachers should have, at least, a certificate in Special Needs Education, (b) they should have more than five years teaching experience in a particular centre, and (c) they should be willing to participate in the study voluntarily.

Instruments and Procedures

Signed Amharic and English Tasks: The researcher with grade eight language teachers was developed the reading passages to assess signed language proficiency. To check the content validity, the test was evaluated and commented by Alpha and Hosanna deaf school teachers whether the items prepared to 8th grade deaf students were appropriate to their cognitive and linguistic capability to sign.

The researcher used a Signed Amharic/English proficiency task for all selected grade eight deaf students. Participants were brought individually to the room to sign written text where a camera was used to capture the sign language sample. The camera focused on the participant so that the participant would be seen on the full screen while signing. In this way, coders could view participants signing.

For reliable and valid assessment of individual sign language proficiency, establishing clear specific checklist is critical. For this Brennan (1992) grouped signs into five parameters (hand shape, location, movement, orientation and non manual components). Similarly, Paulos (2012) states that all sign languages including Ethiopian sign language had five gestural features that are known as the *parameters* of sign production. To assess high and low sign language proficiency of deaf learners Brennan model was used. To that end, the deaf students were assessed in the following five sign language linguistic parameters: handshape, location, movement, orientation and nonmanual components.

Two sign language experts native speakers of SL and one of them was post-lingual assessed the deaf by rating narratives on the bases of parameters on a scale from 1 to 5 point. To control the order effects the 105 words of Amharic, 72 words of English were printed from the reading texts that were equally divided over the raters. The skills were facilitated by the design of the Signed English/ Amharic system. Scoring included right and wrong assessments points for each word/sign. On the basis of frequency distribution of their test scores, children were classified as high proficient or low-proficient in sign language.

Out of 105 words those students who scored right for signed Amharic and rated in frequency distribution from top groups 76 (61.1%) to 99 (100%) were selected as high proficiency groups and deaf students who scored below 55 (39.5) were selected as low proficiency signed Amharic bottom groups. To avoid boarder line cases and possible confusion that may arise from the inclusion of these cases in the analysis, 15 (20%) students were excluded. Similarly, out of 72 Signed English words, those students who answered 40 to 72 of the words correctly were categorized in the high proficiency group. Those students who answered 29 of the items or less were categorized in the low proficiency group. Cohen's Kappa's coefficient was 0.66 indicating substantial agreement between raters (Landis and Koch, 1977).

Reading Comprehension Task: Reading comprehension tests were obtained from reading passage/ literacy texts. The test was prepared in multiple choice items. Multiple choices item is the most widely used types of assessment in reading comprehension for deaf learners (Marscharck & Spencer, 2003). They were designed to assess reading comprehension skills of deaf students. To assess reading comprehension proficiency, a multiple choice rating scale was completed by grade 8 deaf learners.

The reading comprehension tests include the same test for all schools consisting of two reading passages of Amharic and English languages and a total of 30 multiple choice questions for each languages with four response alternatives. The raw score on each test was the number of questions answered correctly. For the purpose of this study, all items of the reading comprehension tests were classified in the following categories: vocabulary item, reference item and items that requires understanding of the main idea of the text. The reading comprehension tests were prepared by eighth grade language teachers. Classroom teachers judged the validity of the test as to which it was appropriate for grade 8 students. The test had to be within linguistic and cognitive capacities of the grade eight students. Therefore, the reading comprehension test was checked against grade eight Amharic and English syllabus or teacher guide. This helped the researcher to identify the reading skills to be tested.

Questionnaire for Students: The researcher developed detailed questionnaire to deaf participants that included questions about personal profiles, sign language and reading

comprehension background. The reading comprehension background questionnaire demonstrates that the deaf participants signing and reading skills difficulties. The researcher distributed the questionnaire only for students who attended in the grade level required for the study.

Interviews: The purpose of this semi-structured interview was to gather data on the teachers' and deaf students' perception about teaching literacy. The instrument was especially developed for deaf students, teachers and directors of the schools. The semi-structured interviews were written in Amharic language and given to linguists to review.

Observation: The researcher designed a non-participatory observation guide based in Creswell (2007). Key themes of observation had been developed prior to fieldwork. As a method, it required the researcher to go in search of information in the learner natural settings. The natural settings included selected special primary schools for the deaf and integrated school classrooms. For all the observation, observation checklist was developed and used.

Data Collection Procedure: The data collection procedures involved both numerical as well as textual information. In this regard, the intention here is to mark the final data represents both the quantitative and qualitative information (Lodico, Spaulding, & Voeglteh, 2006). In other words, the rationale for using mixed method design was to triangulate the findings from different data sources such as Signed Amharic and English proficiency tests, reading comprehension tests, observation and face-to- face interview

reports. Such a triangulation helped the researcher to use mixed methods and thereby enhanced the trustworthiness of the analysis by complementing and compensating the weaknesses of one method through the strength of the other.

