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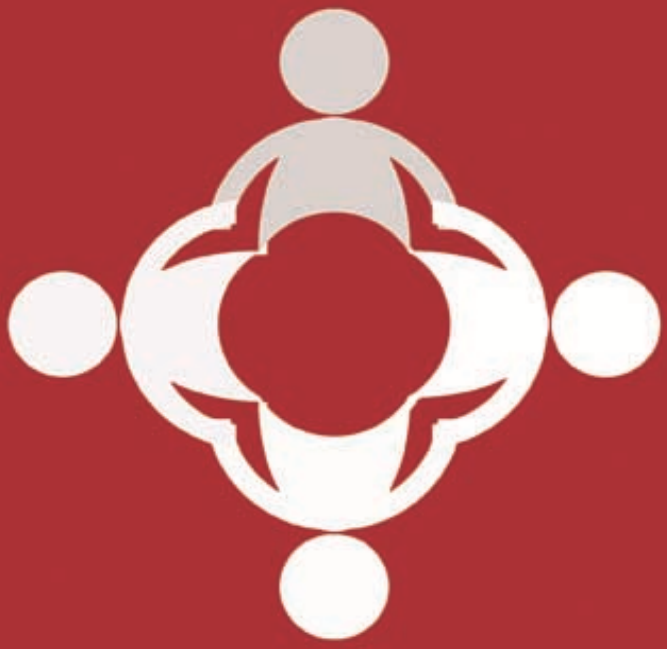

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Message from the Editor

I am very pleased to publish second issue in 2014. As an editor of Turkish International Journal of Special Education and Guidance & Counselling (TIJSEG) this issue is the success of the reviewers, editorial board and the researchers. In this respect, I would like to thank to all reviewers, researchers and the editorial board. The articles should be original, unpublished, and not in consideration for publication elsewhere at the time of submission to Turkish International Journal of Special Education and Guidance & Counselling (TIJSEG), For any suggestions and comments on TIJSEG, please do not hesitate to send mail.

Prof. Dr. Ayşegül ATAMAN
Editor

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SIGNED LANGUAGE PROFICIENCY AND WRITING SKILL OF DEAF CHILDREN IN SPECIAL AND INTEGRATED PRIMARY SCHOOLS IN ADDIS ABABA

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ABSTRACT

The purpose of this study was to investigate the signed language proficiency and writing 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, writing 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 writing. 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 writing skill than those of the integrated schools. Besides, the findings revealed that the high signed proficiency group demonstrated higher writing skill than the low proficiency group. This shows that signed language proficiency is highly associated with writing skill. To empower deaf learners in sign language and literacy early sign language and literacy skills development is fundamental.

Keywords: signed language proficiency, signed Amharic, signed English, writing skill

INTRODUCTION

My eight years experience in teaching English language in the elementary school for the deaf has convinced me that the problem was from our teaching system of English and Amharic languages. And our education has been taken for granted with little attempt at critically looking in to the teaching system and consciously and cooperatively trying to change our ways of teaching the deaf students. It is no good blaming students with hearing impairment for poor performance of literacy, sign language limitation and academic achievement. Poor input- poor outcome is mentioned issue. If they fail to achieve and if we do not try to find out what it is that causes the failure and correct the situation, the blame would be upon the teachers and teachers training institutions.

It seemed to me that the key solution to many of deaf education problems is to criticizing ourselves and improving our ways of teaching, to freely discussing our approaches on a regular and special school basis with an aim to exchanging views and experiences by conducting research of the kind I have attempted. There is a need for better understanding of the problems of deaf students and making them competent students in reading and writing, in their native language (sign language), and helping them advance in their academic performances. Reading and writings in schools received less attention; however they are crucial for deaf learners. We would be forced, then, to know the level of our deaf students' performance in writing skill in relation to their native language proficiency. Moreover, as far as I know few local studies examined the writing skill with sign language proficiency in combination. It is my sincere hope that this research will make its own contribution in this regard.

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.

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To this effect, the academic status of deaf learners has historically lagged behind that of their hearing peers (Allen, 1986). 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).

In a similar way, (Hailu, 2003) says that the quality and the scope of catering educational services for deaf children have gained a scant attention and remained a perennial problem for the last twenty five years in Ethiopia. He relates the underlying causes of improvised deaf education in Ethiopia to the lack of well-trained educators of the deaf, absence of adequate schools for the deaf and inaccurate prevalence information given about people with hearing impairment. Deaf children are at a distinct disadvantage, such as the children's capacity to learn is not exploited to their potential, teaching and learning takes place in a haphazard manner, teaching methods are traditional (chalk and talk), teachers are not equipped to match the learners with their needs, and learners suffer with problems in literacy skills as Hailu assumes. If deliveries of education are limited then deaf students could develop probably long term frustration and lack of confidence to meet later life challenges (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. Without communication, a child is lost in the joys of human contact, the ability to connect thought and symbol into language, and the beauty of learning. 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).

Written Language Skill of Deaf Children

In this connection, communication, education and social growths depend on a language-rich environment, one with ongoing, direct, and age-appropriate language opportunities. According to Antia et al. (2005), we should give importance for the communication of the deaf children since an effective, communication-driven system will meet the needs of all deaf children. If the communication goes awry, it affects the intellectual growth, social interaction, language development, and emotional attitudes, all at once, simultaneously, and inseparably. The language problem is one of several problems. Therefore, efforts should be made to make school life enjoyable for the deaf learners.

Seemingly, sign languages have allowed deaf people to match the skills and abilities of hearing people in communication, cognition, and to empower deaf child in learning (Cummin, 2006). The sign language should be the first language of deaf children and be regarded as their primary language. It should be used to teach academic subjects such as science, humanities, social studies and mathematics. Sign Language can be used to teach English or other majority language as a second language. Usually sign language is used to teach reading and writing skills in English and other languages rather than oracy. 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, 1981, P.20).

In the same view, 'the best deaf readers writers appear to be those who receive early exposure to sign language and exposure to the language in which they will eventually learn to read and write' (Lukner &

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Muir, 2001). 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.

McAnnally, Rose, & Quingley (1994) explain writing as "… a way of expressing what one already knows". Writing is a critical skill, functioning as a method of clear communication and a path to achieving higher levels of prosperity. In one of the few examinations of deaf students on a standardized writing test, Musselman and Szanto (1998) administered the spontaneous writing subtest of 'The Test of Written Language–2 /TOWL–2/' to a sample of 69 adolescents between 14.5 and 19.5 years of age. The students enrolled in a variety of programs ranging from special schools in general-education classrooms Hammill & Larsen, 1988). Scores for the group to syntactic maturity (a measure of grammatical complexity and accuracy) fell more than 1 standard deviation below the mean for the test. Thus, the grammatical complexity of deaf students' writing increases over time. Antia et al. (2005) found out the deaf students, face difficulty in public school with grammatical constructions in their school life.

As Yoshinaga- Itano et al., (1996a, 1996b) analyzed the '… written essays for deaf children (in a variety of educational placements) and reported that they were able to communicate main ideas but did not elaborate or provide details in their writing'. In addition, Antia et al., (2005), further explains that students with severe and profound hearing losses, show lower performance when compared with their hearing peers.

Yoshinaga-Itano and Downey (1996) reported that the pattern of writing delay differed by degree of hearing loss. Students with mild and moderate degrees of hearing loss are likely to have better English literacy than deaf students because of increased access to oral language, they may not necessarily achieve at the same level as their hearing peers. Students with severe and profound hearing loss were reported to demonstrate less skill than mild and moderate. Furthermore, the lexical coding deficit hypothesis (e.g., Kelly & Barac-Cikoja, 2007) claims that because of a permanent lack of auditory stimulation, individuals with pre-lingual deafness do not develop sufficient phonemic awareness to sustain the rapid and accurate phonological decoding and subsequent identification of written words (e.g., Perfetti & Sandak, 2000). As a consequence, the integration of their meaning into broader ideas by means of their structural (syntactic) and semantic processing is at risk to fail. Authors like (Moores, 1996; Paul, 1998) have commented on the difficulty that deaf students have in writing in English. Because of the difficulty they face to access and learn English syntactical and morphological structures, either auditorily or visually, they make numerous errors at the sentence level.

Children who are deaf do not have the same access to the rules of spoken language as do children with normal hearing. Similarly, they are delayed in the development of a signed language (Marschark, Schick, & Spencer, 2006). Thus, the relationship between spoken or signed language and written language is limited in this population resulting in written language acquisition that is both delayed and incomplete (Everhart & Marschark, 1988). The difficulties that children with educationally significant hearing loss have in acquiring receptive and expressive language skills are well documented (Ewoldt, 1985; Marschark, Mouradian, & Halas, 1994; Moeller, Osberger et al., & Eccarius, 1986). The average child who is deaf graduates from high school functionally illiterate, reading and writing on a third- or fourth-grade level (Allen, 1986; Waters & Doehring, 1990).

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The Relation between Sign Language Proficiency and Written Language Skill

In connection to relation sign language and written language skill, one of the earliest and most impressive studies on the relation between linguistic proficiency in sign language and written language was conducted by Strong and Prinz (1997). Strong and Prinz assessed the proficiency in American Sign Language (ASL) and written English of a group of 160 deaf children between 8 and 15 years old. They reported a strong correlation between the composite scores of the linguistic comprehension and language tests in ASL and English after age and nonverbal intelligence was partialled out. Strong and Prinz concluded that "bilingual deaf children can benefit from having (even a moderate) fluency in ASL". Their study was really interesting one to establish a positive relationship between linguistic proficiency in sign language and written language. Most of the early studies were interpreted as evidence for linguistic interdependence between children's proficiency in sign language and in written language.

For deaf students in public schools, one would expect (as a group) that their writing achievement would be higher than students in special schools; however, it is important to know how they compare to norms for the general student population. Antia, et al, (2005) found that deaf students, "even those in public schools, may experience difficulty with grammatical constructions throughout their school years".

Since the very beginning of education of deaf people, a strong view has been held that '… reading and writing can substitute for the diminished capacity to hear and speak' (Power and Leigh, 2000). Earlier identification of hearing loss allows for earlier intervention and raises expectations that increasing numbers of deaf children will build up language and written abilities that are comparable to their hearing age peers. Early years of literacy learning has been shown to be critical to future success. Suggestions have been made that, "with respect to early literacy development, deaf children follow similar trajectories to those of their hearing counterparts. In a review of the literature", Williams (2004) argues that "deaf children's emergent reading reflected the developmental sequence of hearing children described in the research literature" (p. 356) and that "young deaf children's emergent writing development may be similar to that of hearing children" (p. 361).

To summarize, the written language of deaf students vary from their hearing peers on a number of scope. In relation to this, deaf learners need to become proficient and literate users of the language in order to succeed in school, participate in a democracy as knowledgeable citizens, find challenging and rewarding work, be grateful for and contribute to cultural activities, and follow their own ambition and interests as independent learners throughout their lives. Hence, written skill is crucially important.

From the points made above the researcher would appear to be in a tenable position to study that special and integrated schools are conspicuously requiring investigation that focuses on signed language proficiency and written skill of deaf children.

Statement of the Problem

In Ethiopia, schooling for students with hearing impairment is evolving at a fairly rapid rate due to educational and legal changes in the country. In most cases, these changes have contributed to a better understanding of the needs of deaf children and their access to greater educational opportunities. Currently, special schools and integration schools for deaf children are growing up quantitatively in the entire country. This nationwide movement toward opening integration classes in regular schools is part of the inclusive education movement and the result of the expansion of inclusive education program. These opportunities and challenges reveal a need to re-think about deaf education: writing skill as well as

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Ethiopian Sign Language (ETHSL) in current school practices. This requires an in-depth study in the area of deaf education examining their academic status in integrated and special elementary schools.

The other outcome measures are included in recognition of the impact of sign language proficiency on writing skill. In deaf education, these skills influence one another. They link each other. One encourages the other. Without a strong first language base, teaching and learning become complicated and the learning of a second language is much more difficult (Landsberg, 2005). This study assesses the capabilities of deaf children and the problems that they may encounter because deaf children may use more than one mode of communication (e.g., sign language skills and written language 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. As all languages have their own grammatical peculiarities, so does the sign language since it has its own grammatical structure (Adoyo, 2002; Johnston and Schembri, 2007). Ethiopian Sign Language has its own grammatical structure, yet not studied (Paulos, 2012). Since Ethiopian Sign Language is not well studied, it is difficult to study its complete structure. Due to this, 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 written 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 writing skills?

2) Is there statistically significant difference between Sign Language proficiency and writing skills of deaf students?

METHODS

This study was conducted on the basis of the pragmatist philosophical lens which applied both quantitative and qualitative (mixed) approaches. This philosophical framework would propose the use of both methods carefully, to answer the research questions in the study. Since the purpose of this research was to investigate academic status of deaf children in integrated and special schools, to answer the questions posed and to meet the objectives of the study, the researcher used triangulation design, convergence model. The design allowed the researcher to collect diverse types of data which opened the door to a better understanding of the research problem.

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 test, writing 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. As the result of this, both the quantitative comparative research and qualitative study designs were equally weighed in this study. The researcher wanted to focus on two linguistic content areas such as sign language and writing skill. The reason for choosing those specific reading and writing skills were that they are important language learning areas that most deaf students experiences a tremendous difficulties.

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These were critical areas of the school curriculum, an important part of student's carrier and a social act as well as an integral part of everyday life.

Participants

The participants for the main study included deaf students, teachers of the deaf, and principals from the four schools. The participants 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. All the entire population participated in the study: 19 deaf students (7 males and 12 females) from School - 2, 12 deaf students (10 males and 2 females) from School - 4, 25 deaf students (15 males and 10 females) from School- 1 and 20 deaf students (10 males and 10 females) from School - 3. The sum of 76 deaf students participated in the study. All of the deaf students had hearing losses ranging from severe to profound.
Formal semi-structured interviews were designed for three categories of participants. From each school 2 deaf students, 2 teachers and 1 school principal. Totally 20 participants were selected. To sum up 96 participants were taken as sampled for this study. Hence, the data for the study were generated from two nongovernmental and two government school participants. More specifically, deaf students from grade eight Amharic/English and sign language teachers were the participants of the study.

Participant Selection Procedure

The focus of this study was grade 8 deaf students and their teachers in primary government and non-government schools. The difficulty of getting information from every region, difficulty of comparing of varied curriculum, varied media of instruction and examination in each region to study every grade eight deaf students in entire country is very difficult. To study in one representative sample region of all deaf students is the optimal choice. The study limited to Addis Ababa City Administration. The result is directly generalizable to a target city administration school deaf population. Therefore, for quantitative data collection, the accessible population was taken as a sample for the study. For qualitative data collection purposeful sampling strategies were used. Deaf interview participants purposefully selected from grade eight who could provide appropriate information for the student and teacher participants who had long experiences and worked with deaf more than five years in teaching were selected to obtain adequate information about deaf students. To check, the reliability, validity and consistency of the research instruments, the sign language proficiency task, writing task, questionnaire and interviews were administered to a group of 24 deaf students to pilot the study in LeaMcD and Hosanna School for the Deaf.

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 from severe to profound deafness (70 dB above hearing loss on the better ear). The researcher used non-random sampling technique. As a result of the availability of few 8th grade deaf children in selected sites, the researcher was forced to take the whole population as the sample of the study.

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Instruments and Procedures

Signed Amharic and English Tasks

The researcher gave a detailed description of deaf participants who are high proficient and low-proficient in sign language. The deaf participants were divided into proficient and low proficient groups were discussed as follows: To be able to divide the deaf participants into a group that is high proficient in Signed Amharic and English and a group that is low-proficient in signed Amharic and English (Berk, 1976) model was used to determine cut-off scores in two categories (low and high) to assess Sign language proficiency. The researcher with grade eight language teachers developed the reading passage 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. And then, the tests were given to a language testing expert of Addis Ababa University and PhD students of linguistics for appraisal. After a thorough looking through the commented test, the researcher gave the test for further appraisal to the English and Amharic teachers of eighth grade deaf students. The researcher seriously considered the comments which were given by individuals.

The researcher used a Signed Amharic/English proficiency task for all selected grade eight deaf students. The researcher asked the participants (via a written instruction, similar to the instruction for the written narratives) to sign a short narrative in front of a video camera. The instructions were given in ETHSL or Sign Supported Amharic during the assessment of sign language proficiency. To the end, 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, Johnston and Schembri (2007) broken down sign into five formational parameters. In addition, 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 these five sign production parameters were used. To that end, the deaf students were assessed in the following five sign language linguistic parameters: hand shape, location, movement, orientation and non manual components. These are most relevant cheremes in sign productions (Emmorey & Corina, 1990). The two primary ways of guiding performance judgments are rating scales and checklists (Linn & Gronlund, 2001).

Two sign language experts native speakers of SL (who were deaf) and one of them was post-lingual assessed the deaf by rating narratives on the bases of hand configurations, location, movement, orientation, and non-manual components 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/Signed Amharic system. Scoring included right and wrong assessments points for each word. On the basis of frequency distribution of their test scores, children were classified as proficient or low-proficient in sign language. Cohen's Kappa's coefficient was 0.66 indicating substantial agreement between raters (Landis and Koch, 1977).

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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. Furthermore, development of this instrument is planned including assessor training, gathering data, and verifying the cut-off scores for low and high proficiency categories. The goal of doing this was to yield as an efficient, reliable, and valid measure of signed languages proficiency among deaf learners of eighth grade.

Writing Task

In language, four types of tests are commonly used depending on the criteria of their classification. These include: proficiency tests, achievement tests, diagnostic tests and placement tests (Hughes, 1989). Proficiency tests are designed to measure the ability of students without giving any training. This means proficiency test is not based on the content or objective of language courses. Achievement tests are directly related to language courses, and are often prepared by classroom teachers. Diagnostic tests are intended to identify what further teaching learners need. It helps to find strengths and weaknesses. There are two types of testing writing: indirect and direct testing of writing. In indirect testing of writing, students, for example, are asked to edit a text containing a number of errors of grammar, spelling and punctuation, and to re-write the passage by making all the necessary corrections. The direct testing of writing includes essay tests, controlled writing, guided writing, free expository writing and summary. In this study, the researcher used the direct testing of free writing to measure their proficiency. Jonathan Swift model also asked students to write their own experience. Free writing techniques were used to encourage reticent and less confident writers. The focus is getting one's thought, feelings, memories, skills and down on paper without censoring or editing (Murray, 1976, cited in Marschark & Spencer, 2003).

In the direct testing, participants were asked to write a story about the school they have experienced by themselves related to something they have learned. They were asked to write in both Amharic and English languages. Writings skills should be expected within linguistic and cognitive capacities of grade eight deaf students. They were specifically, instructed to write a story about their school, what they had experienced and what the school was for them. The deaf participants received instructions in Total Communication and on paper. The instruction in sign language was given by a teacher of the school and the researcher. The researcher always verified whether the participants understood the instruction. Students were not given any assistance during writing. They were not limited in time when writing their texts. Because of the persistence writing errors of deaf learners, the researcher preferred to evaluate in five criterions such as content knowledge, organization of the ideas, effective use of vocabulary, language construction and mastery of mechanics. For this, Heaton's (1990) five dimension of essay writing assessment model of rating scale used for both Amharic and English writing skill. Five items were identified to be scored by use of ratings that varied from 1 to 4. These items and a brief explanation of the ratings are presented in appendix.

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The two PhD linguistics students were trained in the scoring procedures. Both researcher assistances independently scored the transcript of each written products using evaluation marking scale.

Questionnaire for Students

It was the entire population that was aimed at and hence no sampling was carried out in obtaining the questionnaire data. Questionnaire for students was one of the tools used for gathering data for the study. The researcher developed detailed questionnaire to deaf participants that included questions about personal profiles, sign language and writing skills. Information about the participant was looked up in the personal files available at the schools or was provided by their teachers. The written skill background questionnaire demonstrates that the deaf participants written skills and difficulties. The researcher distributed the questionnaire only for students who attended in the grade 8 level required for the study.

Interviews

The researcher designed a semi-structured interview. The purpose of this interview was to gather data on the teachers' and deaf students' perception about sign language and written skill to students with hearing impairments. The instrument was especially developed for deaf students, teachers and principals of the schools. The semi-structured interviews were written in Amharic language and given to linguists to review. All the corrections were incorporated.

Face-to-face interview was conducted in sign language for deaf students so that the deaf students could understand the interview questions clearly and give accurate responses. The interviews were administered individually and signing to the deaf students by a hearing interviewer. All the interview participants were purposefully selected from each school to give their views in the interview sessions held with the researcher.

The major objective was to investigate sign and writing skill of deaf students in four primary schools. Considering the measurement tools, the researcher developed in the following ways.

1) Signed language proficiency
2) Writing skills

Observation

In this research, observation was used as empirical method for data collection. As a method, it required the researcher to go in search of information in the learner natural settings. The natural settings included selected primary schools for the deaf. Observation data create opportunity for a researcher to gather live data from live situation (Cohen, Manion and Morrison, 2007). The researcher also designed a non-participatory observation guide based on Creswell (2007).

The observation pattern was visiting all the selected special and integrated primary schools and classrooms followed by a close observation according to the scheduled time of data collection. During this time, deaf education pattern (how SL and spoken languages are practiced) and literacy skills were observed in their natural placements. Close observation was carried out in order to compare special and integration primary schools of 8th grade deaf students in the sites. For all the observation, observation checklist was developed and used. Hence, classroom observation helped the researcher to find out how written skills and sign language and other academic tasks were being taught and students' experience of learning.

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Procedure

Before conducting of the classroom observation, I secured permission from the subject teachers. This was on the basis of their inherent willingness to take part. In prior discussion I assured the teachers that all information gathered would be strictly confidential. Thus my presence in the classroom could not have had much negative impact on deaf students. I sat at the back of a classroom. I took notes about what was going on in the classroom itself or completed the notes afterwards. The observation sessions were held on Monday to Friday for four weeks- one week for each school. Each class in the subject area was observed for one class period which had duration of 40 minutes. The sign language, English and Amharic classes were observed for two consecutive periods on different ways. I decided that the language classes had to receive two periods of observation because I felt that the language classes might use different methods of teaching for different topics.

Data Collection Procedure

Signed Amharic/English proficiency assessment task test and writing skill assessment task test 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. All the scores of students of all the sample schools were documented and analyzed using this software.

The sign language and the writing tasks were described in more detail and interrelating comparison was done. These helped the researcher to evaluate the writing skill and sign language impact in selected schools deaf students.

Pilot study: A pilot study involves a small scale testing of data collection methods and procedures that the researcher plans to use in the main study, and revising the methods and procedures before they are launched, or become operational based on what the testing reveals (Anderson, Clapham and Wall, 2001). Therefore, to achieve such a goal the researcher conducted the pilot test in two nongovernmental special primary schools. The schools were used as a proving ground for refining and answering the research questions. Therefore, as the way of devising the pilot study sign language proficiency test, writing test, questionnaire, interview and observation instruments, were developed, and then the tests were given to language testing expert of AAU, PhD students of linguistics and classroom teachers for appraisal. This was because the Sign language and Amharic/English teachers in 8th grade were ideal to evaluate the level of difficulty and relevance of the test in relation to the deaf students. To check, the reliability, validity and consistency of the research instruments, the sign language proficiency task, writing task, questionnaire and interviews were administered to a group of 24 deaf students to pilot the study in LeaMcD and Hosanna School for the Deaf.