Data Analysis

Comparative correlation data analysis and qualitative analysis methods were used in the analysis of the data. The first aim was to determine whether the reading comprehension of students of special schools had differences when compared with the integration schools and high and low proficiency groups of deaf students in the 2010/2011 school year. As mentioned earlier, the primary objective of the study was to determine whether there was statistically significant difference in reading comprehension between deaf children in grade eight integrated schools and special schools for the 2010/2011 school year.

Second, Signed Amharic/English proficiency assessment task test score, reading comprehension task test and questionnaire scores were compiled and entered in to the statistical software program known as SPSS, version 15.00 to calculate the mean and standard deviation for each category.

The third objective was to determine whether there was any relationship between sign language proficiency and reading comprehension skills of deaf students. The data were analyzed using descriptive statistics, and correlation analyses. A descriptive statistics and the Pearson's product moment correlation coefficient (r)

were used to measure the mean standard scores for all schools and the mean standard scores to specify any significant differences between them.

In this study, qualitative approach was used to analyses the data. The interviews were transcribed verbatim. A constant-comparison method (Strauss & Corbin, 1994) was used to examine the similarities and differences in reflections across the participants. The information collected from the four schools gave the research diversity, which helped the researcher to identify the commonalities and differences in lived experiences that helped in capturing the themes as they emerged.

Results

Part I. Quantitative Results

In this study, careful to note that "the key function of this signed form of English and Amharic words would be to serve as a model for English/Amharic text, rather than as the primary language for face-to-face communication." This study investigates how deaf learners understand written language through sign supported speech mode of communication and the content of the text and assess the proficiency of sign language development in high and low scoring procedure.

Special schools for the deaf were high signed Amharic/English proficiency contributors in this study. The differences in sign language performance occurred because special schools deaf children started sign language learning from the nursery classes and continued up to grade four. This early sign language exposure may contribute for better sign language skill development. This

indicates that integrated regular primary school deaf students showed poor sign language performances.

Table 1

Descriptive statistics for right and wrong responses of Signed Amharic and English mean score

High and Low Proficiency		Responses of Signed Score			
		Signed Amharic		Signed English	
		Correct response	Wrong response	Correct response	Wrong Response
Low Proficiency	Mean	34.50	70.60	18.67	53.10
	N	30	30	30	30
	Std. Deviation	11.936	11.984	6.748	7.260
High Proficiency	Mean	90.42	14.45	52.93	19.07
	N	31	31	30	30
	Std. Deviation	6.707	6.913	7.697	7.697
Total	Mean	62.92	42.07	35.80	36.08
	N	61	61	60	60
	Std. Deviation	29.764	29.906	18.709	18.695

Table 2 shows descriptive statistics for the right and wrong Signed Amharic and English in High and low proficiency groups. The mean score for correct response in Signed Amharic of high proficiency group was 90.42 and wrong response was 14.45. In contrast, low proficiency groups mean score for correct response in signed Amharic was 34.50 and wrong response 70. 60.

The mean score for correct response for high proficiency group Signed English (52.93) and wrong response was 19.07. In contrast, correct signed English low proficiency group mean score was 18. 67 and wrong response was 53.10. The results indicated that the mean score for correct high proficiency groups was higher than the mean score for

low proficiency groups. The total mean score of correct response in Signed Amharic/English was different from wrong response in signed English/Amharic. This implies that deaf learners had difficulty of understanding English/Amharic written materials.

Reading

Comprehension Task Results

In this study, to assess their reading comprehension and to forward research based assessment in our context, the researcher used three assessment procedures: Vocabulary, reading comprehension questions and reference items from the reading passages for both languages.

Table 2

Frequency distribution of Amharic and English reading comprehension task result in right and wrong categories

Item Categories	Amharic Language				English Language				gave
	Correct Response		Wrong Response		Correct Response		Wrong Response		
	N	%	N	%	N	%	N	%	
Vocabulary	25	32.89	51	67.11	24	31.58	52	68.42	
Reading comprehension	20	26.32	56	73.68	26	34.21	50	65.79	
Reference	28	36.84	48	63.16	23	30.26	53	69.74	

Table 2 presents the correct and wrong responses of Amharic and English language tests. In the study from a total number of 76 deaf students, 25 (32.89%) students answered correct answers for Amharic vocabulary items and 51 (67.11%) students answered wrongly. In reading comprehension item 20 (26.32%) students gave correct responses and 56 (73.68%) students gave wrong response. In reference item, 28 (36.84%) students provided correct answers and 48 (63.16%) students provided wrong answers. Similarly, in English language test 24 (31.58%) deaf students offered correct answers in vocabulary item and 52 (68.42%) students

wrong responses. In reading comprehension item 26 (34.21%) students gave correct answer and 50 (65.79%) gave wrong responses. In reference item 23 (30.26%) students offered correct responses and 53 (69.74%) students gave wrong responses. This finding revealed that majority (67.98 %) of deaf learners in Amharic and English language tests score below average in their reading achievement. This implies that deaf students in eighth grade level showed deficit in reading comprehension achievement in both languages.