As a result, I gave the tests to a hearing and deaf teachers who had been teaching sign language, Amharic and English languages for the last several years in grade eight for their critical evaluations of the content and to check whether it was to the level of cognitive capacity of deaf learners before it was administered. The researcher considered the comments given by three evaluators namely, experts in sign language, eighth grade Amharic and English language teachers of the deaf and linguists before administering the test to the target group. The process also entailed addressing the validity of the test. The validity of the test refers to the degree to which a test measures what it intends to measure (Creswell, 2007). Then to estimate the reliability index, the researcher administered the pilot tests to a group of 24 deaf students in Hosanna and LeaMcD School for the Deaf.

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Data Collection: The two types of data (quantitative and qualitative) were collected concurrently**.** Prior to the commencement of data collection, two teachers who have ETHSL proficiency skills for rating and evaluating sign language proficiency of deaf students were selected from the schools. To evaluate written text, 2 linguists (PhD students) from Addis Ababa University were selected. The researcher gave a half day training and orientation for sign language proficiency raters and writing skill raters on how to handle and evaluate the data before and after administration of the instruments. The back ground questionnaire was administered to a total of 76 deaf students.

Ethical consideration was prioritized to keep the consent so that the researcher, before data collection, would meet with the directors of the schools and explain to them about the purpose of the study and present the letter written to solicit the cooperation of the schools. During the administration of the instruments, the deaf students and teachers were informed that the data they provide would be used only for research purpose and that the information they gave would be kept confidential. The directions were read to the participants to make their tasks clear. The administration of the instruments was timed and the participants completed them according to their pace. Data collection was conducted during school days.

Data Analysis

The objective was to determine whether there was any relationship between sign language proficiency and writing skills of deaf students. The data were analyzed using descriptive statistics, chi-square and correlation analyses. A descriptive statistics and the *chi-square* and the Pearson's product moment correlation coefficient (r) were used to specify any significant differences between them. In this study, the researcher combined the classical analytical strategy of interpretive descriptive sequences of activities and analysis- in the sense of comparing and interrelating sign language and written skills of eight grade deaf students in the context of critical literature and descriptive interpretive qualitative research method. The data collected through interview and observation on investigation of writing skills and sign language proficiency were organized into a word processing file for analysis.

RESULTS

Rationale for Signed Language Proficiency

First of all, we know that the acquisition of a first language must be secured to the child. If a child whether hearing or deaf is prevented from active participation in communicative settings in which a perceivable language is used, a normal first language development cannot be expected (Svartholm, 1994). We also know that this first language must be a language of optimal accessibility to the child. For the deaf, this means sign language. Speech alone or invented mixtures of speech and signs (such as Signed English/Amharic, for example) are – to say the least – clearly unsatisfactory as a basis for normal first language development. Neither are they suitable for the development of second language (Svartholm, 1994; Marchack, 2003).

When we come to bilingualism in the education of the deaf children means that deaf children have ETHSL as their primary language. Later on they will learn Amharic or English as their second language, and it will be taught by using principles similar to teaching a foreign language. The deaf are bilinguals in the sense that they use both Sign Language and their second language in everyday life (Grosjean, 1992 and Greeshin, 2007). The degree of sign language proficiency varies from one deaf individual to another, especially as regards sign language fluency skill.

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In many parts of the world, a method called sign supported speech is used as a means of language exposure, especially in deaf education. This is based on the belief that the meager information from lip movements can be supplemented with a sign for each word said. The speaker uses his voice and simultaneously produces signs with approximately the same meaning as his words. Sign supported speech has, however, proved unsatisfactory as a means of exposing deaf students to the national language (Johnston, 1989, 2007). Certain important functions of language are lacking in this method. The shortcomings of sign supported speech are such that understanding it requires a very good command of the language being spoken. Second language learners can only understand a small part of what is said this way.

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.

Table 1
Schools participants' involvement in Signed Amharic high and low proficiency groups

Name of the school	**High and Low proficiency Groups - Amharic**				**Total**	
	High Proficiency		**Low Proficiency**			
	N	**%**	**N**	**%**	N	%
School 1	12	60	8	40	20	100
School 2	10	62.5	6	37.5	16	100
School 3	3	20	12	80	15	100
School 4	6	60	4	40	10	100
Total	31	50.8	30	49.2	61	100

Table 1 shows high and low proficiency of deaf students in Signed Amharic proficiency involvement from four schools. As can be observed from table 15, 31 (50.8%) deaf students were in high proficiency top groups (49.2%) were in low proficiency bottom groups. A total of 16 high and low proficiency students from school-2 for the deaf took the highest share i.e. 10 (62.5%) , and school-1 for the deaf and school - 4 i.e. integration school 60% and school - 3 Primary School took the least 20% share respectively. Special schools for the deaf were high signed Amharic proficiency contributors for 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. School -3 regular primary school deaf children might have begun late. This early sign language exposure may contribute for better sign language skill development. School-3 integration school was the least contributor for high proficiency skills. This indicates that integrated regular primary school deaf students showed poor sign language performances.

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Table 2
Participants in Signed English high and low proficiency groups by schools

	High and Low Proficiency Groups- English					
Name of the School	**High Proficiency**		**Low Proficiency**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
School 1	8	42.1	11	57.9	19	100
School 2	11	73.3	4	26.7	15	100
School 3	5	31.3	11	68.8	15	100
School 4	6	60.0	4	40	10	100
Total	30	50	30	50	60	100

Table 2 display high and low proficiency groups in signed English from four schools. As observed from table 16 likewise as Amharic Signed group data, school -2 proficiency participants were (73.3%), school -4 integration school participants were 60%, School -1 for the deaf participants were 42.1% and the least signed English high proficiency group was school- 3 Regular primary school. The factors for the signed language skill development probably early exposure for mother tongue, peer interaction, instructional system and sign language accessibility, placement conditions, teachers teaching methods, etc, may contribute for sign language proficiency differences between schools.

Table 3
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 3 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

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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 groups 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 mean for high proficiency group was higher than that for low proficiency group. The total mean score of correct response in Signed English was not significantly different from wrong response in signed English. This implies that deaf learners had difficulty of understanding English written materials to sign than Amharic written materials.

Table 4
Presents the descriptive statics correct and wrong Signed Amharic responses in high and low proficiency groups by sex

High and Low Proficiency Groups in Amharic Low Proficiency	Sex of the respondent	Correct response of Signed Amharic			Wrong response of Signed Amharic		
		N	Mean	Std. Deviation	N	Mean	Std. Deviation
	Male	19	34.05	11.712	19	70.95	11.712
	Female	11	35.27	12.854	11	70.00	13.000
	Total	30	34.50	11.936	30	70.60	11.984
High Proficiency	Male	19	92.68	5.323	19	12.11	5.656
	Female	12	86.83	7.309	12	18.17	7.309
	Total	31	90.42	6.707	31	14.45	6.913
Total	Male	38	63.37	31.035	38	41.53	31.165
	Female	23	62.17	28.202	23	42.96	28.362
	Total	61	62.92	29.764	61	42.07	29.906

Table 4 reveals the mean and standard deviation for the right and wrong Signed Amharic responses in high and low proficiency groups by sex. The mean score of low proficiency group correct signed Amharic male was 34.05 and standard deviation was 11.71, and wrong signed Amharic male response was 70.95 and standard deviation was 11.71. Female mean score correct response for signed Amharic was 35.27 and wrong response was 70.00. On the other hand, the mean score of high proficiency group correct response of male was (92.68) and wrong response of mean score was 12.11, and the mean score of correct signed Amharic for female was(86.83) and wrong response was 18.17. The mean score of male correct response of signed Amharic was higher than female correct signed Amharic responses. As is observed from the table 20, there is no significant difference between male and female of low proficiency groups of right response Signed Amharic proficiency yielding and wrong response.

On the other hand, there is a significant difference between male and female high proficiency groups Signed Amharic right response mean scores is and wrong responses for signed Amharic. This indicates that grade 8 male and female deaf students of low proficiency groups have almost similar sign language skills in Signed Amharic proficiency. Whereas high proficiency groups of male in Signed Amharic right response (90.42) performed statistically higher than (86.83).

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Table 5
Descriptive statics for correct and wrong Signed English responses in high and low proficiency groups by sex

High and Low Proficiency Groups in English	Sex of the respondent	Signed English					
		Right Responses			Wrong Response		
		N	Mean	Std. Deviation	N	Mean	Std. Deviation
Low Proficiency	Male	12	17.58	6.360	12	54.25	6.254
	Female	18	19.39	7.081	18	52.33	7.941
	Total	30	18.67	6.748	30	53.10	7.260
High Proficiency	Male	23	53.26	7.659	23	18.74	7.659
	Female	7	51.86	8.335	7	20.14	8.335
	Total	30	52.93	7.697	30	19.07	7.697
Total	Male	35	41.03	18.608	35	30.91	18.522
	Female	25	28.48	16.561	25	43.32	16.723
	Total	60	35.80	18.709	60	36.08	18.695

Table 5 reveals the mean and standard deviation for the Signed English proficiency male and female in high and low proficiency groups. The mean score for low proficiency signed English male correct response was 17.58 and standard deviation was 6.36 and wrong response sore mean was 54.25 and standard deviation was 6.25. Female mean score for correct response was 19.39 and standard deviation was 7.08, and wrong response 52.33 and standard deviation was 7.94.

On the other hand, the mean score of high proficiency group correct response of male was 53.26 and wrong response of mean score was 18.74, and the mean score of correct signed English for female was 51.86 and wrong response was 20.14. As is observed from the table 22 that there is insignificant difference between male and female of low proficiency groups results of right response Signed English and wrong response.

On the other hand, there is no significant difference between male and female high proficiency groups right Signed English mean scores and wrong responses for signed English. In general, male and female deaf students in high proficiency group performed almost equal; and similar result was obtained from in both low and high proficiency groups of male and female.

Rationale for Writing Skill

Writing is an important skill in language learning. It is a continuing process of discovering how to find the most effective language for communicating one's thoughts and feelings. In other words people usually write in order to communicate facts, feelings, attitudes and ideas clearly and effectively. It is also a powerful instrument of thinking because it provides students with a way of gaining control over their

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thoughts (Cotton, 2001). Writing enhances language acquisition as learners experiment with words, sentences, and larger chunks of writing to communicate their ideas and to reinforce the grammar and vocabulary they are learning in the class. It is also a critical area of school curriculum and an important part of students' carrier or higher studies after school.

The construct of Amharic and English language proficiency is highly pertinent in the education of deaf students largely because adequate Amharic and English language skills and writing skills are a necessary prerequisite for meeting the demands of educational programs in schools. In this regard, writing skill for deaf learners a crucial one in educational settings and in everyday activities.

Written language is by far the best type of second language exposure in that it is the most accessible to the deaf (Anderson,1994). Deaf learners in our school settings with a national curriculum they have attended schools for eight years using sign language in all subjects including Amharic. However, they read and write their second language poorly. Some have no exposure to sign language at home or previously in school. In addition, the national curriculum was not in full effect when they went to elementary school and therefore they could not benefit from it in their language development. Many of these deaf learners have so poor in comprehending of the Amharic language that they cannot understand even a simple informative text. Most languages have two variants, spoken and written. The fact that written language is perceived visually makes it fully accessible to sighted deaf people. Therefore, the researcher found to look at closer the current proficiency skill of grade 8 deaf learners essay writing skills using Heaton (1990) classroom testing model in this study.

Table 6
Test for independence of proficiency groups with Amharic writing

		High and Low Proficiency Groups - Amharic						Chi-square	
		Low Proficiency		High Proficiency		Total		Value	Sig
Amharic Content categories		**N**	**%**	**N**	**%**	**N**	**%**		
Content knowledge	Very poor	29	96.7	21	67.7	50	82.0	8.933(a)	0.030
	Fair to poor	0	0.0	3	9.7	3	4.9		
	Good to average	1	3.3	5	16.1	6	9.8		
	Excellent to very good	0	0.0	2	6.5	2	3.3		
Total		30	100.0	31	100.0	61	100.0		
Organization of idea	Very poor	25	83.3	11	35.5	36	59.0	16.155(a)	0.001
	Fair to poor	4	13.3	9	29.0	13	21.3		
	Good to average	0	0.0	6	20.5	7	11.5		
	Excellent to very good	0	0.0	5	16.	5	8.2		
Total		29	96.6.0	31	100.0	61	100.0		
Effectively Vocabulary usage	Very poor	23	76.7	11	35.5	34	55.7	12.667(a)	0.005
	Fair to poor	6	20.0	10	32.3	16	26.2		
	Good to average		0.0	8	25.7	9	14.8		
	Excellent to very good	0	0.0	2	6.5	2	3.3		
Total		29	96.7	31	100.0	61	100.0		
Language usage	Very poor	25	83.3	13	41.9	38	62.3	13.443(a)	0.004
	Fair to poor	5	16.7	10	32.3	15	24.6		
	Good to average	0	0.0	5	16.1	5	8.2		

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	Excellent to very good	0	0.0	3	9.7	3	4.9		
Total		30	100.0	31	100.0	61	100.0		
Mastery of Amharic mechanics	Very poor	23	76.0	12	38.7	35	57.4	11.711(a)	0.008
	Fair to poor	6	23.3	9	29.0	15	24.6		
	Good to average	0	0.0	5	16.2	6	9.8		
	Excellent to very good	0	0.0	5	16.1	5	8.2		
Total		29	96.7	31	100.0	61	100.0		

- Sig at 0.05 ($P < 0.05$)

Table 6 presents the percentile in cross tabulation and also chi-square Amharic writing in high and low proficiency levels. In Amharic writing skill, 96.7% content knowledge, 83.3% in organization of ideas, 76.7% in vocabulary usage, 83.3% of language construction, and 76.7% in mechanics low proficiency deaf learners showed very poor performances. Similarly, 67.7% in content knowledge, 35.5% in organization of ideas and vocabulary usage, 41.9% in language construction, 38.7% in mechanics high proficiency deaf students in Amharic writing skills showed very poor writing performances. However, high sign language proficiency group in all content categories of Amharic writing skills performed better than low proficiency groups. This means, 22.6% in content knowledge, 36.5% in organization of ideas, 32.2 % in vocabulary, 25.8% in language usage and 32.3% in mechanics performed good to excellent range of performance. Only 3.3% of low proficiency deaf learners performed a good range of performances. Out of 76 participants 82% of deaf learners content knowledge was very poor, 59% organization of the sentence were very poor, 55% of little knowledge of vocabulary, 62.3% were virtually no mastery of sentence construction and 57.4% were no mastery of conventional mechanics. Both groups exhibited writing difficulties in content knowledge, sentence organization, vocabulary, language usage and mastery of mechanics.

Both the high- and low-achieving groups showed deficits of sentence construction in all aspects of writings. Out of 76 deaf students, 76.7% of them used meaningless words in their sentences with spelling errors. Writing meaningless words was common in both proficiency groups. Further, their sentence construction was collection of words without appropriate message. They could not write meaningfully organized sentences. When they tried to pass message in writings, a lot of errors were observed. They were not enabling to pass quality message in writings. The essay seemed a sentence but lacked significant message; they did not follow Amharic grammar structure, and as a result, it was difficult to pick the message of the writer. The result of this study indicates that deaf students showed very poor writing performances in Amharic language. This revealed that learning to write in second language for both groups is equal unless there are ability/skill differences. Both groups wrote highly fragmented sentences with only content words. Further, to check relationship between low proficiency groups in Amharic writing, the researcher employed chi- square and the result is shown in table 6 above.

The chi-square test confirmed that even if both groups writing skill were very poor, the test was shown that there is a statistically significant difference in high and low proficiency groups in all categories of Amharic written skills $P > 0.05$. The chi-square was made to examine the extent of relationship between high and low proficiency groups in Amharic writing. The finding indicate that the low proficiency group is more in severe difficulties in sentence organization, content knowledge, mechanics, effective choice of vocabulary , language complex construction and mastery of mechanics. Next, a comparison was made on the relation of score of English writing skills of high and low proficiency deaf students.

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Table 7
Test for independence of proficiency groups with English Writing

		High and Low Proficiency Groups - English						Chi-square	
		Low Proficiency		High Proficiency		Total		Value	Sig.
English Content Categories		**N**	**%**	**N**	**%**	**N**	**%**		
English content knowledge	Very poor	30	100.0	24	80.0	54	90.0	6.667(a)	0.083
	Fair to poor	0	0.0	4	13.3	4	6.7		
	Good to average	0	0.0	1	3.3	1	1.7		
	Excellent to very good	0	0.0	1	3.3	1	1.7		
Total		30	100.0	30	100.0	60	100.0	6.800(a)	0.079
Organization of ideas	Very poor	28	93.3	20	66.7	48	80.0		
	Fair to poor	1	3.3	5	16.7	6	10.0		
	Good to average	0	0.0	5	16.7	5	8.3		
	Excellent to very good	0	0.0	1	3.3	1	1.7		
Total		30	100.0	30	100.0	60	100.0		
Vocabulary usage effectively	Very poor	27	90.0	20	66.7	47	78.3	7.185(a)	0.066
	Fair to poor	3	10.0	4	13.3	7	11.7		
	Good to average	0	0.0	5	16.7	5	8.3		
	Excellent to very good	0	0.0	1	3.3	1	1.7		
Total		30	100.0	30	100.0	60	100.0		
Language usage	Very poor	29	96.7	20	66.7	49	81.7	9.098(a)	0.028
	Fair to poor	1	3.3	8	26.7	9	15.0		
	Good to average	0	0.0	1	3.3	1	1.7		
	Excellent to very good	0	0.0	1	3.3	1	1.7		
Total		30	100.0	30	100.0	60	100.0		
Mastery of Mechanics	Very poor	28	93.3	20	66.7	48	80.0	7.333	0.062
	Fair to poor	2	6.7	6	20.0	8	13.3		
	Good to average	0	0.0	3	10.0	3	5.0		
	Excellent to very good	0	0.0	1	3.3	1	1.7		
Total		30	100.0	30	100.0	60	100.0		

- Sig at 0.05 ($P < 0.05$)

Table 7 shows that the relationship of the high and low proficiency groups in English writing skill with the corresponding crosstab result. Low proficiency group in all content categories of English writing skills showed very poor performances in five categories, it ranges from 90 % to 100 % who wrote deficiently. Similarly, high proficiency group in all content categories of English writing skills also displayed very poor writing performances; it ranges from 78% to 90% who wrote incorrectly. However, the percentile score for high proficiency group 20% in English sentence organization, 6.6% in content knowledge, 20% in effectively using vocabularies, 6.6% of proper language construction and 13.3% mastery of mechanics, which ranges good to excellent performed better than the low proficiency groups. Out of 76 participants, 90% did not show knowledge of content, 80% no organization of the sentences, 78.3% little knowledge of the vocabulary, 81.7% dominated by error of spelling, punctuation, capitalization and meaningless words. In general, both groups exhibited writing difficulties in all categories of English. The data of this study indicate that deaf students with high proficiency groups achieved better than low proficiency groups. The finding revealed that the deaf student who had a good proficiency in sign language acquired better writing than low sign proficiency; however, the achievement

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did not confirm whether one is greater than the other. To identify the relationship between high and low proficiency groups' percentile score with English writing, the researcher used chi-square test.

Table 8
Test for independence special and integration schools in Amharic writing skills

		Types of Schools						Chi-square	
		Special schools		Integration Schools		Total		Value	Sig.
Amharic Content Categories		N	%	N	%	N	%		
Content knowledge	Very poor	36	81.8	27	84.4	63	82.9	2.315(a)	0.510
	Fair to poor	2	4.5	3	9.4	5	6.6		
	Good to average	4	9.1	2	6.3	6	7.9		
	Excellent to very good	2	4.5	0	0.0	2	2.6		
Total		44	100.0	32	100.0	76	100.0		
Organization of ideas	Very poor	26	59.1	18	56.3	44	57.9	1.072(a)	0.784
	Fair to poor	10	22.7	10	31.3	20	26.3		
	Good to average	5	11.4	2	6.3	7	9.2		
	Excellent to very good	3	6.8	2	6.3	5	6.6		
Total		44	100.0	32	100.0	76	100.0		
Effectively use Vocabulary	Very poor	24	54.5	19	59.4	43	56.6	1.784(a)	0.628
	Fair to poor	11	25.0	9	28.1	20	26.3		
	Good to average	7	15.9	4	12.5	11	14.5		
	Excellent to very good	2	4.5	0	0.0	2	2.6		
Total		44	100.0	32	100.0	76	100.0		
Language usage	Very poor	27	61.4	22	68.8	49	64.5	1.254(a)	0.740
	Fair to poor	11	25.0	8	25.0	19	25.0		
	Good to average	4	9.1	1	3.1	5	6.6		
	Excellent to very good	2	4.5	1	3.1	3	3.9		
Total		44	100.0	32	100.0	76	100.0		
Mechanics	Very poor	25	56.8	23	71.9	48	63.2	2.180(a)	0.536
	Fair to poor	11	25.0	6	18.8	17	22.4		
	Good to average	4	9.1	2	6.3	6	7.9		
	Excellent to very good	4	9.1	1	3.1	5	6.6		
Total		44	100.0	32	100.0	76	100.0		

P< 0.01

The result of chi-square in table 41 showed that there is statistically significant differences in percentile rank score for high and low proficiency groups in writing in all five categories P > 0.05. This finding revealed that there is statistically significant relationship in high and low groups in writings skill. Even if both groups exhibit low English writing skill, the chi-square indicate that the low proficiency group was more in severe difficulties in sentence organization, content knowledge, vocabulary, mechanics and language construction.

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The results of the percentile rank in table 8 shows that the percentile of the students in special and integrated schools in their Amharic writing skill. Students in special schools in Amharic essay writing 81.8%, content knowledge, 59.1% in sentence organization, 54.5% in vocabulary, 61.4% in language construction and 36.8% in mechanics displayed very poor performances. Only 13.6% deaf students had content knowledge and good language construction, 18.2% had better organization and mechanics and 20.4% used vocabularies effectively, it ranges good to excellent score. Similarly, students in integrated schools in Amharic content categories writing skills also wrote very poor, 84.4% in content knowledge, 56.6% in organization of idea, 59.4% in vocabulary , 68.8% in language construction and 71.9% in mechanics they displayed very poor performance. The results indicated that students from special schools achieve better score in measure of Amharic writing skill tests than their counterpart in integration schools. Out of 76 participants 82.9% did not have content knowledge, 57.9% wrote without organization of the ideas, 64.5% used very poor language construction, and 63.2% used very poor mechanical usage. On the other hand, the findings in measures of Amharic writing skills showed that the participants in both types of schools have significant score differences in the magnitude of the percentile scores in selected Amharic writing skills. Pearson chi-square analysis was, therefore, carried out to check their relation.

Chi-square analysis revealed that there is no statistically significant differences between integration and special schools in all Amharic content as X^2 (1, 76) =2.315, $p > 0.05$. With regard to Amharic writing skills, the results showed that there are no statistically significant differences in integration and special schools. That is, the level of writing skills of deaf students in Amharic languages in both types of schools seems to be similar. It is seen that students in all groups showed that extreme deficiency of writings. They committed a lot of errors. The findings of this data revealed unsatisfactory results in both schools in Amharic writings. The data revealed such descriptors as limited vocabulary, concrete, lack of functional words, bland, poor mastery of verb inflections, plurals, and repetitive, limited, and simple structure of the sentences without carrying meaningful message.