Descriptive Statistics for the Reading Comprehension

The table 3 shows descriptive statistics for the multiple choices reading comprehension test categories by schools. As shown in table 3 grade eight deaf students showed below average performance in both reading language comprehensions. This data finding revealed that special schools had better performances in both language tests.

Table 3: Descriptive statistics in Amharic and English content categories

	Schools	Amharic test			English test	
		N	Mean	Std. Deviation	Mean	Std. Deviation
Vocabulary	School -1	25	39.5000	16.40947	30.8000	13.20353
	School -2	19	32.2368	21.37455	37.3684	16.94504
	School -3	20	29.3750	12.99987	28.0000	17.65160
	School -4	12	25.0000	11.91828	30.8333	17.81640
	Total	76	32.7303	16.95178	31.7105	16.19779
Reading Comp.	School -1	25	24.9408	17.58950	31.3336	13.45453
	School -2	19	24.7674	18.96843	48.2458	16.33433
	School -3	20	25.5875	11.96093	24.9990	10.47093
	School -4	12	29.9017	12.90198	34.0275	16.07164
	Total	76	25.8509	15.78708	34.3200	16.21433
Reference	School -1	25	43.2000	26.25516	27.5000	14.87798
	School -2	19	36.8421	25.17773	34.8684	25.20022
	School -3	20	23.0000	18.66604	31.2500	16.96552
	School -4	12	41.6667	18.00673	27.0833	18.33506
	Total	76	36.0526	24.00439	30.2632	18.84843

Table 4: Comparison of mean score of Amharic and English content categories by high and low proficiency groups

Content categories	High and Low Proficiency	N	Amharic		English		
			Mean	Std. Deviation	Mean	Std. Deviation	
Vocabulary	Low	30	29.58	14.11	30	29.66	14.96
	High	31	35.88	20.60	30	32.66	18.55
	Total	61	32.78	17.84	60	31.16	16.78
Reading comp.	Low	30	20.98	10.66	30	29.16	14.96
	High	31	32.25	20.02	30	42.50	15.98
	Total	61	26.71	16.96	60	35.83	16.75
Reference	Low	30	30.66	20.83	30	28.75	19.18
	High	31	37.41	28.16	30	34.58	19.05
	Total	61	34.09	24.85	60	31.66	19.18

Table 4 shows the comparisons of mean for English and Amharic reading comprehension

multiple choice items in three categories of high and low proficiency signed language. The findings of this data reveal that high proficiency signed language groups have better achievement in vocabulary, comprehension and reference multiple choice items categories than low proficiency signed language groups. The results of the analysis reveal that sign language proficiency in Amharic and English languages have by far

the strongest impact on the students' reading comprehension.

Table 5

Descriptive statistics for English and Amharic language mean scores by integration and special schools

Amharic Content Domain	School types	Amharic		English	
		N	Mean	Mean	Std. Dev.
Vocabulary	School 1&2	44	36.36	33.63	15.11
	School 3&4	32	27.73	29.06	17.479
Reading comprehension	School 1&2	44	24.86	38.63	16.86
	School 3&4	32	27.20	28.38	13.36
Reference	School 1&2	44	40.45	30.68	20.07
	School 3&4	32	30.00	29.68	17.31

Table 6 presents the mean and SD for English and Amharic test scores by integration and special schools in Addis Ababa City Administration. The data result shows that special school achieved better than integration school in vocabulary category in Amharic and English languages. This implies that special schools have better semantic

clues than integration schools. In Amharic reading comprehension 27.20 integration schools performed better than special schools 24.87. In English language in all category items special schools performed better than integration schools. However, both school programs performed poor reading comprehension achievement.

Comparison of high and low proficiency by age of onset

		Respondent age of onset	High and Low Proficiency Groups - Amharic	High and Low Proficiency Groups - English
Respondent age of onset	Pearson Correlation	1	.320(*)	.192

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

There is statistically significant relationship between Amharic high proficiency groups and age of onset ($r = 0.320$). In contrast there is no statistically significant relation between high proficiency and age of onset in English ($r = .192$). Those born deaf, prior age three deaf and after age three deaf were similar in English language skill and no skill differences was seen.

Results of the Deaf Students Questionnaire

The data has shown that most deaf students (67.1%) of students were in difficulties of identifying words, meanings of words and grammatical structure of the sentences. The findings of this data indicates that deaf learners were faced with the difficulties of identifying words, comprehending meanings and following the grammatical structure to set apart one word from another.

In response written language difficulties between Amharic and English during reading process, 57.9% of the deaf students reported that both Amharic and English written languages were difficult to read. This could clearly indicate that majority of deaf

students' encountered difficulties of reading in both languages.

Besides, the deaf students were asked to report how much they understand Amharic written texts in reading process. In response to this item, half of the respondents, i.e. 48.7% said they understand 'to some extent', 28.9% said they understand most of the written texts, and 15.8% claimed they understand very small, while the remaining 2.6% reported they understand little. This might imply that majority of the deaf students do not clearly comprehend when they are reading texts. It implies that deaf students are poor in reading comprehension and require hard school work in the development of vocabulary knowledge. Similarly, when asked how much they understand English written materials deaf learners more than half of the respondents (56.6%) understand English written texts 'to some extent', and 18.4% also reported that they understand English written materials very small and 9.2% understand little.

Finally, as data has shown that half of the deaf participants, 50.0% reported that they faced difficulties in identifying the meanings

of words, understanding grammar structure and getting overall meanings of the text. 34.2% of deaf participants also reported that understanding the meanings of the words in both languages was difficult during reading process. This finding revealed that most of the deaf students exhibited difficulties in understanding the meanings of the words, grammar structure and getting the overall meanings of the texts when they are reading.

Part II. Qualitative Result

Interviews of Teachers and Deaf learners

In relation to signed language proficiency, deaf students had problems in signing in teaching and learning process. All of the four schools deaf and teachers' interviewee addressed that in teaching and learning process, lack of adequate sign language depictions for all vocabularies prevailed in all subject areas. The most serious problem was limitation of sign language. This resulted in inability to understand and identify the meanings of the words and the content of the subject matter. Similarly, deaf interviewees and teachers of deaf suggested that a better sign language skill is highly important for better reading comprehension and academic achievement. They indicated that the limitation of the sign language affected their academic and their literacy skills. The teachers testified that those who had low sign language ability showed low literacy and academic achievements.

Concerning reading comprehension, all of the deaf interviewees reported that their most

serious problem was the limitation of vocabulary knowledge to comprehend the meanings of words in the written language when they were reading. They were unable to catch up the overall ideas of the sentence or paragraphs; they associated their weaknesses to the limitation of the sign language representation for all written words. They stated that they have poor interest to reading written materials particularly Amharic texts. They stated that derivational and inflectional words create a gap in understanding the text. When asked how much they understand Amharic language written materials, interviewees replied that they could understand moderately. In similar vein, they were asked how much they understand English written materials, and they stated moderately. However, both languages were difficult for deaf learners. Most of the participants of this study suggested that in order to improve reading comprehension skill deaf children; teachers' knowledge of sign language skills must be improved. The learners' reading skill and sign language input can be realized only with the help of teachers. All the interviewees suggested that teachers' readiness to empower deaf children in vocabulary knowledge, identifying the meanings and sign language proficiency must begin from early classes.

They reported that sign language is used as spoken language for social interaction, media of instruction, meetings and daily activities. Sign language for deaf people it is everything. It is their identification. Deaf students must know their first language to interact and live meaningful life. It is their

right. However, they stated that ETHSL expressive capacity is very limited.

Teachers reported that during teaching and learning process teachers used signed languages, but they used copy of spoken language (Exact Signed Amharic or English). In other words, they are interpreting word by word. They use Total Communication. The sign language was engulfed by this Total Communication approach. The contribution of this approach to sign language development was very limited. This limitation compels deaf students to sign words wrongly or not related particularly in reading activities. On the other hand, the observations indicated that what deaf learners wanted to say and what they are signing is not similar. In addition, what they are signing and what they are writing is totally different. This shows the deaf learners difficulty of mastering the language.

Deaf children's understanding of written materials is incomplete, fragmented and they do not receive the quality message properly due to mixed communication. This indicates that the gap of communication between teachers and deaf learners exist due to the limitation of total communication to deliver the desired information. If bicultural approach is used in education from early, it might solve these difficulties. The interviewees revealed that total communication is not useful for deaf learners' language development. Now it is shifting time to bilingualism.

If the child is unable to understand words properly, he cannot learn the academics

effectively. Therefore, natural sign language for a deaf child is a key facilitator for literacy and academic achievement. All the teachers and deaf learners forwarded that language plays a key role for literacy development. During classroom observation, the researcher observed that reading was a problem for deaf children. When they were reading textbook, word identification, vocabulary meaning, morpho-syntax relations were clear problems of deaf children.

Ethiopian sign language (ETHSL) is the native language of deaf children and is the only accessible language for deaf children. This accessible language provides opportunities for fluent communication and creates optimal cognitive development for deaf children. However, classroom observation and interview results revealed that sign language development was not well recognized by teachers of the deaf. Development of sign language and empowerment of deaf learners with this skill will provide deaf children in basic foundation of reading and writing as well as better academic achievement.

Discussion

Signed Language Proficiency in Teaching and Learning Process

The main purpose of this study was to find out the effect of sign language proficiency in relation to reading comprehension by deaf children. Based on the categories of high and low proficiency, 70.96% of special schools for the deaf students were high Signed Amharic proficiency contributors and similarly 63.33% of special schools for the deaf students were high Signed English

proficiency group. The result show that significant differences in sign language proficiency in special and integration schools. This suggests that special school environment is linguistically rich to facilitate sign language acquisition than integration schools. Integration schools need a great attention of sign language proficiency development.