Table 9
Test for independence special and integration schools in English writing skills

		Types of Schools						Chi-square	
		Special schools		Integration Schools		Total		Value	Sig.
English Content Categories		N	%	N	%	N	%		
Content knowledge	Very poor	37	86.0	31	96.9	68	90.7	2.776(a)	0.428
	Fair to poor	4	9.3	1	3.1	5	6.7		
	Good to average	1	2.3	0	0.0	1	1.3		
	Excellent to very good	1	2.3	0	0.0	1	1.3		
Total		43	100.0	32	100.0	75	100.0		
Organization of ideas	Very poor	31	72.1	30	93.8	61	81.3	6.836(a)	0.077
	Fair to poor	5	11.6	2	6.3	7	9.3		
	Good to average	6	14.0	0	0.0	6	8.0		
	Excellent to very good	1	2.3	0	0.0	1	1.3		
Total		43	100.0	32	100.0	75	100.0		
Vocabulary	Very poor	30	69.8	29	90.6	59	78.7%	6.136(a)	0.105
	Fair to poor	7	16.3	3	9.4	10	13.3		
	Good to average	5	11.6	0	0.0	5	6.7		

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	Excellent to very good	1	2.3	0	0.0	1	1.3		
Total		43	100.0	32	100.0	75	100.0		
Language usage	Very poor	33	76.7	30	93.8	63	84.0	3.725(a)	0.293
	Fair to poor	8	18.6	2	6.3	10	13.3		
	Good to average	1	2.3	0	0.0	1	1.3		
	Excellent to very good	1	2.3	0	0.0	1	1.3		
Total		43	100.0	32	100.0	75	100.0		
Mechanics	Very poor	33	76.7	29	90.6	62	82.7	3.725(a)	0.293
	Fair to poor	6	14.0	3	9.4	9	12.0		
	Good to average	3	7.0	0	0.0	3	4.0		
	Excellent to very good	1	2.3	0	0.0	1	1.3		
Total		43	100.0	32	100.0	75	100.0		

P < 0.01

The results of the percentile rank in table 9 shows the percentile of the special & integrated schools with respect to their students' English writing skill. As shown in the table students in special school in all content categories in 86% in content knowledge, 72.1% in organization of idea, 69.8% in efficiently using vocabulary, 76.7% language construction and mechanics deaf students performed very poor. Similarly, students in integrated school in all content categories of English writing skills also performed very poor, they range in 78.8% to 90.7 %. This shows both groups' poor writing skill. When we compare special school with integrated ones, the data shows that special school is statistically better than integration schools in most of content categories of English writing skill. This indicates that students from special school achieve higher percentile score in measure of English writing skill tests than their counterpart integration schools.

Chi-square analysis revealed that there is statistically significant difference between students in integration and special schools in five English content categories as x^2 (1,75) = 2.776, P < 0.05, x^2 (1,75) = 6.836, P > 0.05, x^2 (1,75) = 6.136, P >0.05,x2 (1,75) = 3.725, P > 0.05 and x2 (1,75) = 3.725, p > 0.05. It is clear that students in all groups showed high difficulty of writing in English. They made a lot of errors. Therefore, in the context of deaf education, second language writing is often identical to second language acquisition. The findings of this data revealed unsatisfactory results in both schools in English writings.

Table 10
Amharic and English written skill chi- square *correlation by age of onset*

Amharic and English Content Categories		**Age of onset (Amharic)**	**Age of onset (English)**
Content knowledge	Correlation Coefficient	.357(**)	.221
	Sig. (2-tailed)	0.002	0.057
Organization of the ideas	Correlation Coefficient	.277(*)	.258(*)
	Sig. (2-tailed)	0.016	0.025
Vocabulary usage effectively	Correlation Coefficient	.311(**)	.299(**)

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	Sig. (2-tailed)	0.005	0.009
	Correlation Coefficient	.283(*)	.240(*)
Language usage	Sig. (2-tailed)	0.013	0.038
Mastery of mechanics	Correlation Coefficient	.286(*)	.271(*)
	Sig. (2-tailed)	0.743	0.019
		N = 76	N = 75

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

Table 10 presents the Amharic and English language written skill of grade eight deaf learners based on relation between ages of onset. As shown in the above table, there is a positive and weak relation between the written skill of deaf learners and age of onset $P < 0.05$. This revealed that deaf learners who were born deaf and prior age three deaf and deaf after age three have no similar written language skills in Amharic and English language expression. Positive relationship indicates that the age of onset has a positive effect on the writing skill of Amharic & English writings of deaf.

Table 11
Comparison of Amharic and English content categories with sign language started period.

Amharic And English content categories		**Sign started language time (Amharic)**	**Sign language started time (English)**	**Degree of hearing loss (Amharic)**	**Degree of hearing loss (English)**
Content knowledge	Correlation Coefficient	-.119	-.116	-.244*	-.034
	Sig. (2-tailed)	.306	.323	.034	.775
Organization of the ideas	Correlation Coefficient	-.120	-.024	-.089	.003
	Sig. (2-tailed)	.303	.838	.444	.982
Vocabulary usage effectively	Correlation Coefficient	-.109	-.024	-.114	.003
	Sig. (2-tailed)	.349	.841	.328	.982
Language usage	Correlation Coefficient	-.097	-.098	-.136	-.083
	Sig. (2-tailed)	.405	.404	.242	.480
Mastery of mechanics	Correlation Coefficient	-.144	-.068	-.084	-.080
	Sig. (2-tailed)	.214	.563	.469	.496
		N= 76	N= 75	N= 76	N = 75

** correlation is significant at the 0,01 level (2 – tailed)

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Table 11 presents Amharic and English language written skill of grade eight deaf learners' based on the relation between sign language started time. As shown in the above table, there is no statistically significant correlation between Amharic and English written skill and the sign language started period P > 0.05. This revealed that deaf learners who started sign language at home and in school have similar written language performance in both Amharic and English written languages expression skills. As shown in the above table, there is no statistically significant correlation between Amharic and English written skill and the degree of hearing loss
P > 0.05. This revealed that deaf learners who were severe and profound have similar written language performance in both Amharic and English written languages skills.

Questionnaire

The main objective of using the deaf students' questionnaire was to find out students' attitude towards sign language proficiency and writing proficiency and the problems that the deaf students have encountered in learning process. The analysis of the data from the deaf students' questionnaire was carried out using descriptive statistics .These are mainly frequency counts and percentage, both of which are simple statistical procedures indicating only the number of respondents who rated each of the items in the questionnaire according to a rating scale provided. The results of the questionnaire of the main study are presented below.

Table 12
Sign language proficiency

No.	Items	Excellent		Very good		good		Not good		Total	
1	How do you evaluate teacher's sign language skill?	N	%	N	%	N	%	N	%	N	%
		2	2.6	20	20.4	38	50.8	16	20.2	76	100
2	To what extent do you understand teacher's SL during teaching & learning process	Highly understand		Moderately understand		To some extent		I cannot understand		Total	
		N	%	N	%	N	%	N	%	N	%
		12	15.8	29	38.2	18	23.7	15	19.17	74	97.4
3	Satisfaction of teacher's sign language during teaching and learning	Highly satisfied		Moderately satisfied		To some extent		Not satisfied		Total	
		N	%	N	%	N	%	N	%	N	%
		8	10.5	20	26.3	30	39.5	16	21.0	74	97.4
4	With whom easily communicate and easily understand ideas	Each other				With teachers				Total	
		N			%	N		%		N	%
		50			65.8	26		34.2		76	100

Item 1 asked the deaf students how they evaluate teachers' sign language skill during teaching and learning process. As displayed in table 62, 20.4% of the deaf students said ' good', 50.8% said ' very good' and the remaining 20% said 'not good'. From the above data, we can observe that the majority of the deaf students reported that the teachers' sign language skill was good and very good. This could imply that teachers able to communicate with deaf students in moderate in teaching and learning process.

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Item 2 presents to what extent deaf students understand teachers' sign language during teaching and learning process. As shown on the above table, 38.2% the respondents reported that they moderately understand, 23.7% to some extent they understand, 19.17% cannot understand and 15.8% highly understand their teachers' sign language during teaching and learning process. These results indicate that deaf students understand teacher's communication during teaching and learning process moderately and to some extent. This shows that there is a gap of communication between deaf students and teachers during teaching and learning process. The sign language proficiency limitation between the deaf and their teachers also affects the academic performances of deaf learners. This requires the improvement of language proficiency in both groups.

Item 3 displays deaf students' satisfaction of teachers' sign language during teaching and learning process. As observed from the above table, 38.2% of deaf students were satisfied to some extent, 26.3% moderately satisfied, 21% not satisfied with the sign language of their teachers. Only 10.5% of the deaf were highly satisfied with the sign language of their teachers. This implies that the majority of deaf students were satisfied moderately and to some extent with their teachers' sign language. This shows that teachers are unable to communicate with sign language, unable to satisfy their students, and unable to import the required knowledge. If there is dissatisfaction in communication, there is lack of clarity of information that would affect achievement performances.

Item 4 shows with whom deaf students more easily communicate and understand ideas. As shown in the above table, 65.8% of deaf students reported that they easily communicate with sign language with each other and 34.2% of the deaf who are able to read lip and postlinguals communicate easily with teachers. This indicates that majority of deaf students communicate easily with each other.
In item 4.1, the deaf were asked about the reason for their easy communication with each other and they replied that they are the same identity groups and at the same time since sign language is their natural language, they understand each other. No communication problem exists among them. One of the deaf students replied in his response that their communication problem is seen while they are communicating with hearing people, otherwise, for them no significant communication problem exists.

Table 13
If sign language provided as a subject in all grade level

No.	Item	Strongly agree		agree		Undecided		Disagree		Total	
5	If sign language is provided as a subject in all grade level	N	%	N	%	N	%	N	%	N	%
		48	63.2	13	17.1	9	11.8	4	5.3	74	97.4

Item 5 asked the deaf students if sign language should be given as a subject in all grade levels. As shown in the above table, 63.2% of 8th grade deaf students strongly agree that sign language used to be given as a subject, and 17.1% agreed that sign language given as a subject in all grade levels. Regarding, the sign language provision as subject to deaf students, the deaf participants were strongly positive. Accordingly, 80.3% of the respondents reported that they have strongly positive toward learning sign language as a subject in all grade levels. Using sign language as a subject help deaf students update their sign language proficiency, learn new sign language and help to develop sign language every time. The percentage of respondents with negative attitude toward learning sign language was 5.3%, which was very low.

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In item 5.1, asked those who gave a positive reply to item 6 to give justification for their responses. To this item they forwarded that sign language is a language, as other languages, which serve as a means of communication. Learning sign language as a subject provides deaf learners with sign language proficiency, and similarly it introduces with new terms and other technological and abstract words. Furthermore, it qualifies deaf people with strong foundation in their mother tongue (sign language), and helps deaf people to understand their second languages and facilitates the communication skill of the these people.

Table 14
Language item easier from reading and writing

No	Item	Writing in Amharic		Writing in English		Both are simple		Both are difficult		Total	
		N	%	N	%	N	%	N	%	N	%
6.	Which of the following is easier?	28	36.8	21	27.6	1	1.3	24	31.6	74	97.4

In item 6, the deaf students were asked to decide in which of the two languages writing was easy for them. In response to this item, 36.8% of deaf participants said that writing in Amharic was easier than writing in English, 31.6% reported that writing in both languages was difficult and the remaining 27.6% said writing in English was easier for them. This shows that writing in Amharic is easier than writing in English. In contrast, the other groups claimed that writing in both languages was difficult as they faced difficulties equally in both languages. Therefore, writing is difficult for the deaf in both languages.

In item 6.1 the students who choose one of the answers from the provided choices were required to give justification for their responses. Deaf students who forwarded writing in Amharic is easier stated that they grew up with hearing families who are Amharic speaking and writing than English speaking and writing. In addition, in a family level when communication was needed, they communicated through writing in Amharic and parents improved their writings. This and school learning conditions facilitated Amharic writing to be easier than English writings. The other postlinguals groups stated that they faced no writing problems during writing process because they had already exercised the speech and writing which is derived from spoken language structure, and then, they easily wrote the materials.

Table 15
The major difficulties during writing process for deaf students

7. Which of the followings are the major deaf students' problems in writing?

Item	N	%
Unable to use words in their appropriate place	3	3.9
Unable to follow grammatical structure	9	11.8
Unable to follow sentence structure	1	1.3
All	63	82.9
Total	76	100

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Item 7, was designed to find out the major writing problems deaf students encountered during writing process. As can be seen from the above table, the majority of deaf students, i.e. 82.9% reported that they were unable to use words in their appropriate place, unable to follow grammatical structure and unable to follow sentence structure were the major problems of deaf students in writing processes. This could indicate that deaf students in all aspects of writing are in problem. Therefore, special attention should be secured from the schools to improve the writing skill of deaf students.

Table 16
Feeling comfortable when they are writing in Amharic and English

No	Item	Yes		No		Total	
		N	%	N	%	N	%
8.	Do you feel comfortable when you are writing in Amharic/English dictations?	11	14.5	63	82.9	74	97.4

In item 8, deaf students were asked if they are comfortable when they are writing in Amharic. In response to this item, majority (82.9%) of deaf students said 'no'. The remaining 14.5% said 'yes'. This could clearly indicate that most of the deaf students feel discomfort or encounter difficulties in writing in Amharic.

In Item 8.1, the deaf students who gave a negative reply to item 16 were asked to give justification to their responses. To this item, majority (82.9%) of the deaf students reported that they felt discomfort in Amharic language writing because Amharic language has a lot of sophisticated Morph-syntactic language usage than English. Deaf students forwarded areas of difficulties during writing as follows: word order, writing words in their appropriate places, using modifiers, using number and gender agreements.

Qualitative Result

The qualitative research approach was used for this study. The researcher used two methods of data collection - interviews and classroom observations- to obtain thick data (Lincoln & Guba, 1985). The researcher was interested in gaining an insight about the teachers and deaf students' sign language, reading, writing and academic achievement experience in the study sites. Therefore, the researcher employed qualitative framework to obtain thick data about phenomena under study. Phenomena in this context refers to the attitudes of teachers and students towards sign language, reading comprehension, and writing skill, learners' academic achievement, overall classroom practices (of the teaching and learning) and lived experiences (Creswell, 2007).

Analysis of the data agreed with the research questions and revealed themes that emerged from the responses to the questions. Four major themes emerged from the analysis. The themes consisted of issues related sign language proficiency and reading comprehension. Under each theme, several sub-themes emerged.

Findings obtained from analysis of qualitative data gathered through interview on academic achievement and literacy print, and classroom observations in each school were used to supplement the findings from quantitative study.

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Table 17
Interview participants of deaf students background

No	Type of school	Deaf Sts. Name	Age	Sex	Hearing level	Onset	SL Started	Parent hearing status	Home Lang.	Hearing aid
1	School-1	A1	19	F	profound	BD	School	Hearing	Speech	ST
2	School-1	A2	19	M	profound	BD	School	Hearing	Speech	NO
3	School-2	V1	18	M	profound	P3	School	Hearing	Speech	NO
4	School-2	V2	20	F	profound	BD	School	Hearing	SL	NO
5	School-3	MK1	18	M	profound	P3	School	Hearing	Writing	ST
6	School-3	MK2	19	F	profound	BD	School	Hearing	Wr.&sp	NO
7	School-4	MA1	18	M	profound	P3	School	Hearing	Speech	NO
8	School-4	MA2	15	M	profound	P3	School	Hearing	Speech	NO

BD = Born deaf P3 = Prior age three SL = Sign Language ST = sometimes

Results of Deaf Students Interviews

The purpose of the interview was explained to the students both at the time of making arrangements for the interviews and just before the actual interview sessions. Students were asked to respond to semi-structured interview questions attached at the end. As near as possible correct interpretation was ensured by having long years experienced sign language teachers to confirm the information generated. In due courses, four proficient sign language translators who were long years experienced teachers from each school were selected. The translation was carried out by total communication in all schools. The translation was recorded theme by theme by the researcher.

The results of the interview helped the researcher to crosscheck the data obtained from the quantitative data. The purpose of the interview, as mentioned earlier was to obtain information from deaf students about their sign language proficiency and writing skills as presented below under two main headings:

1. Signed language proficiency and difficulties they had in signings
2. Writing skill and problems they had in writing

In addition, students were also asked to give their suggestion about what measures to be taken in order to improve their signed language proficiency and written proficiency. The result of the interview to deaf students was thus carried out with the above two response categories. The following is the result of the analysis of the data.

Summary Results of Interviews

There were two types of tasks that deaf students had to carry out in their interview in the four schools. One purpose of interview for the deaf students was to find out students attitudes towards signed language proficiency and writing skill.

In relation to signed language proficiency, deaf students had problems in signing in teaching and learning process. All of the four schools deaf 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. The participants described that the language they had in sign language was not enough when they were writing. One of the deaf participants stated *that it seemed for him correct when he was writing but his teacher commented that it was not correct and he always ask himself when he would be correct.* Furthermore, he reported that his teacher was not satisfied on his

writing, but when he explained in sign language, he understood it and he didn't say anything, but in writing time the teacher always criticized that he was not correct and the comments were often discouraging. The other participant said that teaching grammar usage of written language is fundamental for deaf children from the early childhood. One of the participants further added *since she was born deaf, she was not aware speech sounds that in turn resulted in capability to write well since written language order follows the order of speech pattern. Written language is the production of different sound system. Written language also follows the order of speech pattern. Her difficulty of writing resulted from lack of these speech sounds.* She stated that *when she was writing the sentence, she did not know whether it was wrong or right. When she was writing, she assumed everything was right*. This findings indicates that deaf children suffering in limitation of vocabularies and managing of sentence structure. Therefore, teaching the difference and similarities between sign language and written language in teaching and learning process the teachers' responsibility. In addition, they claimed that they clearly understood ideas when they communicated in sign language with each other than teachers. When asked how much they understands the teacher's sign language, most participants reported that they understood partially, and the others participant reported that they understood moderately.

The limitation of sign language resulted in inability to understand and identify the meanings of the words and the content of the subject matter. Similarly, deaf interviewees suggested that a better sign language skill is highly important for better writing skill. They indicated that the limitation of the sign language affected their writing skills.

Concerning the written proficiency of deaf students all of the interviewees reported that they are unable to use vocabulary in their correct order, unable to follow the rules of grammar, unable to use mechanics correctly and unable to write sentences in their correct order were the most serious problem in writing process. They added that they were not comfortable when asked the writing assignment and homework activities for the limitation of their grammar and vocabulary inputs.

In order to improve the writing skill of deaf children the interviewees suggested that early empowering in sign language proficiency, timely, age appropriate input of vocabulary, early written language exercise, teaching from beginning the difference and similarities of sign language and written language will improve the written skill of the deaf children. Giving due attention for the learners in order to improve writing skill by the teachers and administration of the schools will help them improve in all aspects of their writing skills.

Results of Teachers of the Deaf and principals Interviews

Eight grade eight teachers of the deaf from each of the four schools under study gave their views about sign language proficiency and written skills of deaf learners. The teachers of the deaf were approached by this researcher prior to the interview sessions in order to ask for their willingness to take part in the interviews. Those who agreed (nearly all agreed to take part) were then briefed on the purpose of the interview, and a convenient time was fixed for the actual session with the selected samples member. Criteria for selection were based on preference given for the fact that those with at least five years experience would meet the requirements and all the selected samples had ten and above years of teaching experience whereby the majority were language and sign language teachers.

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Table 18
Interview participant teachers' background

No	School Type	Name	Sex	Age	Service year	Area of study	Educ. level	Subject teaching	Teaching grade
1	School-1	AT1	F	54	22	Amharic	BA	Amharic	8
2	School-1	AT2	M	45	19	English	BA	English	8
3	School-1	AT3	M	43	19	English	BA	-----	----
4	School-2	VT1	M	45	10	SNE	BA	------	-----
5	School-2	VT2	M	24	3	Amharic	BA	Amharic	8
6	School-2	VT3	F	30	8	English	Dip.	English	8
7	School-3	MKT1	F	58	11	Amharic	Dip.	Amharic	8
8	School-3	MKT2	F	50	10	English	Dip.	English	8
9	School-3	MKT3	M	48	12	Lead/p	BA	----	-----
10	School-4	MAT1	M	42	15	Physics	Dip.	Physics	8
11	School-4	MAT2	F	35	5	Amharic	BA	Amharic	8
12	School-4	MAT3	F	33	9	English	Dip.	English	8

----- No classes for Directors

Summary Results of Teachers of the Deaf and Principals Interviews

Concerning sign language and deaf people, most of the interviewees described that it is difficult to separate sign language and deaf people. 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.

Most interviewed teachers reported that deaf students had difficulties of sign language in the learning process. The difficulties that occurred in sign language represent all words/terms. Sign symbols are not adequate for deaf learners to satisfy their learning particularly in teaching and learning process. This limitation of sign language affects their communication, academic achievement and literacy skills. These teachers testified that those who had low sign language ability showed low academic achievements.

During teaching and learning process teachers used signed language, 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 related or not related particularly in reading activities. The sign language is under the influence of hearing teachers in educational processes. 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. Teachers' use of sign languages was not satisfactory for deaf learners. 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 sign language education is provided as subject in every grade level, the gaps of communication may be solved and newly emerging words may soon get representation of sign language in teaching and learning process. If bicultural approach is used in education from early, it might solve the difficulties. The interviewees revealed that from their long experiences of teaching the deaf they learned 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 properly, he cannot learn the academics effectively. Therefore, natural sign language for a deaf child is a key for academic achievement. All the teachers forwarded that language plays a key role for academic achievement and writen language development. They addressed that laying foundation in sign language skill is the basic for deaf children written skill development. Some interviewees explained that children who began learning sign language in their early age showed better sign language expression than later beginners. They added that early sign language beginners were more computing in sign and academics than aged learners.

Concerning sign language improvement in teaching and learning process, the interviewees stated that sign language as spoken language is growing and changing. The growth of the both languages is the same. Language teaching system for deaf should be changed from preschool to higher school level. Teachers have to gain adequate knowledge in sign language skill so that they could empower deaf people in sign language skills. For deaf learners, foundation of sign language should be laid beginning from early preschool age. In addition, providing scheduled times for sign language development programs such as sign language clubs, sign language development teams and appropriate supplementary teaching recourses in the schools is of great help. They suggested providing sign language as the subject in each grade levels will contribute for the sign language development.

Participant teachers reported that writing skill is associated with phonetic awareness. Deaf learners don't know phonetically arranged speech flow order. For speech users writing is not difficult because they use flow of speech order for writing. For deaf learners to communicate with families, friends and neighbors and teachers writing skill is fundamental. Furthermore, to write personal letters and application writing skill is undeniably important; however, deaf students might not be able to do these because of written skill limitation. A good skill of writing is very important for deaf people to communicate using reading and writing. The participants said that empowering deaf students in sign language possibly improve the learners writing skills. If a deaf child had a good skill of sign language as early age as possible, he/she gets reading and writing easier.