On the other hand, there is a significance difference between high and low proficiency correct and wrong responses in signed Amharic and English mean scores. Signed Amharic high proficiency group correct responses mean score was (90.42) and wrong response mean score was (14.45). In contrast, low proficiency groups mean score for correct response in signed Amharic was (34.50) and the wrong response mean score was (70.60). The mean score for correct response to high proficiency groups Signed English (52.93) and the wrong response mean score was (19.07). In contrast, correct signed English low proficiency group mean score was (18.67) and wrong response was (53.10). In both languages, the high sign language proficiency group achieved a higher mean score than low proficiency group. This revealed that deaf students with high sign language proficiency could understand written materials better than low proficiency groups. This shows that sign language proficiency plays a role in understanding written literacy. The teachers' interview also confirmed that children with better sign language skills could easily understand written texts.

One of the major findings from the study confirmed that there was a sign language limitation in teaching and learning process. All the deaf students, teachers and principals of the schools in their interviews reported prevalent problems encountering during signing and reading due to the lack of adequate sign language representation for all vocabularies in all subject areas. The classroom observation also confirms that sign language shortage in teaching and learning process prevailed. All the participants of this study were highly concerned about the unavailability of adequate signs for classroom use.

The classroom observation shows that teachers use simultaneous communication based on the English or Amharic word order to ETHSL. This deprives the linguistic development rights of the sign language. Teachers lack competence in sign language. These comments were consistent with the data which were collected through classroom observations and reflective journals. The finding is supported by the works of Andargachew (2008) who says that deaf students and their physics teachers seem to fail to establish common understanding because of lack of sign language. This is also supported by interview results of teachers. As to them, it is difficult to say deaf students are learning in real sign language. There is a sign language and deaf people interact with sign language whether the teachers use it or not, understand it or not. When they are communicating each other, they are using sign language but the school situation in reality obliges deaf students to use artificial language that does not support the

development of sign language (Supalla, 1991) who against an artificial sign system. Similar to this finding is Ahlgren, (1984) reported that 'Signed Swedish' encountered problems in making themselves understood and in understanding deaf people especially when they were communicating with each other. When responding to an item of the questionnaire, the majority of deaf learners were not satisfied with the sign language of the teachers. In this regard, there is a sign language competency gap between the deaf and their teachers.

The observation revealed that classroom instruction took place to sign- based Amharic and English or simultaneous communication; in contrast, deaf use their natural sign language. If deaf children are exposed only to Signed English, Supalla (1991) explains they may exhibit "impaired potential for natural language acquisition and processing, impairment of their capacity to create and comprehend grammar, unless they are able to create their own linguistic structures/sign language".

One of the longest experienced teachers reported that *total communication was a "total confusion" for deaf students; it didn't contribute to the sign language development.* The other interviewee added that *it may be difficult to say deaf students are learning sign language. The sign language usage is under influence of hearing teachers and regular educational processes.* This shows that total communication did not function as expected like any other natural sign language. However, the natural sign language acquired by deaf children provides them the best

access to educational content and the second language (reading and writing). According to Marschark (2009), children with deaf parents preferring natural sign language have larger vocabularies than those children who do not. The scholar admits to say that those with early and consistent exposure to sign language had larger sign vocabularies than those without such exposure.

Therefore, providing sign bilingual strategy is very crucial. This strategy is based on linguistic and educational theories. The theory predicts that (language) skills that have been acquired through learning a sign language will facilitate the acquisition of reading and writing (Cummins, 2006). The approach of Cummins advocates for deaf children's need to acquire a natural sign language for cognitive development and as basic ground for second language acquisition. The impact of this on the structure of schooling is that the school must prepare the children for acquisition of a first natural language for second language acquisition, socialization and development of world knowledge (Cummins & Swain, 1986; Liddell & Erting, 1989).

Most of the interview participant teachers stated that language teaching system should be changed from preschool to high school level for deaf learners. This could focus on three areas. First, teachers should gain adequate knowledge in sign language, to empower deaf people in sign language skills. Second, the deaf learners' foundation should be laid with sign language beginning from preschool school age. Third, teacher training

institutions should equip teachers with the sign language skill.

Reading Comprehension

One of the key challenges for deaf learners is the issue of reading comprehension, as it is a pivotal part of the educational process: each learning area textbook, worksheet, examination or assignment relies heavily on reading comprehension (Marchark, 2009). The results of this study reveal that out of 76 participants' the majority (67.98%) of deaf learners in Amharic and English language tests scores below average in their reading achievement test. This implies that deaf students in eighth grade show deficit in reading comprehension achievement in both languages. As the finding shows, the low reading comprehension performance of deaf students seems connected to certain factors. Some of these factors (Paul, 2003) found in three categories: 'reader- based factors; text based factors, and task based factors.

In both languages, deaf students do not understand how to derive new words from the root words. This leads them to wrong understanding or confusion to sign; however, the words are very close in meaning for the hearing people. These different inflections and derivations confused the deaf children during reading and writing lessons. The deaf interview participants of this study agree that the most serious problem for them was the limitation of vocabulary knowledge to comprehend the meanings of words in print reading. And also the core problem is the limitation of the sign language representation of all written inflectional or bound morpheme words. That means, the Ethiopian Sign

Language did not yet come to sign for inflectional morphemes.

In response to the question concerning the major factors that make Amharic and English reading comprehension difficult, 50% of deaf students have reported that the meanings of the words, understanding grammar structure and getting the overall meaning of the text are the major problems of reading comprehension. Thirty four percent of the respondents reported that identifying the meanings of the words was a block for comprehension. These findings agree with Geers & Moog (1989) and Schildroth & Karchmer (1986) report that deaf students' difficulties with English grammar have significant impact on their reading skills and academic achievement.

Furthermore, for the question that asked how much they understand English and Amharic written materials during the reading process, 48.7% of deaf students reported that they could understand Amharic written texts "to some extent" and similarly, 56.6% of deaf students reported they could understand English written materials "to some extent". Twenty nine percent of deaf learners could understand "most" of Amharic written materials and 13.2% of deaf students could understand "most" of English written materials. Sixteen percent said they could understand Amharic written "very little" and 18.4% can understand English written "very little". In contrast, 9.2% reported they never understood written English and 2.6% similarly reported they never understood Amharic written respectively.

From deaf students' reports one can realize that the majority of the deaf learners were in a problem of understanding written prints. The classroom observation showed that when they were reading textbook, word identification, vocabulary meaning, morpho-syntax relations are clear problems of deaf learners. This indicates that deficits in the skill of sign language have an effect on the reading skill of deaf learners.

In addition, the other finding revealed that the majority of deaf respondents (67.1%) reported that they practice difficulties of identifying words, understanding the meanings of words and grammatical structure of the sentences. This is consistent with the statement by Moores et al., (1987) that if deficiencies in a single critical reading process imply the potential for competitive interactions with other cueing systems, then the vocabulary and syntactic processes of certain deaf readers would seem likely candidates for affecting one another during reading.

There is abundant research associating the comprehension problems of deaf readers with these two separate processes. Both vocabulary and syntax processes are potentially inaccurate and inefficient by deaf learners. Thus, it appears that both variables are highly implicated in the reading ability of deaf students. The direct influence of limited syntactic competence on the low reading comprehension of many deaf readers has been revealed by the research of Berent (1988), Geers and Moog (1987) and Israelite (1981). Similarly, this study finding results depicted that there are significant mean

differences between the performances of grade 8 deaf school students in reading comprehension. In the same vein, the teacher participants of this study reported that reading comprehension difficulty is related to one another. The first one is sign language limitation which again brings the vocabulary shortage. The shortage of vocabulary affects the reading comprehension of the deaf learners.

One of the major findings of the deaf learners signed Amharic and English proficiency indicated that the high proficiency group demonstrated higher achievement than low proficiency group in reading comprehension test in both Amharic and English languages. The findings reveal that high proficiency signed language group was better achievers in vocabulary, comprehension and reference multiple choice item categories than low proficiency signed language groups. Hertzog, Stinson, & Keiffer (1989) report is consistent with this finding that data from a comprehension test were analyzed to determine the effects of instruction and subject reading ability of 8th grade students the high proficiency reading group benefited from instruction.

The mean score for Amharic vocabulary in high proficiency was (35.88), reading comprehension (32.25) and reference (37.41) respectively. In addition, the mean score for English vocabulary high proficiency (32.66), reading comprehension (42.50) and references (34.58) respectively. In contrast, low proficiency groups were lower than in Amharic and English language tasks. However, this finding reveals that the deaf

children's reading comprehension skill was low in both groups. . Sartawi et al. (1998) suggested that deaf students have serious comprehension problems that deserve attention. The results of the analysis showed that sign language proficiency in Amharic or in English languages had by far the strongest influence on the students' reading achievement. This implies that language proficiency is an important variable in predicting performance in reading comprehension.

Most teachers of interview participants in this study reported that the main reading comprehension problem of deaf children was the language problem. To comprehend reading materials, the deaf must get adequate language input from early ages, but they don't. This finding agrees with the report by Hover & Gough, (1990) that ... problems in reading comprehension can stem from poor decoding skills, poor linguistic competence, or a combination of both in early age.

When we compare the reading comprehension skills of deaf students in integrated and special schools, the data result shows that special schools deaf learners achieved better than those of the integrated schools; hence, they have showed better mean score in both except Amharic reading comprehension. Deaf students in both school programs had problems in reading achievement in all categories; however, in special schools have a better opportunity than integrated schools. The findings from my observation and the data obtained from interview participants show that in all school programs the teaching and learning process

seriously dominated and guided by traditional chalk and talk (lecture) method. There was little opportunity for deaf students to actively practice reading or there was no modification made by carrying out various exercise tasks, with the result that neither the material nor the way of teaching are used to contribute significantly to reading skill development in teaching and learning process.