The participant teachers stated that the most common writing problems of deaf students' are inability to write words in their correct order, missing grammatical structure of sentences, lack of getting the overall meaning and the organization of the text. It is difficult for deaf to get the correct grammatical structure because deaf children write in sign language order. For oral language users it is sometimes difficult to understand the written materials of deaf students. The hearing people follow the spoken language grammatical order, and then judge if it is wrong, but deaf people look as if it was correct.

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All of the interviewee teachers reported that vocabulary usage, punctuation, grammar structures and sentence structure usages are the major writing deficit of deaf children in writing process. Particularly, born deaf students made all the mentioned deficits. They could explain what they thought using this skill. They know the idea but limited in vocabulary output, at the same time they write the words that doesn't match or fit with the sentences. Their wording systems are not flourished with grammatical rules. Beyond unorganized writing structure, the participant teachers reported, morphological derivation, inflection, modifiers, lexical germination infixes, prefixes, suffixes, inflectional affixes, and inability to understand linear relation of words, and inability to understand words in their tense structure are common deaf learners' deficits. For deaf learners morphological derivations are headache in Amharic language writing process. The biggest problem was that the teachers were not trained to teach deaf students. To empower teachers with these skills, adequate linguistic and language training is necessary. If they get adequate training on how to teach the deaf, they can teach how to write and read the second language and they might master the literacy skill.

All the interviewee participant teachers suggested that to improve the writing skills of deaf students, adequate vocabulary knowledge input, early grammatical structure skill, early exposure of writing skills, development of grammar skill and early writing skill development play a key role. Teaching Amharic and English grammar structure in relation to sign language or showing their differences in writing is very essential in schools during teaching and learning process. Students should be empowered in sign language and reading and writing skills; to do this the teacher's readiness to develop these skills is very important.

Classroom Observation (Main Study)

Outcome of Sign Language Observation

1. All the participants of this study were highly concerned about limitation of signs for classroom use. There are no signs for certain abstract and scientific terms. Due to lack of signs teachers tended to explain the concepts using informal signs that differ from one teacher to another and one school to the other school. As a result there was no uniformity in teaching. There was no standard and teachers came up with their own signs changing the signs obtained from the previous teachers. When these students come from different schools sign language background to post secondary schools, they faced with sign confusions.

2. Sign language was not given due attention as other languages in the classroom; teachers were not aware that sign language for deaf learners is their mother tongue. It is important to develop sign language by establishing team clubs focusing on culturally and linguistically suitable sign vocabulary and analyzing its efficacy.

3. In schools the natural sign language acquired by deaf children provides the best access to educational content and the second language (reading and writing) was not emphasized. Since the classroom is the primary place in which deaf children acquire their first language, the teacher is the primary role model for deaf children to acquire a strong foundation in sign language.

4. Teachers and deaf students were not empowered in sign language proficiency. This in turn affected students' academic achievement. Classroom instructions were more dominated in speech.

5. The ultimate goal of language (sign language, reading and writing) learning in bilinguals is producing fluent and accurate expression in both languages. Bilingual children seem to acquire the two languages with relative ease. But the attention for both languages in all schools was very poor.

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Outcome of Observation of Reading and Writing

1. Reading and writing are closely related; most educators have paid much more attention to reading, and in most classrooms time spent on task for reading was greater than for writing. In classroom more attention was not given for writing.

2. From classroom observation, the researcher observed various aspects of written language problems (lexical, morphological, syntactic, and pragmatic). The learners' problems were most strikingly in the area of grammatical morphology including omissions, substitutions, and additions of various morphemes in both written languages.

3. 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.

4. The common observed problems during writings were: inability to write vocabularies in their appropriate places, inability to follow the grammatical rule of writing, inability to construct sentences and inability to attain general grammatical organization.

1. The other observed behavior was reading comprehension problem. Limitation of the sign language to represent all words and their morphologies was the biggest problem of deaf children in reading process. From their manner of reading lack of confidence was evident in the students. The problem appeared to be limitation of sign language representation for particular word.

2. Evident in the classes was that the deaf students no enthusiasm to learn reading and writing skills. However, reading and writing are fundamental for academic achievement.

3. Moore (2001)strengthen in his book that the importance of literacy skill for deaf learners explained the need for print literacy—reading and writing—is more important for deaf individuals. This clearly indicates that since both print literacy components are crucial for deaf individuals, early supportive environment nourishes effective literacy skills.

DISCUSSION OF FINDING

Signed Amharic and English Proficiency of Deaf Students

I observed from my teaching experience that deaf children have achieved success, in my special school and in general education classrooms, under all different approaches. In Total Communication approaches, the language base on which literacy is founded may be a mixture of English/Amharic-based signing is the most effective mode of communication in the classroom but the number of successes through TC instruction has not been satisfactory to support due to its limited use in developing reading and writing skills in deaf children. I believe such an approach, particularly, is not satisfactory in the development of literacy skill. Most educators would agree that mother tongue is much more powerful than any Amharic/English-based sign system. It is a fully developed language in its own right. Any English-based sign system is a code on spoken language just as Amharic/English print is a code on spoken English/Amharic.

To that end, Landsberg (2005) state that 'without a strong mother tongue base, teaching and learning become complicated and the learning of a second language is much more difficult' As to the other

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scholars agree, social and academic success is related to the acquisition of sign language (Ormel, Hermans, Knoors and Verhoeven, 2009). Besides, lack of mother tongue input in early could be cause for language delays in children with severe and profound hearing losses (Nicholas and Geers, 2003). Deaf people take part in deficient types of education that suppress them in the language and culture of hearers rather than it could have been enrichment model where signing is encouraged as the primary language.

The main purpose this study was to find out the effect of sign language proficiency in relation to writing skill, reading comprehension and academic performances 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. This may be an ideal environment for sign language acquisition.

The most surprising finding is that regular school deaf children showed the least signed language proficiency acquisition than counterpart special schools. This goes with the findings of (Marchark et al, 2008). As to the scholars, deprived regular setting deeply affects the communicative environments and belittles both in the relationship and reduces the linguistic scope in vocabulary and conceptualization.

The researcher's classroom observation also confirms that students in integrated schools with hearing peers and classroom teachers do not have sufficient sign skills to communicate with the deaf students at the required academic level. Most of the time, with their hearing peers in the classroom or out of the classroom, they use lip reading, speech and sign language are limited to some extent. This is supported by the works of Shaw and Jameson (1995) who say that signed conversation between hearing and deaf students were very limited when compared to what signs the hearing students knew. In contrast, a sign language conversation was very high in special schools because deaf students gain access to the communication in the classrooms and out of classrooms. This is because and classmates become fluent in ETHSL and use sign language in all interactive activities. This finding is similar to Seigal, (2001). The scholar's finding shows that special schools provide a sign rich learning setting for deaf students. This helps the deaf students to engage in direct conversations with their peers, teachers, specialists, and others within the school setting. These conditions facilitate sign language growths. Integrated schools have students of diverse groups of hearing and non-hearing. The dominant one was speech and the chance of using sign language was reduced. The ability of integration settings to foster a communicative learning environment may be poor for deaf students. This agrees with the findings of Antia (2007) report that deaf students faced communication difficulties in the integrated classrooms. In integrated schools, deaf incline to lip reading than using sign language. In special schools, more opportunities to develop interpersonal relations with sign language were exhibited whereas in integrated schools communication with their teachers and classmates was in a limited way.

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 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.

In descriptive statistics for comparison of high and low proficiency groups for the signed Amharic and English mean score by male and female, the mean of a high proficiency group of male correct Signed Amharic was (92.68) and for female (86.83). This indicates that there is mean differences in right and wrong Signed Amharic between male and female. In addition, the findings display that there is a significant difference between male and female right and wrong responses of mean score. Right response to Signed Amharic high proficiency male and female groups and wrong responses for signed Amharic. The low proficiency group performed lower mean score than the high proficiency groups in right and wrong responses. On the other hand, there are mean score differences in correct Signed English males (53.26) and correct mean scores of females was (51.86). Besides, and males wrong Signed English mean score was (18.74) and females wrong mean score was (20.14). This shows the difference between males and females proficiency.

In English Signs mean score males achieved better than females. However, there is an insignificant difference between male and female in English high proficiency groups. This reveals that females have similar opportunities for English language exposure as males to exercise and use English signs as males. The low proficiency group performed lower mean score than high proficiency group in English signs. This finding is supported by (Swanwick and Watson, 2005). As they found deaf students relatively differ in their abilities to acquire language. Furthermore, they differ in their level of language they bring from home, the degree to which they can use their hearing and speech reading skills and other non-language-specific influences.

Signed Amharic/English Languages in Teaching and Learning Process

One of the major findings from the deaf learners' questionnaire, interviews of the deaf, teachers and principals, signed Amharic and English language test, reading and writing skills tests, and from my classroom observations confirm 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, reading and writing in teaching and learning process 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 findings of my observation show that Ethiopian Sign Language and other spoken languages are equivalent in their communicative potential; the problem is lack of early exposure to a language, not from the language limitation. The problem is that the schools are not linguistically rich to facilitate sign language acquisition for deaf learners and for themselves properly. The problem is the teaching system of language. The problem is not lack of competence in Ethiopian Sign Language but teachers lack linguistic competences. According to some scholars, bilingual strategy for education, suggest the need for new methods of instruction and the high competence of sign language for teachers of the deaf (Sass-Lehrer & Martin, 1992). It is natural that sign language allows deaf learners to meet the skills and abilities of hearing people in communication, cognition, and play a role in empowering the community.

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Another 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. The deaf students' interview results reveal that newly employed teachers' capacity of sign language is very poor. It seems that they come to the classroom without sign language skill/training. This is supported by the ideas of one of the deaf participants. In this regard, one of the deaf participants reported: *"In our school, the principal himself doesn't know the sign language. He cannot communicate with us. How could he understand our feelings, how could he talk about sign language and how could he facilitate the sign language learning environment for teachers and students?"* The deaf participants agree that teacher's lack of competence in the language of instruction. They feel that this influenced their sign language development and academics. 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 study also reveals that there was a communication gap between the deaf and their teachers. This is also supported by interview results of a teacher. As to him, 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 was not satisfied with the sign language of the teachers.

With regard to item that reflect deaf students easily communicating and understanding between the same identity groups, 65.8% of deaf students testified that they easily communicate with sign language each other and 34.2% are able to read lips and postlinguals communicate with teachers. This shows that the majority of deaf students communicate easily with each other with the same identity group using the real sign language. One of the deaf interviewees addressed that their *communication problem is seen while they are communicating with hearing people; otherwise, among them there is no significant communication problem.* They justified that they are the same identity group; at the same time, sign language is their natural language with which they understand each other.

To sum up 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 Marchak (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. In this regards, classroom observations confirmed sign language is the native language of deaf children and is the only accessible language for deaf children. Andargachew (2008) in his three schools' study report, he observed a serious scarcity of sign language to represent technical and scientific physics terminologies in 7th and 8th grade physics textbooks. In addition to that there was a little effort to organize and enhance the level of sign language. In connection with this idea, are found busy on Total Communication approach, and even most of deaf teachers did not identify total communication from natural sign language of the deaf. If the classroom is the primary place in which deaf children acquire their first language, the teachers should be the primary role model for deaf children to acquire a strong foundation in sign language.

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 beginning of preschool school age. Third, teacher training institutions should arm teachers with the necessary skills of teaching the deaf.

As the response to the questionnaire of deaf students about the contribution of sign language for the academic achievement depicted that 59.2% of the respondents said 'yes' and the remaining 40.8% said 'no'. This could clearly indicate that the majority of deaf participants has understood that better sign language skill contribute to their academic achievement. The response of students ascribes that the possibility of transfer between the academics such that skills acquired in signed languages could positively influence the academic performances of the students. Deaf interview participants added that sign language proficiency can contribute to academic achievement. It is clear that language plays a key role for academic achievement. If the child is unable to understand properly, he cannot learn the academics effectively. Not only the deaf child but also teachers require skills of sign language since sign language is used as a medium of instruction in schools. One who wants to teach deaf learners the sign language, he should know sign language very well. The skill of language is important for both parties. Sign language 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 reveals that sign language development is not well recognized by teachers of the deaf. Development of sign language and

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empowerment of deaf learners with this skill will provide deaf children with basic foundation of reading and writing as well as better academic achievement.

As the responses of deaf students show, the sign language is used as a subject in all grades. In this regard, (80.3%) of grade 8th deaf students strongly (agreed) that sign language was given as a subject in all grade levels. They justified that using sign language as a subject helps deaf students update their sign language proficiency, learn new sign language and help to develop sign language every time.

Furthermore, they added that sign language is a language, like any other language serves as a means of communication. It provides deaf learners with sign language proficiency and it introduces with new terms and abstract words. In addition, it qualifies deaf people with a strong foundation in their mother tongue (sign language), helps deaf people to understand their second languages and facilitates the communication skill of the people. This finding is supported by the works some scholars like (Marschark & Hauser, 2012). As the scholars agree that offering sign language as a school subject for deaf children in regular education as well as those in special education contexts will generally improve the level of sign language skill among deaf children.

Writing Skill in Teaching and Learning Process

One of the objectives of this study was to examine the eighth grade deaf students written skill in our context and to explore the deficiencies of deaf learners in writings. Researchers and educators serving students who are deaf have given considerable attention to students' proficiency in written expression. The assessment of deaf students' writing skill was based Heaton (1990) model on five Amharic and English sub-scales, essay writing proficiency. The items were reliably judged by two independent judges and they showed high internal consistency and high test-retest reliability. The overall assessment of the children's writing was validated by means of a correlation which was high and significant $p > 0.01$) level, which indicates that the assessors were able to use the ratings reliably.

Looking at inter-rater reliability and concurrent validity, the researcher evaluated the rating scores for 76 deaf participants of 8th grade in English and Amharic writing proficiency. According to frequency distribution evaluation results in free writing by deaf participants in Amharic, both raters' results show that 82% of deaf students exhibited deficits in Amharic content knowledge, 59% of organization of idea problems, 55.7% of ineffective/little vocabulary, 62.3% of language construction problems, 57.4% of poor mastery of mechanics. Deaf students were performed very poor Amharic writing. Most of the deaf students fail to treat a topic adequately, and many had a problem in writing and difficult to identify sentence structure. Out of 76 deaf students, 76.7% of used meaningless words in their sentences with spelling errors (See Appendix L). In addition, 90% of deaf students exhibited deficits in English content knowledge, 80% of organization of ideas, 78.3% of ineffectively using vocabulary, 81.7% of language construction, 80% of mastery of mechanics deaf students was very poor in English writing, or difficulty of writing. Furthermore, 81.6% of them wrote meaningless words that did not carry messages (see Appendix L). They were not able to write complete sentences that carry clear meanings. Only 20% in English sentence organization, 6.6% in content knowledge, 20% in effectively use vocabularies, 6.6% of proper language construction and 13.3% mastery of mechanics, which ranges good to excellent. They wrote a correct grammar order in English. The research finding reveals that the overall writing performance of deaf students was uninformative and very poor. Their sentence construction is a mere collection of words without appropriate message. This finding is consistent with the works of McCoy et al. (1996b) who found that approximately 76% of the errors in ASL were produced by proficient deaf

adults while writings. From the written materials, the researcher observed various aspects of written language problems: lexical, morphological, syntactic, and pragmatic problems.

Moreover, they could not write meaningful and organized sentences. When they tried to pass messages in writing, a lot of errors were observed. They were in a difficulty to pass messages correctly in writing. It is difficult to identify the proper modifiers, agreements, determiners, etc. in such sentences. The sentence of deaf students found lacking quality message since do not follow Amharic and English grammar structure. As a result, it was difficult to pick the message of the writer. The result of this study indicates that deaf students show poor writing performance in both languages. They were poor in word organization, sentence structure, and grammar structure in the general organization of the sentences.

Interesting similarities and differences could be observed between Amharic and English writing of deaf study participants. Regarding their similarities, the majority of the deaf participants produced linguistically non-standardized forms of writing and concerning their differences their writing skill deficits are less in Amharic language than in English. Such result is also observed in the works of (Maxwell & Falick, 1992; Yoshinaga-Itano, Snyder, & Mayberry, 1996b). As these scholars, the "deaf can make numerous errors at the sentence level and may write uninteresting, uninformative, and not coherent sentences". In addition, other scholars to address the issue similarity that deaf students have considerable delays and variances in written language (Mayer, 1998, 1999; Moores & Sweet, 1990). As the researcher observed the written works of deaf learners, inability to write vocabularies in their appropriate places, to follow the grammatical rule, to construct sentences and general grammatical organization problems need serious attention of deaf education.

Similarly, the questionnaire result also shows that most of the deaf participants (82.9%) reported that the major problems encountered during the writing process were inability to use words in their appropriate place, inability to follow grammatical structure and inability to follow sentence structure. When asked whether they were comfortable in Amharic writing or not, similarly, the majority of deaf students, i.e. 82.9% of the students said 'no', in that they have low interest of writing, while the remaining 14.5% said 'yes'. Since written language is the product of speech sound, phonetic awareness plays a key role in constructing the correct grammar structure.

According to deaf participants in the interview "*written language is the production of different sound system. Written language also follows the order of speech pattern. My difficulty of writing comes from unaware of these speech sounds. When I was writing the sentence, I did not know whether it was wrong or right. When I was writing it seemed right*. In addition, the other deaf participant stated that it *seems correct when I am writing but my teacher said it is not correct. I always ask myself when I am going to write correct sentences".* Furthermore, he said that his teacher was not satisfied with his writing; but when he explained in sign language, he understood the message and didn't say anything, but in writing, he always commented with offensive words that he was not correct. The teacher always told him during his writing that he used only the content words, and his sentences lack modifiers, inflections, and other sentences organizations. When inquired why they wrote content words only, they stated that when they came to school they learned the sign language only word by word not with grammatical structure. Hence, this factor may influence deaf children to write content words. The writing systems were not supported by grammatical rules. Some interview participants' teachers associated the children's writing problems with poor language input, inefficient teaching system and inefficient teachers and wrong perception of the deaf students. According to researcher observation, the teaching strategies are not in a way of deaf understanding.

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The findings from the interviews of teachers of the deaf show that their common problems in writing were sentences with full of spelling errors, poor grammar order, sequence problems, general text organization difficulties and writing short sentences which lack message quality. According to Marschark et al, (2002), " deficits in vocabulary, syntax and inability to use abstract language, all of which have been documented for a large portion of deaf children, directly impede the acquisition of literacy skills and thus limit their academic experiences". In addition, delays or deficits in the classroom language further limit academic experiences. Words are the basis for grammar. The arrangement of words in their grammatical order requires grammatical knowledge. The study shows that born deaf students made all the mentioned deficits. They could not write explaining what they think. They knew the idea but as they had limited vocabulary input, they write the words that didn't match or fit with the sentences. When they were asked to write a kind of task in classroom written activities, they write only a few lines of fragmented sentences. The classroom observations reveal that there are no opportunities of helping deaf students to develop their writing skills. Each teacher rushes to cover the topics of the semesters as no time was arranged to support deaf with writing skill development.

The classroom observation also confirms that classroom discourse seems to be oriented towards traditional methods of teaching (e.g. Lecture methods, rapid question-answer method and drilling) because these methods are most of the time easy way of teaching and often favored to cover the portion of the year. However, teachers may also be required to enhance deaf children's knowledge of the written language systems as (Padden & Ramsey, 2000). Besides, Woolsey, Satterfield, & Robertson, (2006) suggested that teachers should increase children's knowledge of the sublexical structures (letters, graphemes/ phonemes, and syllables) in the written and spoken languages. In addition, teachers may stimulate children's knowledge about the orthographic/phonological and morphological structure of the written language by exploiting child's skills in the sign language. For instance, Paul (1998) notes that '… children can be introduced to the notion of word roots through exercises in which they have to detect similarities in the forms of morphologically related signs'.

Two interview participant teachers forwarded that they are always trying to bring deaf learners to their spoken culture; they do not want to go to their sign language. During this time, they do not recognize that they are making mistakes since they don't know about the sign language and they don't want to know the sign language grammar. They always say there is a limitation of sign language and grammar rule; they don't try to fill the gaps. They view the deaf writing on their hearing ways, and they look at a wrong ways. These ideas suggest that to reconsider about sign language and written language of the deaf learners, first we should go to them and bring them to the second language.

Both the high- and low-achieving groups showed deficits of sentence construction in all aspects of writings. However, high sign language proficiency group in all content categories of Amharic writing skills performed better than low proficiency groups. A low proficiency group in all content categories of Amharic writing skills achieved very poor; only 3.3% of deaf students performed a good range of performance. On the other hand, a high proficiency group in all content categories of Amharic writing skills also achieved very poor, however, 22.6% of wrote correct content knowledge, 36.5% of wrote organization of ideas, 32.2% of used effective vocabulary, 25.8% of used good language construction and 32.3% of them performed mechanics good to excellent range of performance. Both groups exhibited writing difficulties in sentence organization, grammar structure, content discussion, mechanics, modifiers, and gender and number agreements. Writing meaningless words was common in both proficiency groups. This reveals that learning to write in a second language is difficult for both groups equally regardless of their proficiency differences. Both groups wrote highly fragmented sentences with content words and the

sentences were difficult to identify in convention. This finding indicates that deaf people become illiterate through the language of the hearing community to which they belong. The chi-square test confirmed that even though both groups writing skill were very poor; the test has shown that there is a statistically significant difference between high and low proficiency groups in all categories of Amharic written skills. The finding indicates that the low proficiency group faces more severe difficulties in aspects. This finding is supported by Beijsterveldt and Hell (2010) finding that high and low proficient signers did not differ with basic measures of textual writing. The researcher found that proficiency in sign language affects the written production of those linguistic forms. The teacher interview results imply that if deaf children have a good skill of sign language they can improve their reading and writing. In teaching sign language structure and written language structure differences, it is possible to enhance writing skills.

In terms of English language essay writing, the percentile score for high proficiency group content knowledge, organization of ideas, mechanics, vocabularies, language construction was higher than the low proficiency group. A low proficiency group in all content categories of English writing skills performed very poor, none of the students wrote correctly. Similarly, a high proficiency group in all content categories of English writing skills also displayed very poor, however, better performed than low proficiency groups, 20% of in the English sentence organization, 6.6% of in content knowledge and language construction 20% of effectively used vocabularies, and 13.3% of mastery of mechanics performed which ranges good to excellent. Both groups exhibited writing difficulties in those five categories. The data of this study indicate that deaf students with high proficiency group achieved better than low proficiency group. The finding indicates that the deaf student who had a good proficiency in sign language acquired better literacy than low sign proficiency; however, the chi-square test analysis confirmed that even if both groups exhibit low English writing skill, the low proficiency group had more severe difficulties in sentence organization, knowledge of the subject, mechanics, effective sentence construction and vocabulary usage than high proficiency group.

This finding agrees with the theories that stress the "Common Underlying Proficiency" of languages (Cummins, 1981) and the fact that mother tongue proficiency is a reliable and an influential predictor of reading and writing development (Hakuta, 1990). Most studies on writing language skills concluded that the '… majority of deaf students, including those at the highest level, is notably different and somewhat behind their hearing peers (Berent et al., 2007; Biser, Rubel, & Toscano, 2007). Explicitly making connections between signs and written words support transfer between sign language and written language (Hermans, Ormel, & Knoors, 2010). Therefore, this studies also addresses that attention to students' proficiency in writing language should be given in teaching and learning process.

In response to the questionnaire that inquires one was easier from Amharic and English writing, 36.8% of the deaf participants said that writing in Amharic was easier than writing in English, 31.6% reported that writing in both languages is difficult and the remaining 27.6% said that writing in English is easier for them. This revealed that writing in Amharic is easier than writing in English. Deaf students justified the reason that Amharic is easier in writing process than English because we grew up with hearing families who are speaking and writing in Amharic Language. In addition, in a family level when communication is needed, they communicate through Amharic writing, during this time errors are corrected by their parents. Their background information informed that most of deaf learners (90.8%) came from Amharic speaking families. This is true because there may be family support and learning environment favors Amharic writing. As deaf interview results indicate that writing in both languages is difficult but due to all this, Amharic writing seems easier than English.

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The other study finding revealed that students from special schools have better mean score in both languages writing skills than in their counterpart integration schools. Most of the deaf students 86% of them have very poor content knowledge in special schools in Amharic writing skills, 72.1% in organization of idea, 69.8% inefficiently using vocabulary, 76.7% of these students perform poor and virtually no mastery of sentence construction and mastery of mechanics performed very poorly. Similarly, the results of integrated school students show that in all content categories of Amharic writing skills also performed very poorly, they range from 78.8% to 90.7 %. This showed that students from special schools achieve higher mean scores on the Amharic writing skill test than their counterpart integration schools. However, the chi-square analysis reveals that there are no statistically significant differences between integration and special school students in all Amharic writing categories as x^2 (1, 76) = 2.315, p > 0.05. The Amharic language writing skills of deaf students in both types of schools seem to be similar. It is clear that students in both groups faced with high difficulty of writings. This finding clearly shows that deaf students in both programs had high difficulty of Amharic writings. This finding is consistent with the work of Antia, et al. (2005) that suggested public schools may experience difficulty with grammatical constructions throughout their school years.

Students in special school in all content categories of English writing skill were very poor. 86% in content knowledge, 72.1% of organization of ideas, 69.8% of vocabulary usage, and 76.7% of language construction and mechanics of deaf students were very poor. Similarly, students in integrated school in all content categories of English writing skills also achieved very poor, this means only 1.3% to 6.6 % wrote correctly. This shows that both groups weak writing skills. When we compare special school students with integrated ones, the data show that students in special schools are statistically better than students in integrated schools in most of categories of English writing skill. In addition, chi-square analysis reveals that there is statistically significant differences between integration and special school students in the organization of the sentence, content knowledge, vocabulary, language construction and mechanics of the English categories as can be shown as x^2 (1,75) = 2.776, P < 0.05, x^2 (1,75) = 6.836, P > 0.05, x^2 (1,75) = 6.136, P >0.05, x2 (1,75) = 3.725, P > 0.05 and x2 (1,75) = 3.725, p > 0.05. It is clear that students in all groups showed high difficulty of writing in English. Based on the performance of written work of students' data reveal that such descriptors as limited vocabulary, vagueness, lack of functional words, bland, poor mastery of verb inflections, plurals, and repetitive, limited, and simple structure of the sentences without carrying meaningful message. Teachers interview results from both types of schools attests that the students' exhibit, inability to use vocabularies in their correct places, follow the rules of grammar, use punctuations correctly and write sentences in their correct order. This all are found common deficits of the learners in both languages.

On the other hand, there is a positive and a weak relation between the written skills of deaf learners' age of onset P < 0.05. This indicates that deaf learners who are born deaf, prior age three deaf and deaf after age three have no similar Amharic and English written language skills. Positive relationship indicates that the age onset has a positive effect on the writing skill of Amharic & English of deaf. On the other hand, there is no statistically significant correlation between Amharic and English written skill and the sign language started period P > 0.05. This reveals that deaf learners who started sign language at home and in school have similar written language performance in both Amharic and English written languages.

In response to the interview that inquire the suggestion to improve the writing skill of deaf learners, deaf students and their teachers suggested that writing skill is fundamental for deaf children to compete with majority of hearing people. Hence, an age appropriate input of vocabulary, an early supporting system of writing skill beginning of preschool, telling the relation and differences between sign language and

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written language order in both languages, and early written language exercise contribute for writing skill development. Teachers also add that readiness and capacity show these skills in the classroom will contribute to the improvement of the skill.

The above findings agree with Paul (1998) that '… at first the necessary step is that deaf children must learn written languages are not related to sign languages. Deaf children do not always realize that the written language is related to the spoken language by hearing people and unrelated to the sign language. In addition, deaf children have to learn that there exist important differences between written languages and sign languages'. This result is supported by works of (Padden & Ramsey, 2000). According to these scholars, teachers may also try to develop deaf children's knowledge of the written and speech language systems.

In addition, teacher interview results show that sign language and written language development programs in schools, early vocabulary knowledge input, early grammatical skill and early exposure of writing skills play an important role in the improvement of writing skills. Besides, teaching Amharic and English grammar structure in relation to sign language, identification of words or showing the differences in writing are very essential in encouraging the performance of writing skill. Giving, due attention of the learners, in order to improve writing skill, by the teachers and administration of the schools is of paramount importance. The literature suggests improving deaf students' writing proficiency calls for increased instructional accountability. In support of the finding above, (Berent et al., 2007; Channon & Sayers, 2007; White, 2007) say "teachers should be accountable with an efficient and valid means of assessing writing skills".

CONCLUSION AND RECOMMENDATION

Based on the findings of the study and the conclusions drawn above, the following recommendations are made. The findings of the study have important implications for the concerned parties, namely, Ministry of Education, special and integrated schools, educational policy makers, teachers, school principals, deaf learners, and parents.

Signed Language proficiency: Communication has the ability to connect thought and symbol into language, and is the beauty of learning. The effective development, understanding, and expression of language are fundamental to any educational and social experience and are particularly crucial for deaf children. Effective communication, education and social growths depend on a language-rich environment. Language rich classrooms could facilitate academic learning. However, the finding of this study reveals that there were sign language limitations available in all subject areas. This created a gap of understanding print literacy and academic achievement in the learning process of deaf students.

On the other hand, the study findings reveals that deaf students with high signed proficiency laid the bases to perform better in Amharic and English reading comprehension, in written proficiency as well as in academic achievement. This shows that language proficiency is highly associated with literacy skill and academic achievement. Many studies indicated that high language skills in sign have been found to associate with higher literacy skills in children who depend primarily on sign and increase access to learning. Therefore, early access to fluent language is central to deaf children's gaining literacy skills. This requires special attention in the development of sign language proficiency. For those children who are not able to benefit fully from spoken language, an early foundation in language through ETHSL would appear to be a promising alternative. This study encourages deaf students to learn with their

mother tongue. The Constitutional also encourage children to learn with their mother tongue. There for it is constitutional right.

- Preparation of deaf people for life in two cultural and language community is a primary bilingual program. It is the negotiation of two languages (signed and spoken/written) and two culture (the culture of the deaf community and the hearing world). The development of sign language skills is fundamental to the objective of providing uninhibited access to curriculum content via a fully accessible language and a basis for acquisition of Amharic/English as a second language. In this regard, institutions should invest quality training in order to improve the qualification sign language teachers.

- On the other hand, integrated school students showed poor sign language proficiency than counterpart special school students. This indicates that lack of full access to a complete language and/or delays in language development can limit the learning of language and academic concepts. Teachers need to recognize and capitalize on the benefits of language, particularly Ethiopian Sign Language, reading, writing and their contribution to academic performance.

- The findings of this study reveal that the contributions of Signed English and Amharic/ Total Communication in the development of natural sign language/mother tongue were small and unsatisfactory as were in the improvements of Amharic/English language skills in deaf children. The explanation for why this Total Communication use speech and signs does not function as expected. Literature confirmed that if deaf children are exposed only to Signed English, 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. In effective, educational practices in special and integration schools did not meet the aspirations of deaf learners.

- Therefore, paradigm shift would be needed in deaf education away from unsatisfactory communication and education system. A signing community cannot ignore the fact that signing in English/Amharic occurs, but the linguistic description of a natural signed language as a language in its own right must be properly distinguished from artificial sign system.

Written skills: The other findings results reveal that deaf students wrote the linguistic specifications of the translation equivalent in sign language. This shows that deaf learners have access in only sign language. It is difficult for deaf children set up a written language system, when the syntactic, the semantic, and especially the morphological specifications of the spoken word equivalents are not already available. Understanding this issue is vital to help deaf learners.

Educators of the deaf need to understand deaf children have difficulties in learning to read and write. Many deaf children have delays in their face-to-face language development that can negatively affect literacy learning. Early literacy is positioned with respect to the development of face-to-face language and the subsequent development of reading and writing. The findings reveal that high sign proficiency group in all content categories of Amharic and English writing skills achieved higher mean score than low proficiency group. This displays that sign language proficiency is the base for writing skill. The priority should be given to that child to acquire first language proficiency during preschool and early schools at least to master the above issues.

- In reality the deaf students have inadequately developed Amharic and English syntax, morphology and vocabulary. The fact is, however, that deaf students made numerous errors at the sentence level in writing are explored in this study. In addition, the fact that many deaf students have difficulty with writing might stem from exposure to models of good writing. The teachers of deaf should emphasize on approaches to writing that capitalize on producing basic sentences in writing. Since their writing in the study seem lacked quality messages, uninformative and coherent sentences. This calls us educators to make a change on instructional strategies of teachers and modification or revitalization of materials.

- The findings of this study reveal that the common observed problems of the deaf during writings were inability to write vocabularies in their appropriate places, to follow the grammatical rule of writing, construct sentences and attain general grammatical organization. They were poor in word organization, sentence structure, grammar structure in general organization of the sentences. This issue also need emphasis deaf children have to develop a written lexicon that contains the appropriate semantic, syntactic, morphological, and orthographic information for each of the words they learn. The construction of such a written lexicon is vital part of learning to read as words are the building blocks of languages. In addition, the deaf need to be taught similarities and differences between sign languages and written languages. Instruction need to be well organized, clearly and effectively delivered, and include learning activities that are appropriate in length, depth, and focus on written language skill development.

- The findings of the study reveal that deaf students from special schools had higher mean score in measure of both written language skills than those in their counterpart integration schools. Special schools students displayed better sentence construction than integrated schools. However, this finding clearly shows that deaf students in both programs had high difficulty in Amharic and English language writings. This implies in both school programs deaf children suffers in literacy skills. This suggests us to take measure on strengthening written skill classes in both programs.

- This study finding revealed that severe writing impairment was found in deaf students. Writing is the basic foundation for school education. Literacy proficiency is the back bone for other curriculums. Students who experience difficulty in learning to read and write cannot fully participate in classroom learning; hence they are at high risk for school failure, are at high risk for lifelong problems with employment, and have diminished avenues for pleasure. Therefore, it is crucial that schools for the deaf should take proactive steps in transforming their schools in to bilingual deaf education. If they provide deaf learners with access to education in the language of their own, namely through Ethiopian Sign Language, deaf learners will have access to reading and writing as well as education.

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A NEW METHOD SUGGESTION FOR THE STUDENTS WHO HAVE LEARNING DISABILITY IN FIRST READING AND WRITING: VOCAL AND SYLLABLE BASED SENTENCE METHOD[1]

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ABSTRACT
The purpose of this study is, to suggest a new method to the teachers who teaches to the students who have difficulty in first reading and writing. For this purpose, the phases of "Vocal Based Sentence Method" which has been carried out since 2005 is examined, by taking views of five experienced teachers the difficulties encountered during these method practice are established and "Vocal and Syllable Based Sentence Methods developed. According to this, in those method practices with the help of "Vocal Based Sentence Method" a mixed method which is tought to ease the teaching of "syylable-word-sentence" structures the student have difficulty to understand is used. During the practice of the method the vocal line of "Vocal Based Sentence Method" is not changed but, a change has been made in the number of the groups. Those vocals and their groups are like this: First Group: "e, l, a, t, i, o, n" Second Group: r, m, u, k, ı, y, s" Third Group: d, ö, b, ü, ş, z, ç, g" Fourth Group: c, p, h, ğ, v, f, j. With those method practices, when the teaching of first group vocals and syllable- word-sentence teaching is completed, by repeating the formations of the vocals in the mouth they are reminded to the children. By mazily combining the first group vocals, new open and closed syllables are formed. By combining the syllables new words, by adding vocals or syllables at the end of the words different words are obtained. Those structures are transformed to a chart and hanged on the class board. Some of the sentences that has been formed are hanged to the sentence board by writing on the notecards . After making students read and write those sentences sufficiently, vocal-word-sentence formations are pointed out. Also the sentences that has been formed are turned in to texts and written to the text notebooks. The texts are prepared by the teacher in a big size (50x70) and hanged on the class board. All of those texts are combined and turned into a "class text notebook". For the students to be able to study again, the syllable-word-sentences that have been obtained from the first group are transformed to the work sheets and passed out to them. Similarly when the process with the second, third and fourth group vocals is finished the ability of fluent reading skills of the students are improved and practices intended for vocals and words they have difficulties to write are placed.
Key Words: Reading and writing teaching, Children with learning disability, vocal and syllable based sentence method

Introduction

Up till now around the world and in Turkey, in first reading and writing teaching many methods and technics has been used. Some of them are, the alphabet method based on teaching the recognizing and pronouncing the words; the phonetic method based on the phonemes that show the vocals and vocal goroups`; the syllable method based on the syllable, one of the meaningless language elements; the word method based on the word which is one of the significant elements also; the kinesthetic method that teaches the words with pictures; the sentence method which accepts the sentence as the starting point and the story method which based on a story that tells an accurate event, thought and emotion depending on time and space. (Calp, 2009; 66)

Binbaşıoğlu (2004; 170) subsume those methods under two headlines, synthesis (composition) and solution (decoding,analysing). Çelenk (2005;50) searchs the methods of word and vocal (phonetic) as synthetic methods; the methods of word, sentence and story under the titel of analytic methods and adds mixed methods to the third headline. Güleryüz (2002; 43) handle those approaches under three titles ,"synthetic approach" "analytical approach" and "mixed/ eclectic approach".

Güneş (2005;136-137), who makes statements about how the mixed methods are formedpoints out that mixed methods can be the methods that are formed by mixing the analysis and synthesis methods and the mixed methods may have different practices. According to Güneş (2000; 44-45), there are nearly

[1] Bu makalenin ilk hali, 16-18 Eylül 2013 tarihleri arasında düzenlenen Uluslararası İlköğretim Eğitimi Konferansı'nda sunulmuştur.

50 methods in the field of reading and writing. Those methods are synthesis, analysis and mixed methods. The synthesis methods composed of the Letter (alphabet), vocal (phonetic), syllable methods are the oldest methods and barely used today. Each and evry method are named after the first element that it starts to teach reading. Which means, the word method starts with words, vocal method start with vocals and syllable method start with syllables. Later on those strong elements combine and the words and sentences are formed. Analysis methods came up after 1990's. This method group is formed from word, clause, sentence and story methods. In analysis method, each element is read and dwelled on their meaning and then analysed. Namely sentences are separates to words, syllables and letters. Mixed methods are formed by mixing analysis and synthesis methods.Mixed methods consists many methods like letter-phonetic, phonetic- syllable, sentence- letter,word-story methods. For the eclectic method, the phases of analysis and synthesis methods are respectively used.

Unlike Güneş, some of the theoreticians describe the mixed practices as prototype methods and criticize them since they are not useful. For example, Cemaloğlu (2000;67) describes the mixed method as an implementaion of induction and deduction methods. Öz (2005;12) interpret those implementations as an accelerated version of sentence method. Göçer (2008;9) handle it as a method to teach reading and writing as soon as possible.

All around the world the mixed method practices are used and the choice of the method is up to the teacher. In our country, for many years it has been told that one type of teaching method must be used in reading and writing teaching. Still experienced teachers use mixed methods to troubleshoot the problems they encounter. During those implementations the teacher try new ways like mixing sentence-vocal, vocal-syllable. The first person to point out this situation, Çelenk (2002;40) has stated that teachers use mixed methods to clear away the difficulties during the teaching period. He himself developed the "Hierarchical Synthesis Method". In his method teaching starts with introducing eight vowels. In the second base as a result of mixing vowels and consonants open and closed syllables are obtained and then setences are formed. (Çelenk; 2005;67) Another method which will be examined under the line of mixed method is "Vocal Based Sentence Method", improved by Güneş. In this modern education method it is aimed to teach reading and writing to the students in a short term. In this method, first reading and writing teaching starts with vocals. First, the vocals are felt by the students. That is why the vocals are related to the daily life. After giving some significant vocals, respectively from vocals to syllables, words and in the end sentences are) reached.

Like Çelenk and Güneş, Deliveli too has brought different methods together and developed mixed method. Vocal Focused Sentence Method(2007), Associative Vocal Teaching Method (2009), Vocal Associated Integrated Word Method (2011), Vocal Based Language Teaching Method (2012), Drama Supported Vocal Teaching Method (2012), Lyrics Based and Rythim Supported Reading and Writing Teaching Method (2012) Subject Based Language Teaching Method (2012), Action Based Language Teaching Method (2012) are some of those methods. In these studies it was pointed out that by differently bringing together the vocal- syllable- word- sentence methods mixed methods might be improved.

In teaching and writing teaching, it is not true to froce the teacher to use one type of method. It is possible to teach with different implementations and approachs. Many methods particular to Turkish language may be developed like letter, vocal, syllable,word,sentence,clause,story methods. And if tried and used succesfull results may be taken from those methods too. Therefore different methods must be developed and the teachers and academicians who are interested in this subject must keep searching different methods.

Method

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The teaching difficulties encountered in normal classes in first grade level are mostly because of the children's individualistic differences and this may effect their success on the process of reading and writing. These differences can arise from the lack of basic knowledge and abilities to be ready to reading and writing of the children, preschool living or the children's being different from their equals in a cognitive angle. Therefore it becomes unavoidable that the teachers use individualistic teaching practices in first reading and writing in classes in which individual differences may affect success recognizably. The objective of this study is to propose a new methodto the teachers having difficulties with the children in first reading and writing. For this objective the practices about "Vocal Based Sentence Method" which has been carried out since 2005, are examined, the children who have learning difficulties in first grade during first reading and writing activity are observed, the difficulties encountered during this activity has been established by taking the views of five experienced teachers who have first grade experience.By considering the structural properties "Vocal and Syllable Based Sentence Method" is developed. Evaluating in terms of reading and writing teaching methods "Vocal and Syllable Based Sentence Method" is mixed special to Turkish, evaluating in terms of practices it can be evaluated under the line of special methods.

Findings and Commentary

Phases of Vocal Based Sentence Method

According to "Vocal Based Sentence Method" that has been implemented in our country since 2005-2006 academic year, reading and writing teaching starts with vocals. In these method implementations vocals seperated into groups and reading and writing teaching is completed by following the vocal line in the group. According to this these groups compose of those vocals: First Group: e,l,a,t , Second Group: i,n,o,r,m, Third Group: u,k,ı,y,s,d, Fourth Group: ö,b,ü,ş,z,ç, Fifth Group: g,c,p,h, Sixth Group: ğ,v,f,j. After giving some vocals that can make up significant, from vocals to syllables, to words and sentences are reached. For example, after teaching the "e,l" vocals the structures like "el,ele,el ele" are obtained. The phases of this method is, "preparation to first reading and writing, starting first reading and writing (feeling the vocal, writing and reading the letter, reading and writing syllables fromletters, words from syllables, sentences from words, forming texts)freereading and freewriting. With the "Vocal Based Sentence Method" reading and writing teaching is carried out depending upon listening and talking skills, integrated with visual reading and writing field. Starting reading and writing teaching with vocals, significant syllables and words by integrating vocals helps to obtain sentences in a short time. As in Turkish every letter fullfills one letter, this method is convenient for Turkish vocal structure.

The Problems of The Children Who Have Learning Disorder in Teaching Reading and Writing

Five volunteer teachers, living in Muğla have supported the study. In the selection of the teachers the condition of teaching more than six times to the first grades seeked.

Name of The Teacher	Age	Sex	Seniority	Experience of First Grade	The School He Works
Özkan Deniz (T1)	48	Male	27	8	Dumlupınar İlkokulu
Hürriyet Uygar (T2)	49	Male	29	10	Türdü İlkokulu

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Cengiz Barut (T3)	47	Male	26	10	Koca Mustafa Efendi İlkokulu
Enver Prinççioğlu(T4)	58	Male	33	6	Atatürk İlkokulu
Nurten Koçar (T5)	43	Female	25	7	Şehit Yarbay Alim Yılmaz İlkokulu

(T1) "The most important difficulty of Vocal Based Sentence Method which is being used right now is the children have difficulty in seeing the detail. Because little children perceive the incidents as a whole. They have difficulty in seeing the detail. Especially when it comes to the phase of syllable they have difficulties." (T2) "While practicing Vocal Based Sentence Method, there has been some situations that i had to use mixed method practices. Because while practicing Vocal Based Sentence Method some children have difficulties with syllables. As there are no notecards in this method, children had difficulties in understanding the voices. There has been some problems in understanding the words too. The biggest problem was especially occured during syllables practice. They United the syllables wrong. (like Po-şet, poş-et)."

(T4)"During the implementations of Vocal Based Sentence Method the children may froget the vocal. You need to repeat and maket them remember. During repetitions i don't go back to start. I just repeat the vocals he forgets. In some cases we have to use mixed methods. While practicing Vocal Based Sentence Method after a while, after giving 5-10 vocals we turn back to the syllable method. With the help of Vocal Based Sentence Method we mix syllable and word methods with vocal method."

(T3) "If i had the chance to choose i would use mixed method. With the Vocal Based SEntence Method he reads quick but the speed of reading is slow. Some students may have difficulties in reading with this method. In this situation we use syllable, word, sentence methods. During the practices some students may mistake the vocal, syllable and word. Some students have difficulties in learning alveolars. Some students may have difficulties in learning "k,b,h,t,p,g,l" voices. Some can make mistakes while writing "p-b, k-g". By making them read more i try to maket hem understand the differences between. It is important to be able to improve the children's skills of understing while reading but they need time for this.

(T5) I have used both sentence method and Vocal Based Sentence Method. I like Vocal Based Sentence Method. But there may be some who have difficulties. That is why while practicing Vocal Based Sentence Method after giving first ten vocals, necessarily, level groups are formed and i usemixed methods. While working with these groups sometimes i use syllable, sometimes word methods. While inductioning instead of repeating the vocals, for some students deductioning is a way. While reading vocals (p-b, d-t, f-v, k-g) are mistaken with vocals and repetition may be needed.

Children With Learning Disabilities

Learning disability is a term used for the individual groups who have difficulties in academic skills such as; reading,writing, reporting the datas, spoken language, written language or thinking skills but have avarage or above avarage intelligence. (Mastropieri ve Scruggs, 2004; Heward,2003; Akt: Özmen, 2010; 336). In Turkey, legally, learning disability according to Special Education School Regulation's Article 4, passage "k" is used for identifing the children who is not exclusive in terms of intelligence level and because of the physical and cultural inadequacy of the enviroment he grew doesn't have interest and experience in education or who have difficulties in understanding, telling, reading, writing, drawing, recognition and conceptualization devoted to the organic or functional reasons. (MEB,1990)

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In recent years with the concept of learning disability, concepts like learning disorder, and lack of learningare used. Some researchers claim that it wouldn't be true to classify the learning disorder by pointing out every children's problem may be in different fields and in different levels. Altough they are diffrent with regard to their features, it is stated that, most of them have common characteristics. Most of these children have problmes in the area of socially and individually improvements, attention disorders and supermotility. (Aral and Gürsoy, 2007; 209-214) But these children may learn some subjects quick and easy. (Friend and Birsuck, 2006; Levis ve Doorlag, 2003; akt. Melekoğlu, 2010; 91).