Reading skill development differs by age of onset. In this regard, Pearson correlation r-value indicates that there is moderately positive correlation between Amharic reading comprehension and age of onset ($r = .250$) and sig (.008); in contrast, there is negative correlation in English reading comprehension and age of onset. This shows that deaf learner's language acquisition depend on the age of onset ability of the acquisition. In this regard, Pearson correlation r-value indicates that right Amharic vocabulary was ($r = 0.282$, $P > 0.05$), for reading comprehension was ($r = .250$, $p > 0.05$) for reference was ($r = .234$, $p > 0.05$). This study result revealed that there is a correlation relation between all Amharic categories and age of onset. In contrast, there is no correlation relation with English reading comprehension and age of onset ($P < 0.05$). Those born deaf, prior age three deaf and after age three deaf were similar in English language skill no skill differences seen.

And also there is a statistically significant relationship between high proficiency groups and age of onset are = 0.410, $P > 0.01$ in vocabulary, reference items ($r = 0.480$, $p > 0.01$) and reading comprehension item ($r = 0.$

201, $p > 0.01$). In contrast there is no statistically significant relation between low proficiency and age of onset ($P < 0.01$).

Conclusion

The current study explored the signed language proficiency and reading comprehension skill of deaf children attending in four integrated and special primary schools in Addis Ababa City Administration. The findings of this study indicate that deaf students (70.96%) of special schools for the deaf students were high Signed Amharic proficiency contributed to this study and similarly (63.33%) of special school for the deaf students were high Signed English proficiency group supply in this study. The results show that significant differences exist in sign language proficiency between special and integration schools. This implies that the special school environment is linguistically richer to facilitate sign language acquisition than integration schools. Integration schools require due attention in sign language proficiency development.

In both languages, the high sign language proficiency groups achieved higher mean score than low proficiency groups. This reveals that deaf students with high proficiency could understand written materials better than low proficiency group. This indicates that sign language proficiency plays a role in understanding print literacy.

The findings confirm that there was a lack of adequate sign language representation to all vocabularies in all subjects in teaching and

learning. On the other hand, the finding reveals that Total Communication follows the structure of Amharic and English, which deprived the linguistic development of the sign language. The reason is that unsatisfactory basis for normal first language development. Neither it is suitable for the development of second language.

With respect to reading comprehension test, the majority (67.98%) of deaf learners in Amharic and English language tests scores below average in their reading achievement. This shows that deaf children in eighth grade showed deficit in reading comprehension in both language tests. Another finding from the deaf questionnaire was 67.1% of deaf respondents reported that they faced difficulties of identifying words, the meanings of words and grammatical structure of the sentences. This reveals that the skill of sign language has an impact on the reading skill of deaf learners. The most serious problem in reading was the limitation of vocabulary knowledge to comprehend the meanings of words in written language. Deaf readers in this study failed to comprehend what they read because they lacked adequate structural (syntactic) knowledge/skill that could sustain the integration of correctly recognized written words into grammatical rule order level. This could be due to little attention lesson on grammar.

The findings of this study show that high proficiency signed language group had better achievement in vocabulary, comprehension and reference multiple choice test items than low proficiency signed language group. The mean scores reveal that high proficiency

group performed higher in both language categories than low proficiency group. The results of the analysis showed that sign language proficiency in Amharic and in English languages had by far the strongest effect on the students' reading achievement. This suggests that language proficiency is an important variable in predicting performance in reading comprehension and commonality in reading and signing skills and that skill acquired through learning a sign language can facilitate the acquisition of reading skills.

The current educational provisions for deaf learners are disappointing they were not getting quality education. Deaf learners were poor in sign language proficiency. If needed, to empower deaf learners in sign language proficiency and reading skills necessitate a change of teaching system in education. To do this, providing sign bilingual strategy as early as possible is central. This strategy is linguistic and educational theories. Sign bilingual approach recognition is essential to the development of proficient reading skills, writing skills as well as academic achievement. Most of the study participants stated that language teaching system should be changed from preschool to high school for deaf learners.

References

- Ahlgren, I. (1984). *Research on Sign Language XIII*. . Department of Linguistics, Stockholm University.
- Allen, A. T. (1986). Patterns of Academic Achievement among hearing students: 1974 and 1983. In A.N. Schildroth & M.A.Karchmer(eds.).
- Deaf children in America* (pp. 161-206). San Diego, Ca: College Hill Press.
- Andargachew. (2008, August). Communication Challenges of Teaching and learning Physics. The Case of Physics Teachers and Deaf Students of Three Selected Primary Schools in Addis Ababa. Millenium Graduates Bulletin and Research Abstracts. *Addis Ababa University*, pp 13-14
- Anita, S. (2007). Can deaf and hard of hearing students be successful in general eucation classrooms? p. from www.tcrecord.org/print_content.asp? May Retrieved 17, Content ID =13461.
- Berent, G. (1988). *An Assessment of Syntactic Capabilities*. Cambrige: Cambridge University Press.
- Brennan, M. (1992). 'The visual world of BSL: An introduction'. In D. Brien (ed.), *Dictionary of British Sign Language*(PP. 1 – 133). London: Faber & Faber.
- Creswell, J.W. (2007). *Qualitative Inquiry and Research Design: Choosing among Five Approaches* (2nd ed.). Thousands Oaks, CA: Sage.
- Cummin, J. A. (1986). *Bilingualism in Education: Aspects of Theory, Research, and Practice*. New York: Longman.
- Ehri, L. (2000). Learning to read and learning to spell: Two sides of coin. *Language Disorders* 20(3), 19-36.
- Ehri, L. R. (2006). Hand book of early literacy, Vol.2., In D. a. Dicinson, *The roots of Learning to read and write: Acquisition of letters and phnemic*