Generally learning disorder does not emerge depending one factor. Most of the learning disorders emerge after the content of the curriculum, basic knowledge level of the children, cognitive skills, teaching procedures, convenience of the teaching materials,self trust of the student, expectation of success, value of learnin and meaning.

Generally, learning disorder is considered as showing itself in using language skills. This disorder is felt like an insufficiency in listening, talking and reading and writing of the students. Especially insufficiencies during the process of learning reading and writing affects the success of the student at school. Learning disorder is generally starts in school period and first grade. As a result of the academic failure social problems may ocur. That is why learning disorder must be identified in the early years and teaching preparations mut be made fort he children(Özmen, 2010; 335).

Observations That Are Made in the Classroom

According to the observations that are made in the classroom, in the first grade, the children who have problems in learning during the reading and writing practices, despite mentally showing a normal improvement, can have problems in listening, speaking, reading, writing and reasoning. These children are easily spotted by the teacher because they get bored during the listening, speaking and especially reading and writing practices, and have problems during the reading and writing education such as writing vaguely, misusing the letters and punctuation marks, and spelling. For instance, these children, as well as mistaking the letters and numbers for each other like "b-d, d-t, m-n, g-y, 2-5", they can write the syllables adversely, like "ab- ba". Similarly, they may write a word that they are supposed to note down from the board like how it looks from the mirror. Some children can add letters and syllables to words like this: "gelir- geliri, kelime-keelime". Some children can write the words in a sentence without putting a blank between them, like *"Alilaleal"*. And some children can make mistakes in reading as they write the sentence from right to left. Therefore, because of the problems in reading and writing, these children can have problems in understanding the vocal-syllable-word-sentence formations. Besides, handwriting of these children can be more vague and slower in comparison with their peers. When the reading skills of these children are evaluated, it is seen that they similarly make mistakes in "omitting, adding, reversing and word recognition.". Similarly, during the reading practices, they can mistake the letters such as "b-p, k-g, ğ-g, m-n, r-y, b-d, d-t, f-v " for each other and when reading the word in the sentence, they can read by omitting or adding words, thus being unable to carry out a qualitative, out loud and quiet reading. Therefore, when teaching these children to read and write, teachers need to use different practices for vocal-syllable-word-sentence formations and have amusing/attracting special practices when reading and writing syllables-words-sentences.

Reading and Writing Education with the Vocal and Syllable Based Sentence Method

When the Vocal and Syllable Based Sentence Method was being improved, the existing methods and "the Vocal Based Sentence Method" was examined, Turkish language's structural features were

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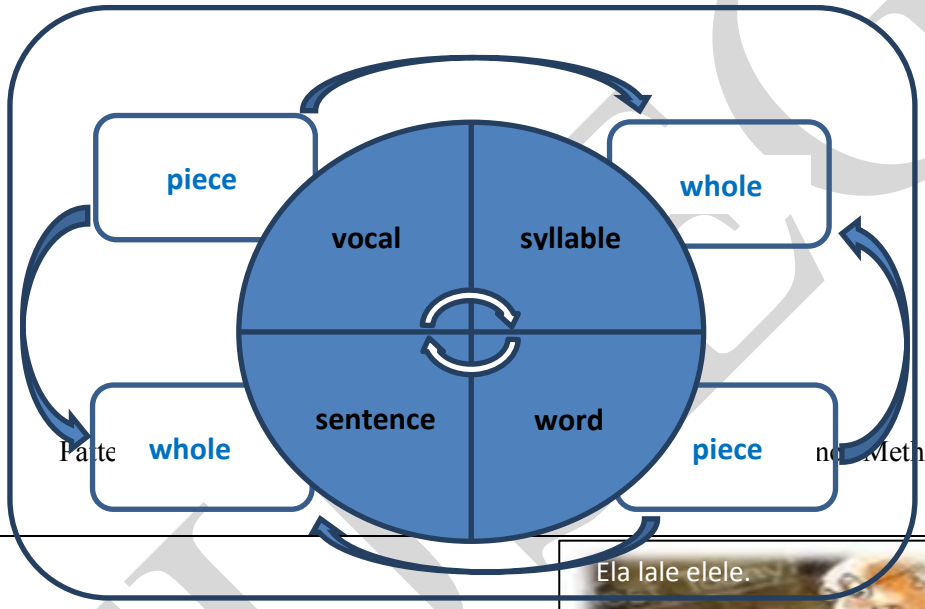
evaluated, the characteristics of the students who have problems in learning were searched and some children who have problems in learning during the reading and writing practices were observed. Besides, the process steps of the method were decided by applying the teachers' views and by detemining the problems of the students who have learning problems during the Vocal Based Sentence Method. While teaching reading and writing via the Vocal and Syllable Based Sentence Method, to simplify the practices without completely leaving "the Vocal Based Sentence Method", a mixed prodecure which was thought to ease the teaching of the "syllable-word-sentence" foramtions was followed. According to this, the reading and writing education stars with the "vocal" in this method, and after the teaching of the vocal, syllable-word-sentence formations are taught as in the "Vocal Based Sentence Method". However, during the method practices, not only to the teaching of the vocal but also to the teaching of the syllable and the emphasizing of the difference were given importance. The children are tried to apprehend the meronymy this way.



Pa te ne Method

After the teaching of the first seven vocals,syllable-word-sentence formations are revised by practicing again. This way, by making the child repeat the meronymy, he/she is given time to form the syllable-word-sentence formation in his/her mind.

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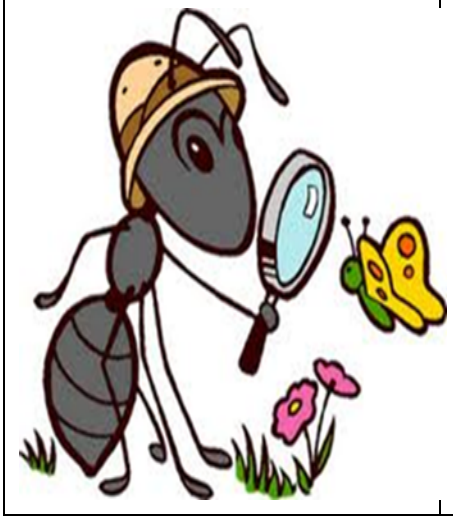

In brief, during the reading and writing practices, with the Vocal and Syllable Based Sentence Method, the fields of listening, speaking, reading, writing, visual reading and visual presentation are handled as a whole. The structures that are attained during the teaching of vocal-syllable-word-sentence are related to the themes of "Individual and Society, Atatürk, Educational and Social Activities, Our World and Space" in the Hayat Bilgisi class.

While teaching reading and writing to all the students in the class with the Vocal Based Sentence Method, for the students who have problems in learning during the practices, practices which aren't so irrelevant to the class' studies are carried out in the level groups that forms itself in the class.

To get this easiness, the order of vocals in "the Vocal Based Sentence Method" wasn't altered, but the number of the groups were amended. According to this, in the Vocal and Syllable Based Sentence Method, the vocals and vocal groups to be taught are like this: 1. Group: e, l, a, t, i, o, n , 2. Group: r, m, u, k, ı, y, s , 3. Group: d, ö, b, ü, ş, z, ç, g , 4. Group: c, p, h, ğ, v, f, j. After groups of vocals are taught, syllable-word-sentence formations in each level of group are to be repeated.

To explain the practices of reading and writing education with the Vocal and Syllable Based Sentence Method more, just like in "the Vocal Based Sentence Method", the reading and writing process starts with the vocal, and syllable-word-sentence formations are examined through the vocals. While forming the syllables though the vocals, the words are attained by seperately studying the open syllables and closed syllables.

l → el e la → Ela E	le → ele e la → Ela E	le → lale la li → elli el

Chart 1. Syllble and Word Derivation Practices

As the syllables are attained, colored syllable cards are prepared. With a code that is attached to the back of the syllable cards, they are hung on the syllable cards board as they are read. As open and closed syllables are attained, by doing matching practices, the similarities and differences are emphasized. The syllables that piled on the board are used in the syllable matching practices or word forming practices from time to time.

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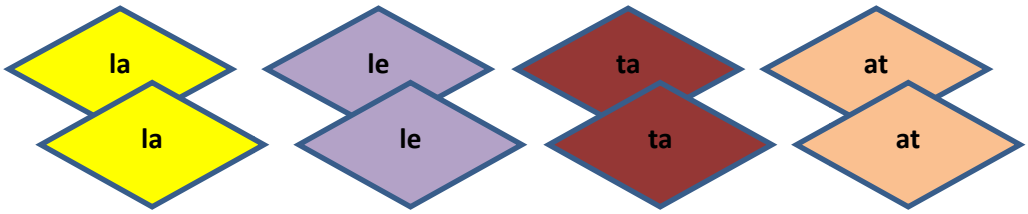
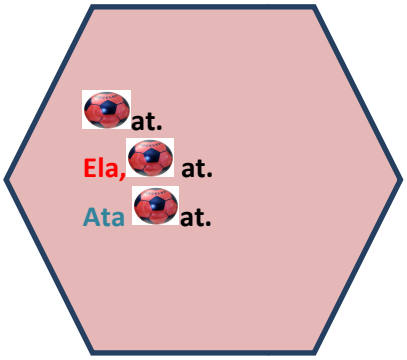
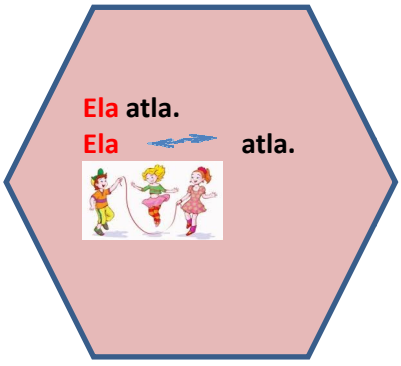


While forming new words with the syllables, word cards are prepared by writing each syllable of a word in color. During the word readings, while drawing attention to the syllables of the words, after closing the first colored syllable with the left hand, the second syllable is pointed at with the right hand. In the next step, the reading of the word is completed by pointing at the third syllable; if there is one, with the right hand. Similarly, during the writing practices, after the child writes the first syllable, he/she closes the first syllable with the left hand and adds the second syllable. After writing all the syllables of the word, the child is asked to reread the word as a whole. The teacher helps the child in this practices until he/she gains the habit of reading from left to right and until the mirror reflection effect is gone. The teacher aims for the child to gain the habit of reading from left to right, by underlining the syllables of the word or by using special signs such as ➡ ➡ ➡, which shows the student the way to read from left to right.

As the sentences are attained, the students are to read and write the first level texts. When they read and write these sentences, they are to read each word by circling it. And while writing, they write them so as to make them colored. If it is wanted to emphasize the syllable, the same method is carried out and the syllables are emphasized. During the reading and writing practices, the teacher constantly reminds the students to read the syllable/word/sentence from left to right.





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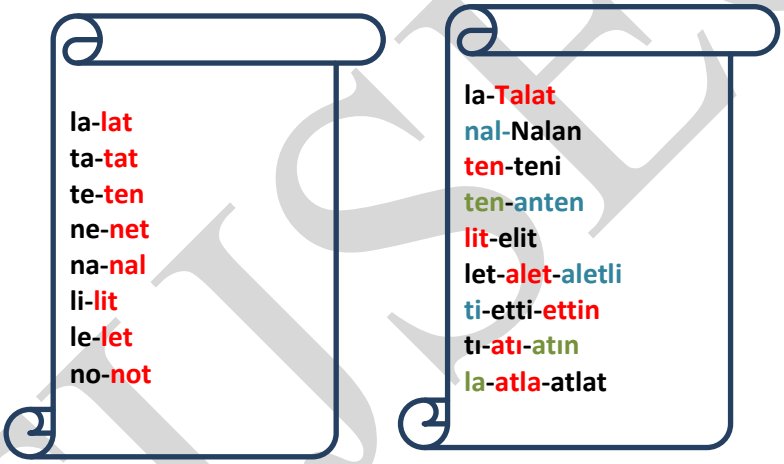
When the syllables are formed with the first group vocals turned into open and closed syllable chart and repeated. Similarly when the teaching of the vocals and syllables belongs into this group is finished word charts are made and hanged on the class board.

Hece Tablosu						Kelime Tablosu					
la	al	at	ta	na	an	Ali	Ata	elle	anne	otla	nane
le	el	et	te	ne	en	Ela	itti	elli	nine	otlat	naneli
li	il	it	ti	ni	in	Lale	eti	laleli	ana	atlat	tane
lo	ol	ot	to	no	on	Talat	ete	eli	nal	atı	taneli

Chart 3. First Level Synthesis Practices

When it comes to repeating practices, the teacher firstly reminds the children the formation of the first group vocals in the mouth. The syllables which has three vocals are repeated by adding vocals at the end of the close syllables. Those syllables are mixed with vocals or syllables and the sentences which can be used in asentence are reformed, read and written.



By using word and syllable charts the sentences are made. In this process, some sentences tought to be make a significancy are turned into texts and second level text practices are done.

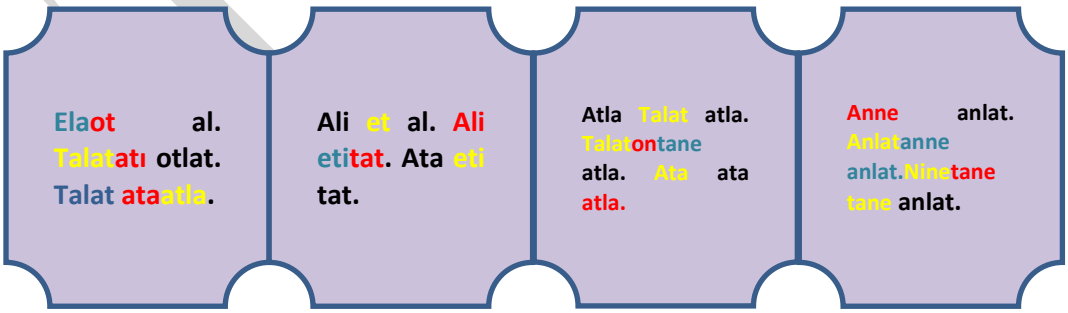


Chart 3. Second Level Text Practices

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Pictures and images might be added to the big sized (50x70) texts which are written remarkably. When each text is finished the texts are brought together and turned into class textbook and used in study. It is suggested to preapare for each group level 10 texts.

To be able to establish the reading and writing difficulties of the children or make them study the teachers benefit from those texts. While the children write sentences on the textbook if the word must be emphasised each syllable are written colorfully or underlined to take attention of the child.In this level some sentences are turned in to cards. Images can be added to those cards or each card sentence can be written to the colorful papers and hanged on the class board.

Ela lale al.
Ata elinielle.
Lale ata ot al.
Lale eliniitti.
Ali eti al.
Ali eti tat.

Ata eti tat.
Ela on tane at al.
Talat ata atla.
Talat attan in.
Nine nane al.
Anne, nine nane tat.

While those card sentences are read and written, teacher make it easy for the chidren to notice by clapping for each word. With the guidence of the teacher while reading and writing the sentence the students try to close the first sentence, read the second and after finishing the second starts to read the third. In this period teacher helps the children by using special signs showing the from left to the right writing direction. When the children completes the sentence the teacher wants the children to underline or circle every word and read them again. With this way, it is tried to ease the conception of direction from left to the right and the child is able to see the sentence/word franction.

After making the students read and write the cards, the “e, l, a, t, i, o, n” vocals are seeked in the target sentence. The teacher plays the “vocal bingo” game with the students and wants the children to tell him if the vocal that he picks from the bingo is in the sentence or not as “there-not”. When the child says “there”, after reading the vocal emphatically, he finds the vocal in the sentence and compares it with the card he has. For example if the vocal that comes out from the bingo is “t” and the game is played with the sentence “Ata eti tat.” The child emphasises the vocal like “tttt”, underlines it and shows which words have it and how many “t” vocals are there in the sentence. To be able to emphasis the syllables and repeat the syllable formations, with the help of the cards the open and closed syllables are found in the sentence and matched. The words belonging to the sentence are matched with the help of the wprd cards and the spellings are checked. After these processes are made the sentences are analysed, vocal-syllable-word structures are studied. Thus, with the help of integral education first group synthesis and analysing practices are completed. The syllable- word-sentences that are obtained in this process are turned into work sheets passed out to the children and then individual reading and writing practices are mad efor the student to be able to proceed in his own speed.

When passed on to the second group vocals, after teaching group vocals in an order, repeating syllable-word-sentence structures, the teacher emphasizes the differences and similarities with the practices of synthesis and analyse. After completing this group with similar operations the vocals belonging to 1. and 2. Group are combined and colorful syllable charts are made. By using syllable chart, syllable, board, word chart, word cards as in 1. Group similar procedures are made. By making

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the sentences with the help of the words 3. Phase texts are made. The same procedures are made for each group. Besides, by making synthesis and analysis practices as in first group, the syllable-word-sentence structures are revised.

After all the groups are completed, it is expected from children to pass onfree reading and writing. During this period, teacher tries to improve the reading skills of the children and eliminate the difficulties. Sixth phase texts are prepared especially with the "b-p, k-g, ğ-g, m-n, r-y, b-d, d-t, f-v" vocals, the children encounter mostly and the children's reading levels are evaluated. To be able to improve the reading skills of the children, sentence is underlined and maket he students focus on the sentence and read it. In these texts fluent and fast reading practices are made and each student's reading speed is checked in. While evaluating the children individually, teachers try to remove the reading and writing difficulties of the children. For example, during the text reading practices if there are some words that the children have difficulties with, that word is circled and pointed out. The vocals of these words are read by underlining. If there are saimilar difficulties while writing those texts, the same procedure is made. Below examples about the special texts that repeats those vocals are given. In this phase teachers must preapare at least 10 texts.

Pazara Gittik	**Fidan Diktik**	**Kedim ve Ben**
Biz bu gün pazara gittik. Pazarda parlak parlak elmalar gördük. Babam elma aldı. Annem de kabak, ıspanak aldı. Eve geldik. Annem sarı elmaları yıkadı. Ben bir elma yedim. Emel de iki tane yedi. Elmalar çok tatlıydı.	Hava çok sıcaktı. Babamla fidan dikmeye gittik. Vedat ve Figen evde kaldı. Toprağı kazdık. Fidanları diktik. Fidanları suladık. Eve döndük. Annem yemek yapmıştı. Hepimiz hep birlikte yemek yedik. Yemekten sonra çay içtik.	Benim küçük bir kedim var. Akşamları erkenden uykuya dalar. Sabahları erkenden uyanır. Miyav miyav miyavlar. Kedim sütü çok sever. Her gün lıkır lıkır süt içer. Ben de kahvaltımı yaparım. Kahvaltıda süt ya da çay içerim. Ekmek, bal, peynir, reçel yerim.

Chart 4. Level Text Examples

Discussion and Conclusion

In Turkey, the success of the student during the process of learning reading and writing is important both for teachers and families. But some of the disabled children may have difficulties in this process. That is why it is important to understand if the children have learning disorder or not by the teachers. The teachers and the families who doesn't have knowledge about the disorder identify those children like "lazy", "doesn't want to learn", "idiot". But those children are neither lazy nor idiots and they need special implementations because of their disorder. So, these children need to be equally learning with their classmates. On the other hand the aim musn't only be to learn reading and writing to the children. During the teaching process the necessary precuations must be taken for the children to feel the will to success and his needs must be answered. If not watched out, it shouldn't be forgotten that, these children may who have difficulties in learning, feels different from peers, have bad relationships with friends and family may be affected negatively inpersonality developement. If by chance they can

not cope with their disorders it should not be forgotten that those children may have mental problems like depression or have anxiety disorders and self reliance damages. Especially the teachers must be very carefull about this situation and must try different practices fort he children who have learning disorder and try to ease the learning process of the student. In this study, for the children who have learning disorder, by considering the Turkish language structureal characteristics, "Vocal and Syllable Based Sentence Method" is improved. This method is suggested to the teachers who would like to try new ways during the implementations.

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ÖĞRENCİLERİN DİSKALKULİYE YATKINLIKLARININ BELİRLENMESİNDE NOKTA SAYILAMA VE SAYISAL KARŞILAŞTIRMABECERİLERİ

DOT ENUMERATION AND SYMBOLIC NUMBER COMPARISON SKILLS IN DETERMININGSTUDENTS' DYSCALCULIA TENDENCIES

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ÖZET
Bireylerin matematik öğrenme güçlüğüne sahip olmalarının nedeni olarak iki temel hipotez ileri sürülmüştür. Bunlardan çekirdek yetersizlik hipotezine göre; bireylerin çoklukları tam ya da yaklaşık olarak algılama mekanizmalarındaki bozukluklar matematik öğrenme güçlüğüne neden olmaktadır. Sembole erişim yetersizliği hipotezinde ise bireylerin çoklukları sembole dönüştürme ya da sembolden çokluğu algılama mekanizmalarının bozuk olabileceği ileri sürülmüştür. Bu iki hipotezi test etmek amacıyla 487 ilkokul öğrencisine çokluk sayılama ve sembolik sayı karşılaştırma görevleri verilmiştir. Matematik başarısı bakımından alt ve normal olmak üzere iki gruba ayrılarak yapılan karşılaştırmalarda her iki görev türünde dört sınıf düzeyinde de gruplar arasında farklar olduğu; ancak farkın daha çok çokluk sayılama görevlerinde olduğu bulunmuştur. Bulgular çekirdek yetmezlik hipotezine daha çok destek sağlamaktadır.
Anahtar kavramlar: Diskalkuli, temel sayısal kapasite, nokta sayılama, sayısal karşılaştırma, çekirdek yetmezlik hipotezi, sembole erişim eksikliği

ABSTRACT
There are two hypotheses about why individuals have mathematics learning difficulties. According to the core deficit hypothesis, the reason behind dyscalculia is a core deficit in number module. Individuals who have a dyscalculia have a deficit in their approximate or exact number system. Access deficit hypothesis, on the other hand posits that individuals with dyscalculia might have a deficit in accessing symbols from quantities or vice versa. In order to test these two hypotheses, we gave dot enumeration and symbolic number comparison tasks to 487 primary school children. Based on their mathematics achievement test scores, students divided into normal and low achievement groups. Comparisons showed that there were differences between the groups in all 4 grades. The largest differences have been obtained in dot enumeration tasks. Results provided stronger evidences to core deficit hypothesis.
Keywords: Dyscalculia, basic numerical capacity, dot enumeration, number comparison, core deficit hypothesis, access deficit

GİRİŞ

"Matematiğe özgü öğrenme güçlüğü", "aritmetik öğrenme bozukluğu", "gelişimsel diskalkuli" gibi karşılıkları olan diskalkuli, öğrencilerin; özellikle sayma ve hesaplama ile ilgili becerileri kazanmada zorlanmalarına, buna bağlı olarak aritmetik işlem yapma ve hatırlamada sorun yaşayarak (Geary ve Hoard, 2005) akranlarından geride kalmalarına neden olmaktadır (Murphy, Mazzocco, Hainch ve Early, 2007). Diskakuli, özellikle; "sayma" ve "sayı büyüklüklerini karşılaştırma" gibi basit sayısal

işlemleri gerektiren görevlerde yaygın bir problem olarak karşımıza çıkmaktadır (Butterworth, 1999). Bu çalışmada, sayısal işlemler sırasında öğrencilerin zorlanmalarına neden olan diskalkulinin, bu işlemlerle ilgili görevler yoluyla anlaşılabileceği düşüncesinden yola çıkılmış, geliştirilen testlerle diskalkuliye yatkınlığı olan öğrencilerin belirlenebilmesi amaçlanmıştır.

Kuramsal Çerçeve

Araştırmalar incelendiğinde, normal nüfus içinde %3 - %6 sıklıkla görülen diskalkulinin (Barbaresi, Katusic, Colligan, Weaver ve Jacobsen, 2005) nedenleri ile ilgili hipotezler karşımıza çıkmaktadır. Bunlardan biri, doğuştan gelen çekirdek bozukluğu hipotezidir. Bu hipoteze göre beyindeki horizontal intraparietal sulcus bölgesinin (Wilson ve Dehaene, 2007) ya da beyindeki sayı modülünün(Butterworth, 1999) zarar görmesi, bireyde diskalkuliye neden olmaktadır. Bir diğer hipotez olan erişim bozukluğu hipotezi, sayısal büyüklüklerin sembollerle temsil edildiği durumda, sayısal büyüklük-sembol bağlantısının kurulamaması sonucunda diskalkulinin ortaya çıktığını savunmaktadır. Yapılan araştırma sonuçlarında, öğrencilerde, sayma ve sayısal karşılaşırma işleminde yaşanan problemler, daha çok çekirdek yetersizlik hipoteziyle desteklenirken (Landerl, Bevan ve Butterworth, 2004; Mussolin, Mejias ve Noël, 2010) sembolik matematiğin kullanıldığı bazı çalışmlarda diskalkulinin nedeni, erişim bozukluğu hipotezi ile açıklanmıştır (Attridge, Gilmore ve Inglis, 2009).

Sayma işlemlerinden biri; nokta sayılamadır. Sayısal öğrenme kapasitesini ölçmeye yönelik nokta sayılama işlemi; genellikle 10'dan küçük sayıdaki noktaların mümkün olduğunca hızlı ve doğru bir şekilde sayılmasını gerektirmektedir (Landerl, 2013). İnsan beyni, birden üç ya da dörde kadar olan noktaları sayma işlemi yapmadan algılamaktadır (Desoete, Ceulemans, Roeyers ve Huylebroeck, 2009). Subitizing (şipşak sayılama) olarak adlandırılan bu durumun, tipik ve diskalkuli olan öğrenciler arasında farklılık gösterdiği bulunmuştur (Butterworth, 2009, Fichert, Gebhardt ve Hartnegg, 2008). Sayı büyüdükçe, sayma işlemi başladığından şipşak sayılama işleminin önemi ortaya çıkmaktadır. Bu durumda, diskalkuli olan öğrencilerin nokta sayılarını daha uzun sürede belirledikleri ve hata oranların daha yüksek olduğu gözlenmiştir (Desoete, Ceulemans, Roeyers ve Huylebroeck, 2009). Landerl, Bevan ve Butterworth (2004), çekirdek bozukluğunun, şipşak sayılama mekanizmasındaki bozukluktan kaynaklanabileceğini ileri sürmüşlerdir.

Öğrenciler, bir diğer önemli işlem olan sayısal karşılaştırma yaparken sayıların fiziksel büyüklüklerinden de etkilenmektedirler. "Fiziksel büyüklük sayısal büyüklük uyumu (size-congruity effect)" adı verilen bu etki nedeniyle, öğrenciler 2- 9 karşılaştırmasını, 2- 9 karşılaştırmasına göre daha hızlı yapmakta, fiziksel büyüklük ile sayı değeri büyüklüklerinin örtüşmediği durumlarda daha fazla problem yaşamaktadırlar (Rubinsten, Henik, Berger ve Shahar-Shalev, 2002). Bu etkinin, diskalkuli olan öğrencilerin sayısal karşılaştırma yaparken daha geride olmalarına neden olacağı düşünülmektedir.

Araştırmalar, sayısal öğrenme kapasitesini belirlemeye yönelik görevler yardımıyla tipik ve diskalkuli olan öğrencileri karşılaştırmış ve bu öğrenciler arasında farklılıkların olduğunu ortaya koymuştur. Araştırma sonuçları, diskalkuliye yatkınlığın erken yaşlarda belirlenmesinin önemini ve diskalkuli nedenlerinin daha iyi bir şekilde ortaya konması için bu konuda daha fazla çalışma yapılmasının gerekliliğini ortaya koymaktadır. Türkiye' de bu konuda yeterli araştırma bulunmakla birlikte, diskalkuliye yatkınlığı belirleyecek herhangi bir araç da bulunmamaktadır. Bu çalışmada, Türkiye'deki ilkokul 1-4. sınıf öğrencilerinin nokta sayılama ve sayısal karşılaştırma becerilerini ölçme yoluyla onların diskalkuliye yatkınlığını belirleyen bir tarama aracı geliştirmek amaçlanmıştır. Bu amaçla öğrencilerin başarı düzeyleri belirlenmiş ve alt grup-üst grup olarak ayrılan öğrenciler, nokta sayılama ve sayısal karşılaştırma testlerinin sonuçlarına göre karşılaştırılmıştır. Geliştirilen

aracın, diskalkuliye yatkınlığı olan öğrencileri belirlemek ve onlara erken müdahalede bulunabilmek için yararlı olacağı düşünülmektedir.

YÖNTEM

Katılımcılar

Araştırmaya Ankara ilindeki 12 devlet ilkokulundan toplam 487 öğrenci katılmıştır. 1-4. sınıf öğrencileriyle yapılan çalışmada; her okulda, tüm sınıf düzeylerinden birer tane olmak üzere rastgele sınıf seçimi yapılmış, daha sonra bu sınıflardan rastgele 12 öğrenci seçilmiştir. Her sınıf düzeyinden 126'şar öğrenciye ulaşmak hedeflenmiştir. Ancak uygulama sırasında bazı öğrencilerin devamsızlık yapmaları nedeniyle çalışma, 1-4. sınıf düzeylerinden sırasıyla; 125, 126, 124 ve 112 öğrencinin katılımıyla tamamlanmıştır.

İşlem

Verilerin toplanması, beş araştırma görevlisi tarafından, yaklaşık iki buçuk ayda tamamlanmıştır. Uygulamalar, öğrencilerin kendi okullarında, okul idaresi tarafından belirlenen sessiz bir odada gerçekleştirilmiştir. Araştırmada, öğrencilere dört test uygulanmıştır. Bunlardan ilki, Fidan (2013) tarafından geliştirilen ve öğrencilere bir ders saatinde uygulanan matematik başarı testleridir. Başarı testleri her sınıf düzeyinde ayrı ayrı olmak üzere öğretim programının sayı alt öğrenme alanı kazanımlarına dayalı olarak geliştirilmiştir. Geçerlilik ve güvenilirlik çalışmaları yine daha önce Fidan (2013) tarafından yapılmıştır. Bu test sonuçlarına göre öğrenciler, alt ve üst grup olarak ayrılmış, böylece normal ve düşük başarılı öğrencilerin belirlenmesi amaçlanmıştır. Diğer üç test ise temel sayısal becerileri ölçüp ölçmediği test edilen ve öğrencilere bire bir uygulanan Domino Nokta Sayılama (CDC), Rasgele Nokta sayılama (RDC) ve Sayısal Stroop (SNC) testleridir. Tablet bilgisayarda hazırlanan bu testler, öğrencilerin yanıtları ve yanıtlama süreleri kaydedilecek şekilde hazırlanmıştır. Nokta sayılama görevi için iki ayrı testin kullanılmasının nedeni, öğrencilerin domino ve rastgele dizilmiş noktaları sayılama sürelerinin, öğrenme güçlüğü olmayan öğrencilerin strateji kullanmalarından dolayı, farklı olacağının düşünülmesidir. SNC testinde ise fiziksel büyüklükleri farklı olan sayılar karşılaştırılarak bu testin yanıtlanma sürelerinin, farklı düzeylerdeki öğrencilere göre değişip değişmediğini gözlemlemek amaçlanmıştır. Bu testteki sorularda, karşılaştırılması istenen sayılar, fiziksel büyüklükleri açısından zıt (5- 7), nötr (5-7) ve uyumlu (5-7) olacak şekilde hazırlanmış, böylece, bu durumun farklı matematik başarı düzeyinde bulunan öğrenci gruplarını nasıl etkilediğini gözlemlemek amaçlanmıştır.

Veri Analizi

Analizlere başlamadan önce veride yer alan uç değerler temizlenmiştir. Uç değerlerin belirlenmesinde her bir test bazında, bireylerin maddeleri yanıtlamada harcadıkları zaman göz önünde bulundurulmuştur. Öğrencilerin matematik testi puanlarına dayanarak her sınıf için alt ve üst gruplar oluşturulmuştur. Alt gruplar, matematik testinden 0, 1 ve 2 alanlardan; üst gruplar ise 2'nin üzerinde puan alanlardan oluşmaktadır. Buna göre 1-4. sınıf düzeyinde, öğrencilerin sırasıyla %16, %4'ü, %4'ü ve %5,4'ü alt grubu oluşturmaktadır. Başka bir ifadeyle 1-4. sınıf düzeylerine, alt grupta sırasıyla; 20, 5, 5, 6; üst grupta 105, 121, 119, 106 öğrenci bulunmaktadır. Alt ve üst gruptaki öğrencilerin Testlerinin testleri yanıtlama süreleri ile matematik başarısı arasındaki ilişki Pearson Momentler Çarpımı korelasyon katsayısı ile incelenmiştir.

CDC, RDC ve SNC testleriyle ilgili analizlerde, öncelikle testlerin doğru yanıtlanma puanlarına göre analizler yapılmış; ancak tavan etkisi nedeniyle bu testleri tamamlama sürelerine göre analizlerin

yapılmasına karar verilmiştir. Analizlerde, doğru yanıt oranının yüksek olduğu ve yanıtlama süresi ile yanlış yanıt yüzdesi arasında yüksek korelasyonun bulunduğu zaman kullanılması önerilen, Inverse Efficiency Score –IES (Bruyer ve Brysbaert, 2011) kullanılmıştır. IES, bireylerin, testteki maddelerini yanıtlamada harcadıkları toplam sürenin doğru yanıtladıkları madde yüzdesine bölünmesiyle hesaplanmaktadır.

CDC, RDC ve SNC testlerindeki IES değerleri betimsel olarak ve Mann Whitney U testi ile karşılaştırılmıştır. IES ile her bir sınıf düzeyindeki alt ve üst grupların CDC, RDC ve SNC testlerini yanıtlama sürelerindeki değişimin gözlenmesi amaçlanmıştır.

SNC testindeki; nötr, uyumlu ve zıt soru tiplerinden alınan IES değerlerinin alt ve üst gruplara göre karşılaştırılması için Mann Whitney U testi kullanılmıştır.

Bulgular

Yapılan korelasyon analizleri ile CDC, RDC ve SNC testlerinin IES değerleri ile matematik başarısı arasındaki ilişki incelenmiştir. Bu ilişiklere, tüm sınıflar bazında bakılmış ve elde edilen korelasyon değerleri Tablo 1'de gösterilmiştir.

Tablo 1. 1-4. Sınıf Öğrencilerinin Matematik Başarıları ile CDC, RDC ve SNC Testlerindeki IES Değerleri Arasındaki İlişki

Sınıf Düzeyi		CDC IES	RDC IES	SNC IES
1.sınıf	Pearson	-,356	-,331	-,449
	p	,000	,000	,000
	N	125	125	125
2. sınıf	Pearson	-,560	-,431	-,393
	p	,000	,000	,000
	N	126	126	126
3. sınıf	Pearson	-,542	-,431	-,393
	p	,000	,000	,000
	N	124	124	124
4. sınıf	Pearson	-,565	-,445	-,325
	p	,000	,000	,000
	N	112	112	112

Tablo 1'de; 1. sınıf düzeyindeki öğrencilerin matematik başarı testi puanlarıyla; CDC ($r=-0,356$; $p<0,05$); RDC ($r=-0,331$; $p<0,05$) ve SNC ($r=-0,449$; $p<0,05$) testlerinin IES değerleri arasında negatif yönde orta düzeyde ve anlamlı ilişkilerin bulunduğu görülmektedir. 2. sınıf düzeyindeki öğrencilerin, matematik başarı testi puanlarıyla; CDC ($r=-0,560$; $p<0,05$); RDC ($r=-0,431$; $p<0,05$) ve SNC ($r=-0,393$; $p<0,05$) testlerinin IES değerleri arasında negatif yönde orta düzeyde ve anlamlı ilişkiler bulunmaktadır. 3. sınıf düzeyindeki öğrenciler için bu ilişkilere bakıldığında; matematik başarı testinden alınan puanlar ile CDC ($r=-0,542$; $p<0,05$); RDC ($r=-0,431$; $p<0,05$) ve SNC ($r=-0,393$; $p<0,05$) testlerinin IES değerleri arasında yine negatif yönde orta düzeyde ve anlamlı ilişkilerin olduğu anlaşılmaktadır. 4. sınıf düzeyi için incelendiğinde ise matematik başarı testinden alınan puanlar ile CDC ($r=-0,565$; $p<0,05$); RDC ($r=-0,445$; $p<0,05$) ve SNC ($r=-0,325$; $p<0,05$) testlerinin IES değerleri arasında, diğer sınıf düzeylerinde olduğu gibi negatif yönde orta düzeyde ve anlamlı ilişkilerin olduğu anlaşılmaktadır. Bu bulguların, araştırmada geliştirilen CDC, RDC ve SNC testlerinin geçerliliği için bir kanıt olabileceği düşünülmektedir.

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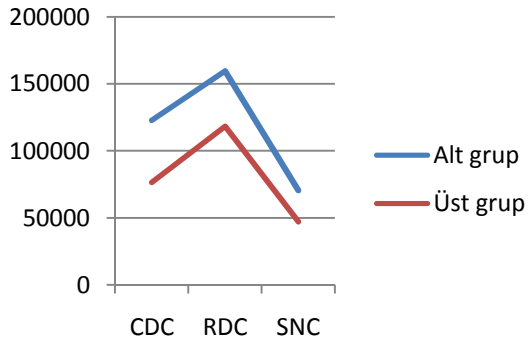
Araştırmada, geliştirilen testlerin, diskalkuliye yatkınlığı belirlemede etkili olup olmadığını incelemek amaçlandığından CDC, RDC ve SNC testlerinin IES değerleri incelenmiş ve bu değerlerin sınıf düzeylerine ve farklı başarı düzeylerinde bulunan öğrencilere göre nasıl değiştiği araştırılmıştır. CDC, RDC ve SNC testleri için hesaplanan IES sonuçlarının sınıf düzeylerine ve alt – üst gruplara göre dağılımı Tablo 2'de sunulmaktadır.

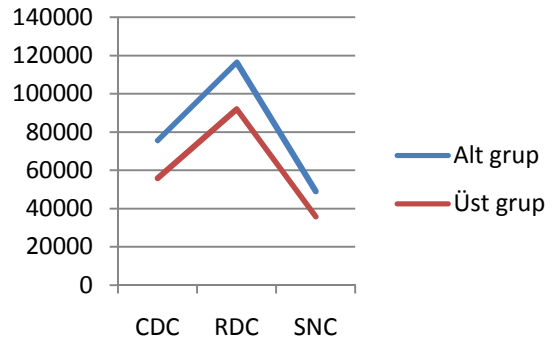
Tablo 2. IES Sonuçlarının Sınıf Düzeyleri ve Alt - Üst Gruplara Göre Dağılımı

Sınıf Düzeyi	**Grup**	**(IES ortalama)**			
		N	**CDC**	**RDC**	**SNC**
1.Sınıf	Alt grup	20	122920,3668	159531,1153	70587,6487
	Üst grup	105	76532,5203	118275,3741	47026,1407
2. Sınıf	Alt grup	5	75555,4077	116409,0000	48926,0038
	Üst grup	121	55854,6111	92012,4578	35752,5482
3. Sınıf	Alt grup	5	82415,3308	100977,5378	35289,7536
	Üst grup	119	48504,7127	81650,5242	30590,3323
4. Sınıf	Alt grup	6	76563,7788	107442,3610	40934,7958
	Üst grup	106	40050,0084	75344,4712	28494,6428

Tablo 2 incelendiğinde, IES ortalamalarının, tüm sınıf düzeylerinde SNC testinde en düşük, RDC testinde ise en yüksek değerde olduğu görülmektedir. Bu durumda, SNC testi, en kısa sürede yanıtlanan test olurken RDC en uzun sürede yanıtlanan test olmuştur. Tüm sınıf düzeylerinde üst gruptaki öğrencilerin testleri alt gruptaki öğrencilere göre daha kısa sürede yanıtladıkları söylenebilir. Üst gruplarda, sınıf düzeyi arttıkça IES ortalamalarının azaldığı; yani testlerin daha kısa sürede yanıtlandığı; ancak bu durumun alt gruplarda geçerli olmadığı anlaşılmaktadır. Bu durum, sınıf düzeyi arttıkça; üst gruptaki öğrencilerin testi yanıtlama sürelerinde daha belirgin azalmaların olduğunu, buna bağlı olarak da bu gruplarda daha fazla öğrenmelerin gerçekleştiğini gösterebilir. Her bir sınıf düzeyinde, IES değerlerinin testlere ve alt ve üst gruplara göre nasıl değiştiği Şekil 1, 2, 3 ve 4'teki grafiklerle sunulmuştur.



Şekil 1. Birinci sınıfların alt ve üst grupların CDC, RDC ve SNC testlerini yanıtlama sürelerine ait IES puanları



Şekil 2. İkinci sınıfların alt ve üst grupların CDC, RDC ve SNC testlerini yanıtlama sürelerine ait IES puanları

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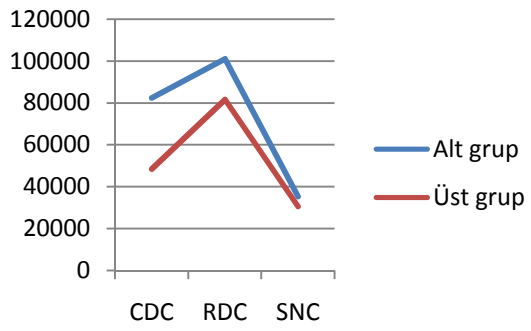
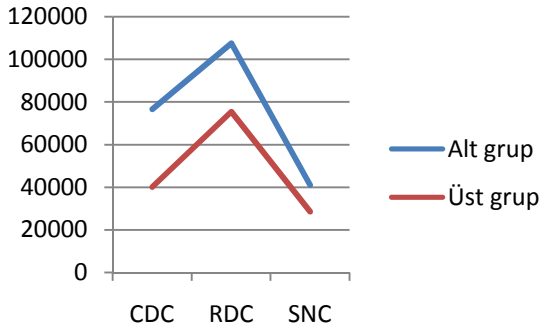


Şekil 3. Üçüncü sınıfların alt ve üst grupların CDC,RDC ve SNC testlerini yanıtlama sürelerine ait IES puanları



Şekil 4. Dördüncü sınıfların alt ve üst grupların CDC, RDC ve SNC testlerini yanıtlama sürelerine ait IES puanları

Şekil 1, 2, 3 ve 4' te görüldüğü gibi tüm sınıf düzeylerinde, matematik testinden alınan puanlara göre belirlenen alt ve üst grupların her üç test puanları arasında istikrarlı farklar vardır. Tüm sınıf düzeylerinde, iki grup arasındaki en büyük fark CDC testinde oluşmuştur. Bunun nedeni, normal başarı düzeyindeki öğrencilerin, domino dizili noktaları sayarken aritmetik stratejiler kullanırken öğrenme güçlüğü olan öğrencilerin noktaları birer birer saymaları ve böylece fazla zaman harcamaları olabilir. Gruplar arasındaki en küçük fark ise SNC testinde oluşmuştur.

Her bir sınıf düzeyinde, testlerin IES değerlerinin alt ve üst gruplara göre değişimine Mann Whitney U testi ile bakıldığında; 1 sınıf düzeyinde; CDC($U=589$, $p<0,05$), RDC ($U=690,5$, $p<0,05$), SNC ($U=445$, $p<0,05$) testlerinin yanıtlanma süreleri arasındaki alt grup lehine anlamlı farkların olduğu bulunmuştur. 2. sınıf düzeyinde de CDC($U=69$, $p<0,05$), RDC ($U=142$, $p<0,05$), SNC ($U=141$, $p<0,05$) testlerinin yanıtlanma süreleri arasındaki alt grup lehine anlamlı farklar vardır. 3. sınıf düzeyinde; CDC($U=85$, $p<0,05$) ve RDC ($U=115$, $p<0,05$) testlerinin yanıtlanma süreleri arasındaki alt grup lehine anlamlı farkların olduğu; ancak SNC ($U=195$, $p>0,05$) testi için anlamlı farkın olmadığı görülmüştür. 4. sınıf düzeyinde yine CDC($U=115$, $p<0,05$), RDC ($U=100$, $p<0,05$) ve SNC ($U=42$, $p<0,05$) testlerinin yanıtlanma süreleri arasındaki alt grup lehine anlamlı farkların olduğu bulunmuştur. Analiz sonuçları, RDC ve CDC testlerinin tüm sınıf düzeylerinde, üst gruplar tarafından anlamlı bir şekilde daha kısa sürede yanıtlandığını, SNC testinin ise 1, 2 ve 4. sınıf düzeylerinde üst gruplar tarafından anlamlı bir şekilde daha kısa sürede yanıtlandığını göstermektedir.

1. sınıf düzeyinde, SNC testinin tüm soru tiplerini, üst grup anlamlı bir şekilde daha kısa sürede yanıtlamıştır (zıt soru tipi için $U=1140,5$, $p<0,05$; uyumlu soru tipi için $U=1240,5$, $p<0,05$; nötr soru tipi için $U=1467,5$ $p<0,05$). 2. sınıf düzeyinde, zıt soruları, üst grup anlamlı bir şekilde daha kısa sürede yanıtlarken ($U=474,5$, $p<0,05$) diğer soru tipleri için anlamlı farklar bulunmamıştır. 3. sınıf düzeyinde, sadece nötr soruları üst grup anlamlı bir şekilde daha kısa sürede yanıtlarken ($U=422,5$ $p<0,05$) 4. sınıfta düzeyinde bu soru tiplerini yanıtlama süreleri bakımından gruplar arasında anlamlı farklar yoktur.

Elde edilen bulgularda; başarı testi ile belirlenen alt ve üst gruptaki öğrencilerin, IES değerlerinde farklılıkların olması ve sınıf düzeyi arttıkça bu farkların genellikle istikrarlı bir şekilde devam etmesi, araştırma açısından oldukça önemli bulunmuştur. Bu bulgular, öğrencilerin "nokta sayılama" ve "sayısal karşılaştırma" becerilerini ölçmek amacıyla hazırlanan CDC, RDC ve SNC testlerinin, matematik öğrenme güçlüğü çeken öğrencileri ayırma potansiyelinin olduğunu göstermektedir.