- awarness,eds. (pp. 113-131). New york: The Guilford press.
- Geers, A. & Moog, J. (1989). Factors Predictive of the Development of Literacy in Profoundly Hearing Impaired Adolescents. *Volta Review*, 91: 69-86.
- Girma Wosanne, (2008). Effects of Instrumental Enrichment and Mediated Learning Experience on EFL Vocabulary Task Performance of Students with Hearing Impairment. Addis Ababa University: Unpublished PhD Thesis.
- Hoffmeister, R. (2000). A piece of puzzle: ASL and reading comprehension in Deaf children. In C. Chamberlain, J.P. Morford & R. Mayberry (Eds.), *Language acquisition by eye* (pp.143-163).
- Hover, W. & Gough, P.G. (1990). The Simple view of Reading and writing. *An Interdisciplinary Journal*, 2, 127-160.
- Iseralietes, N. a. (1981). *Bilingual-Bicultural education for deaf and hard of hearing students*. Toronto, ON: MGS.
- Kluwin, T., & Stinson, M. S. (1993). Deaf Students in Local Public High Schools: Backgrounds, Experiences, and Outcomes. Springfield: Charles. C. Thomas.
- Lane, H., Hoffmeister, R. & Bahan, B. (1996) *A Journey into the Deaf-World*. San Diego: Dawn Sign Press.
- Livingston, S. (1997). *Rethinking the Education of Deaf Students: Theory and Practice from a Teacher's Perspective*. Portsmouth, NH: Heinemann.
- Lodico.M.G, S. a. (2006). *Methods in Educational Research: From Theory to Practice*. San Fransisco Ca:: Jhon Wiley & Sons,Inc.
- Marschark, M. (2003). Epilogue:What we Know, What we dont know,and what we should know. In M. a. Marschark, *In Oxford hand book of Deaf Studsies languag and education*,ed. (pp. 91-4). New York: Oxford University Press.
- Marschark, M. a. (2009). *The education of deaf and Hard of hearing in Ireland, NCSE Policy Advice*. National council for special education.
- Marschark, M. H., Lang, H.G., Albertini, J.G (2002). *Educating Deaf students:From Reaearch to Practice*. New York: Oxford University Press.
- Marschrk, M. H. (2008). Cognitive Underpinings of learning by deaf and hard of hearing students. In I. M. Spencer(eds.), *Oxford handbook of deaf studies, language and Education*. NY: Oxford University Press.
- Moates,L. C. (2000). *Speech to print: Language Essentials for Teachers*. Baltimore: Brookes.
- Moore, D. K. (1987). *Factors Predictive of literacy in deaf adolescent in Total Communication programs*. Washengton,DC:: Gallaudet Research Institute.
- Paul, P. (2003). *Literacy and Deafness: The development of reading, writing, and literate thought*. Boston: Allyn & Bacon.

Paul, P.V. (1996). Reading Vocabulary and Deafness. *Journal of Deaf Studies and Deaf Education*, 1, 3- 15.

Journal of Special Needs Education
Vol.35/No.1, 31-40.

Paulos, K. (2012). Ethiopian Sign Language Teaching Guidance. Addis Ababa University Press.

Sartawi, A. A. (1998). A Pilot Study of reading Comprehension Strategies of Students who are deaf/hard of hearing in a non-English speaking country. *Journal of Children's communication Development*,20(1), 27-32.

Schildroth, A. H. (1996). Change in programme and student characteristics (1984-5 1994-5). *American annals of the Deaf*, 141,, 68 - 71.

Seigel, J. (2001, February). *Where are we in deaf education reform?* Retrieved from National Association of the Deaf <http://www.nad.org>.

Staewart, D. &. (2001). *Teaching Deaf and Hard of hearing Students: Content,Strategies,and Curriculum*. Boston: Allyn & Bacon.

Supalla, S. (1991). Manually Coded English: The Modality Question in Signed Language Development. In P. Siple & S. Fischer (Eds.), *Theoretical Issues in Sign Language Research Volume 2: Psychology* (pp. 85-109). Silver Spring, MD: TJ Publishers.

Tesfaye Basha, (2004). Social and Academic Conditions of Integrated Students with Hearing Impairment at Wachemo Comprehensive Secondary High School. AAU: Unpublished. MA Thesis.

Wauters, L. N., & Knoors, E. V. (2001). Sign Facilitation in Word Recognition. *The*