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Tartışma, Sonuç ve Öneriler

Çekirdek yetersizlik ve sembole erişim yetersizliği hipotezlerinin test edilmesini amaçlayan bu çalışmada, ilkokul 1-4. sınıf öğrencileri düşük ve normal başarı düzeylerine göre ayrılmış ve verilen sayısal görevlerle, farklı başarı düzeylerindeki öğrenciler karşılaştırılmıştır. Çalışmada, üst gruptaki öğrencilerin sayısal görevleri genellikle anlamlı bir şekilde daha kısa sürede yerine getirdikleri gözlenmiştir. Bulguların, daha çok çekirdek hipotezini desteklediği düşünülmektedir.

Çalışmada, öğrencileri alt ve üst grup olarak ayırmada kullanılan başarı testinin genel olarak kullanışlı olduğu söylenebilir; ancak testin, 1. sınıf düzeyindeki öğrencilerin okuma yazmayı yeni öğrendikleri bir dönemde uygulanmış olması, bazı güçlüklere neden olduğundan, bundan sonraki çalışmalarda bu sınıf düzeyi için bire bir uygulanmasının daha uygun olacağı düşünülmektedir.

Nokta sayılama görevlerinin yer aldığı CDC ve RDC testleri karşılaştırıldığında, alt ve üst gruplar arasındaki IES farkının CDC testinde daha fazla olması, üst gruptaki öğrencilerin domino dizilmiş noktaları aritmetik stratejiler kullanarak saydıklarını ve buna bağlı olarak daha hızlı oldukları ihtimalini düşündürmektedir. Bu sonuç, öğrenme güçlüğü yaşayan öğrencilerin aritmetik işlemlerde zorlandıkları düşüncesini desteklerken (Geary, 2011, Landerl, 2013) bu durumun, şipşak sayılama mekanizmasındaki bozukluktan kaynaklanması da olasıdır (Landerl, Bevan ve Butterworth, 2004). Araştırmada elde edilen bu sonucun, çekirdek hipotezini desteklediği söylenebilir.

SNC testinin IES değerleri incelendiğinde, alt grupların üst gruplara göre bu testi daha uzun sürede yanıtlamaları, sayısal büyüklük - sembol bağlantısının kurulamaması sonucunda diskalkulinin ortaya çıktığını savunan erişim bozukluğu hipotezi ile açıklanabilir. Rakamla yazılmış iki sayının karşılaştırılması görevi, aritmetik öğrenme güçlüklerini belirlemede önemli bir ölçüt olarak kullanılmaktadır (Butterworth, 2003); ancak bu araştırmada alt ve üst gruplar arasındaki IES farkının en küçük olduğu testin, SNC olması düşündürücüdür. SNC testi, 3. sınıf düzeyinde alt ve üst grupları ayırmada etkili olmamıştır. Ayrıca sınıf düzeyi arttıkça testte yer alan zıt, uyumlu, nötr soru tiplerinin etkilerinde değişiklikler olmuştur. 1. sınıf düzeyinde her üç soru tipi için alt-üst grupların yanıtlama süreleri arasında anlamlı farklar varken 2. sınıfta yalnızca zıt ve 3. sınıfta yalnızca nötr soru tipinin yanıtlanma süreleri arasında anlamlı farklar bulunmuştur. 4. sınıf düzeyinde ise bu soru tiplerinin yanıtlanma süreleri arasında anlamlı farklar bulunmamıştır. SNC testi ile ilgili sonuçlar, onun alt ve üst gruptaki öğrencileri ayırmada sınırlı etkisinin olduğunu göstermektedir. Bu sonuçlar, sayılarla ilgili sembolik sayı karşılaştırma gibi otomatik diyebileceğimiz işlemlerin, matematiksel yeterlilikle daha az ilişkili olabileceğini de düşündürmektedir. (Bugden ve Ansari, 2011).

Araştırmada, diskalkuliye yatkınlığı olan öğrencileri belirlemek amacıyla hazırlanan testlerin öğrenme güçlüğü olan ve olmayan öğrencileri ayırt etme potansiyellerine sahip oldukları sonucuna varılmıştır. Diskalkulinin neden kaynaklandığının henüz tam olarak netleşmediği bu dönemde, geliştirilen testlerin, yapılacak araştırmalar için yararlı olacağı düşünülmektedir. Bu araştırma ile sayısal işlemlerin, diskalkulinin belirlenmesindeki önemi bir kez daha ortaya konmuştur. Diskalkulinin, daha çok hangi sayısal becerilerle ilişkili olduğunun araştırılması ve diskalkuli olan öğrencilere bu yönde bilinçli müdahalelerde bulunulmasının, onların matematik öğrenmelerini sağlamak açısından gerekli olduğu düşünülmektedir. Ayrıca ileriki araştırmalarda deneysel desenlerle temel sayısal becerilere yönelik bir eğitimin, aritmetik becerileri geliştirip geliştirmediğine bakılabilir.

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Extended Abstract

Dyscalculia, which stands for "mathematics learning disability", "arithmetic learning disability", "developmental dyscalculia", etc., gives rise to falling behind their peers by having trouble for arithmetic operations and remembering them (Geary and Hoard, 2005) in parallel with students' having difficulty in gaining especially enumaration and calculation skills (Murphy, Mazzocco, Hainch ve Early, 2007). When the surveys are examined, hypotheses related to the reasons for dyscalculia affecting 3 to 6% of the population (Barbaresi, Katusic, Colligan, Weaver ve Jacobsen, 2005) have come to light. Among them, according to the core deficit hypothesis, individuals' disabilities in mechanisms of perceiving small quantities exactly or roughly bring about mathematics learning difficulty. On the other hand, access deficit hypothesis puts forward that individuals' mechanisms of transforming numbers into symbols or perceiving numbers from symbols might have impairment. As a result of studies conducted, while the problems faced during enumeration and number comparison among students are supported rather by the core deficit hypothesis (Landerl, Bevan ve Butterworth, 2004; Mussolin, Mejias ve Noël, 2010), the cause of dyscalculia in some studies symbolic mathematics used in it was explained by access deficit hypothesis (Attridge, Gilmore ve Inglis, 2009).
In this study that aims the core and access deficit hypotheses to be tested, primary school students from 1^{th} to 4^{th} grade were seperated in terms of their low and normal achievement levels, and enumeration of small quantities and symbolic number comparison tasks along with students at different success levels were compared. Therefore, it was aimed to determine the students with dyscalculia tendencies via tests developed. The participants were 487 students in total from 12 state schools in Ankara. From 1^{th} to 4^{th} grade, 125, 126, 124 and 112 students took part in the survey, respectively. Four tests were applied to the students in this research. First of them is the mathematics achievement tests that were developed by Fidan (2003) and administered to the students in one course

hour. Achievement tests were built at each level seperately by taking into consideration the outcomes of sub-learning number domains in the curriculum. As for three remaining test, they were the ones as Domino Dot Enumeration (DDE), Random Dot Enumeration (RDE) and Numerical Stroop Tests (NST) administered to students one-to-one and tested whether they measured the basic numerical skills. These tests prepared on tablets were designed such a form that students' answers and their response time would be recorded. For dot enumeration task, the reason for using two separate tests is to be considered that students' enumeration time of randomly-ordered dots and the ones lined up in the form of dominoes will be different due to students' use of strategies who have no learning difficultities. When it comes to NST, it was targeted to observe whether or not this test's response time would change regarding students at different achievement levels thanks to the comparison of numbers at different physical magnitudes. In the test questions, numbers dealt with were prepared in terms of their physcial magnitudes in the forms of congruent (5-7), neutral (5-7) and incongruent (5-7) ones. In analyses, Inverse Efficiency Score - IES(Bruyer ve Brysbaert, 2011) suggested when the high correlation between response time together with the percentage of incorrects occurred and the percentage of corrects was high, was put to use. IES is calculated through dividing total time individuals spend responsing the test items into the percentage of corrects. Lower and upper groups were arranged for every grade based on students' mathematics test scores while analyzing. The relationship beween IES values of these groups in DDE, RDE, NST tests and math achievement was examined with correlation analyses. Negative-directed, moderate level and meaningful relationships between the mathematics acheivement test scores of all students from all levels and values of IES in the tests were found. These findings are considered as a evidence for the validity of DDE, RDE and NST that were developed in this survey. When the values of DDE, RDE and NTS tests are compared, NTS test was responded at the shorthest time while RDE was the test answered at the longest time. It might be said that students of upper groups at all levels responded the tests in much shorter time in contrast to lower groups' students. It is inferred from the study that averages of IES decrease in upper groups while grade levels increase; that is to say, tests were answered in a shorter time, but this situation was not valid for lower groups. At all levels, the most considerable difference between two groups existed in DDE test. The smallest difference among groups was seen in NST test. When the variance of IES values of the tests according to lower and upper groups at each grade level was analysed with Mann Whitney U test, it was found that RDE and DDE tests were responded in a shorter time significantly by upper groups at all levels while NST test was done significantly in a shorter time by upper groups from 1^{st} – 2^{nd} – 4^{th} grades. Likewise, there occurred changes in the effects of congruent, incongruent and neutral item types in NST test when the grade level increases more and more. There were significent differences between lower-upper groups' response time for every three item types at the 1^{st} level while significent differences between the congruent ones at the 2^{nd} level and only neutral question types at the 3^{rd} level were encountered. On the other hand, significent differences were not found between response time of these question types at the 4^{th} level. According to the findings, it is of great importance that there were differences between lower and upper groups', who were determined by the achievement test, IES values while grade level increased more and more and these differences generally continued in a stable manner. These findings show that DDE, RDE and NST tests prepared to measure students' dot enumeration and number comparison skills had a capacity to separate students having mathematics learning difficulties. When DDE and RDE tests which have dot enumeration tasks are contrasted, the fact that IES difference between lower and upper groups is more at DDE test supports the idea that students having learning difficulties are trouble in arithmetic operations (Geary, 2011, Landerl, 2013). It is also possible for this case to stem from impairment of rapid enumeration mechanism (Landerl, Bevan ve Butterworth, 2004). It can be said that this result supports the core deficit hypothesis. As for IES values of NST test, the fact that lower groups rather than upper ones responded this test in a longer time could be explained by access deficit hypothesis which supports that dyscalculia comes up as a result of not linking up symbolic numerical magnitude. The task of comparison of two number writtten in figures is used as a significant criterion in specifying arithmetic learning difficulties (Butterworth, 2003); however, it is thought-provoking that

the test in which smallest IES difference occurred between lower and upper groups was NST. It was not influential to separate lower and upper groups at 3rd grade level. Results related to NST test show that it has a limited effect to separate lower and upper groups' students. These results give rise to thought that processings such as symbolic number comparison which could be said automatic will be less connected with mathematical competence (Bugden ve Ansari, 2011). In this study aiming the core and access deficit hypotheses to be tested, it is considered that findings support the core deficit hypothesis more. In this period why dyscalculia stems from has not become clear yet,the tests built will be useful for the subsequent studies. Thanks to this research, the importance of numerical processings in identifying dyscalculia one more time. It is agreed that searching which numerical skills are closely related to dyscalculia and giving students with dyscalculia appropriate intervention in this respect are necessary to provide them with learning mathematics. Furthermore, it can be looked through in the next studies whether a training as regards basic numerical abilities with experimental designs will develop arithmetic abilities or not.

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PARALLEL PATHS: INCLUSIVE SPECIAL EDUCATION AND RACIAL DESEGREGATION

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ABSTRACT
The purpose of this study is to research the evolution of policy of integrating children with disabilities into the general education settings in the U.S., keystone events that shaped the fates of disabled children and outcomes of policy decisions.According to the direction that these purposes provide, this paper tries to answer these questions: (1) Is integration process of children with disabilities parallel to the racial integration? (2) Is the process perceived as separate from or similar to the racial desegregation by public and legislation? I first discuss vital policy decisions and court actions that pave the way for inclusive special education and racial desegregation. I then draw inferences from them to claim that the two paths, inclusive education and racial desegregation, have actually been parallel.
Keywords: Inclusive special education, special education, racial desegregation, racial integration

Introduction

Special education is a relatively new field, forits history goes back to a little more than 40 years. Much has changed during this time period. For example, we no longer separate *mentally retarded* children and call them as "severely brain damaged vegetables" (Hehir, 2005, p. 1). Inclusion of disabled children has always been mandated by several laws. Some court decisions provided foresight to integrate children with disabilities into general education settings (Ramanathan, 2008).Those decisions paved the way for several legislative acts like the Education for All Handicapped Children Act (EAHCA), the Individuals with Disabilities Education Act (IDEA), and the No Child Left Behind Act (NCLB). Although, the courts may have referred to a civil rights perspective, it is unfortunate that we need laws to provide every child with a basic need: education.

Before the existence of these acts, principals did not have to provide disabled students with access to education. This caused these kids to be separated from their non-disabled peers. They had to be served in special facilities because they were perceived as uneducable. In those facilities, they learnt nothing useful for their lives after leaving there. On top of it, they received a humiliating treatment from their so-called instructors who were supposed to prepare them for life (Hehir, 2005).

All this was because they were different than other children. From this point of view, there is a similarity between the separation of disabled children and the segregation of African American children. Although African American students received a more meaningful education compared to those of disabled students at that time, they were still separated from their peers whose skin color is different. Similarly, desegregation too was triggered first by court decisions.

However, these resemblances are not enough to make these two processes being perceived as parallel by public and legislation. Both have appeared at the same time period, have an aggrieved side that affected negatively, are results of differences, have been relieved gradually by court actions and laws, prevented other side from being more tolerant and open to individual differences, and have made a big progress towards success.

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Review of the Paths

Students with disabilities constitute a significant portion in public education. According to ideadata.org, nearly 9% of all school-aged children have at least one kind of disabilities. The disabilities cannot be excuses to restrict the inclusion of those children. The Civil Rights movement has been the basic defender of this claim.

Before the Civil Rights Movement, exclusion of disabled students was legal. For instance the *Beattie v. Board of Education* case of 1919 allowed public schools in Wisconsin to deny students with disabilities. The court concluded that including disabled students would be detrimental to other children's learning. LaNear and Frattura (2007) harshly criticize the decision:

> "In some perverted notion of fairness to thenormative group (i.e. the general education students), the basic sensibilities ofthe majority were favored over the educational opportunity of one child. Thus, theconstitutional guarantees-the fundamental rights and liberties-of one childwere subjugated to a 'depressing and nauseating effect' on the general sensibilitiesof the dominant class. Granted, this case occurred in 1919, yet this type of injustice isstill pervasive in American public schools today" (p. 92).

The *Brown v. Board of Education of Topeka* (1954) is considered as a victory by special educators despite its distinct subject of racial segregation because its emphasis on *equality*constitutes a model for all children (LaNear & Frattura, 2007). LaNear and Frattura (2007) argue that decisions that have conventional viewpoints accidentally allow discrimination of disabled children. According to them, despite the Brown's commitments, "dual systems of education" have survived evolving into "non-racial categories: general and special education" (p. 93).

Support comes from Skiba et al. (2008) who imply that racial inequalities continued through over identification of minority children in special education. They state that due to historically racial mistreatment to African Americans, racial disproportionalities became a standard in special education settings during the 1960s and 70s. Affected from the discrimination of minorities, special education of those years was mostly segregated and inappropriate to development of the disabled children. Dunn (1968) criticizes this situation by stating that "much of our past and present practices are morally and educationally wrong" (p. 5, as cited by Kavale, 2002). Research suggests that even today many educators have biases against minority and special education students (Murtadha-Watts & Stoughton, 2004).

The adventure of integrating disabled children into general education started with modifications to existing laws such as the Elementary and Secondary Education Act of 1965 (ESEA). Also, courts made decisions that were deeply rooted in the Civil Rights movement to emphasize the right of education for all children regardless of their handicaps. An important federal law that plays a major role in the lives of disabled children and their families was enacted in 1975. It was the Education for All Handicapped Children Act (EAHCA). It was a result of the ESEA and Civil Rights movement (Ramanathan, 2008). It evolved to let more opportunities to handicapped children. After several modifications, in 1990, it experienced a big amendment, and its name was changed to the Individuals with Disabilities Education Act (IDEA). It received modifications too. In the years 1997 and 2004, it was reauthorized to demand more accountability at the state and local levels. Also, the No Child Left Behind (NCLB) Act of 2001 renders all students including disabled ones accountable for achieving high standards.

According to McLaughlin (2009), IDEA is the main law which directs special education. She lists the basic features of this law; it guarantees "a free, appropriate public education" (FAPE) to students with disabilities (p. 5), and it secures the rights of disabled students and their families "through procedural safeguards" (p. 6). She interprets FAPE as "specially designed instruction and related services that

meet the unique needs of an individual student and which should be provided in the *least restrictive* environment possible" (p. 5).She indicates that the term "appropriate" was first defined by the U.S. Supreme Court during the case of *Board of Education of the Hendrick Hudson School District v. Rowley* in 1982. She states that related services are defined in the IDEAas "transportation, speech and language services, physical therapy, occupational therapy, technology, and recreation" (p. 6).

The IDEA defines the least restrictive environment (LRE) as

> "to the maximum extent appropriate, children with disabilities, including children in public or private institutions or other care facilities, are educated with children who are not disabled, and special classes, separate schooling, or other removal of children with disabilities from the regular educational environment occurs only when the nature or severity of the disability of a child is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily."

The other important law governing the special education is the NCLB. It furthers the requirements of the IDEA by mandating schools and districts to achieve *Adequate Yearly Progress* (AYP) (McLaughlin, 2009). Both guarantees all students that they will receive a quality instruction that is standardized and accountable for local and state assessments. This also ensures that disabled children will be provided with all necessary support and resources and be included into general classrooms (McLaughlin, 2009).

However, LaNear and Frattura (2007) criticize the inclusion of disabled students into assessments associating it with a "one-size-fits-all" approach, for it allows schools to "demonize" disabled students if schools fail to make AYP. They also criticize the existence of dual laws governing the same area. They indicate that both laws have different focuses: IEP and AYP, so this forces administrators to opt for one of them in favor of either general or special education students. This is another reason of their "dual systems of education" theory. They offer "a merger of federal laws" to end confusion and segregation (p. 104).

Inclusion of disabled students appeared in late 1980s. One reason of this was the segregation of African American children. Spadafore and Leonard (2011) implied that if those children were allowed into all public schools, disabled students could be included too. The *Debra P. v. Turlington* (1981) case was a landmark in Florida. African American students from racially segregated high schools could not pass a state-wide diploma exam. The decision mandated the state to allow equal educational opportunities to those students before granting a diploma.

Many court decisions played a role in shaping special education policy (See Colarusso and O'Rourke (2003) for a detailed list of other cases). The *Board of Education of the Hendrick Hudson School District v. Rowley* (1982) required districts to provide students with necessary support to overcome difficulties resulted from their disabilities, the *Brookhart v. Illinois State Board of Education*(1983) states that modifying or waiving a state-wide diploma exam cannot be considered as an accommodation for disabled students, the *Irving Independent School District v. Tatro* (1984) decided that schools must provide disabled students with supplementary aids and services, the *Smith v. Robinson* (1984) required schools to reimburse costs of necessary residential placements, the *Honig vs. Doe* (1988) bans expulsion of disabled students due to misbehavior, the *Board of Education in Sacramento, CA vs. Holland* (1994) necessitates LRE for FAPE, the *Rene v. Reed* (2001) objected Indiana's attempt to ban accommodations for a state-wide diploma exam, and the *Chapman et al. v. California Department of Education* (2002), similar to the others, ensured students with disabilities to receive accommodations they need when taking a diploma exam.

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In Pennsylvania, the most important class action about special education is the *Gaskin v. Pennsylvania Department of Education* (PDE) of 1994. PDE were reluctant to comply with the laws governing special education. Families affected from violations of the laws along with some organizations supporting special education won the action. "The lawsuit… alleges that students with disabilities have been denied their federal statutory right to a free appropriate public education in regular classrooms with necessary supplementary aids and services. In particular, the plaintiffs allege that PDE has systematically failed to provide technical assistance and training, and to enforce the provisions in federal law requiring local schools and school districts to offer a full continuum of support services allowing students with disabilities to be educated in regular classrooms" (Rhen, 2005, p. 12). It mandates schools provide children with disabilities with supplementary aids before placing them to a more restrictive environment. PDE agreed to make several changes to improve school districts' abilities for more appropriate special education services.

Other than the laws and court actions above, section 504 of the Rehabilitation Act and the Americans with Disabilities Act are the laws that are broader in terms of defending the rights of disabled children and adults in public education.

Conclusions

The policy of inclusive special education was dependent on racial integration at the beginning. Later, it has gained its independence and owned specific laws. Now the IDEA and the NCLB govern special education. One of the reasons that special education remained 'special' is that disability has been rarely perceived as diversity (Hehir, 2005). That might have caused special education to be in need of the Civil Rights Movement.

The existence of dual laws governing the same area has been criticized. In the future an integration of the laws would be an option for effective policies. Also, it is criticized that policies do not reflect data-driven research, and thepractice of laws is limited to complying with laws.

In terms of practice of the special education policy there are many issues. Research presents a huge gap between policy and its practice, an existence of the effects of outdated policies, and perception differences between practitioners. Duhaney (1999) made "a content analysis of state education agencies' policies on inclusion" in special education. The study revealed that only seventeen state education agencies have embraced policies on inclusive education. McCarthy, Wiener, and Soodak (2010) have found that prior policies on exclusion of disabled students and segregation still have effects on current school administrators' policy practices, and thus this undermines change. Crawford and Tindal (2006) have discovered a noticeable difference between teachers' and principals' perspectives on inclusive special education policy.

It is quite certain that the evolution of the inclusion of students with disabilities into regular education settings has been parallel to racial integration. Both took power from the Civil Rights Movement. Laws that were made to solve racial integration problems also helped special education to solve its biggest problem: inclusion of the disabled children. Special educators inferred that the laws targeting discrimination work also for their case where exclusion of students due to their disabilities was seen as discrimination as well. It was not unusual to notice that a court case that was referring to the Brown decision. However, the word "parallel" is not used to describe similarities of the two processes. It may due to the lack of research that investigates the two areas together. From this standpoint, it is hard to claim that the two processes were perceived as parallel.

Although, there is no study indicates that including students with disabilities affects students without disabilities negatively (McLaughlin, 2009), including disabled students in a regular classroom has been a difficult process. The lack of research that clarifies the outcomes of inclusion makes this process harder (Hochschild & Scovronick, 2003).

If we look at the outcomes of the policy, we may conclude that many problems still remain despite the policies targeting them. Minority disproportionality, over identification, lack of funds and staff, poor quality in leader preparation are just some of the problems. Skiba et al. (2008) report the history and current status of minority disproportionality, and they indicate that disproportionality has been a chronic problem despite the direct reference to it in the IDEA. Also, the definitions of disability types in the IDEA are superficial, and thus they make the practice very problematic. Ahearn (2003) criticizes the definition of specific learning disability in the IDEA saying that "…the IDEA regulations concerning identification of a child with SLD do not have any reference to psychological processes" (p. 2). Kauffman (2010) criticizes that reforms are often offered by non-special educators. This may be one of the reasons that outcomes of policies are not satisfying because they do not reflect the real needs of the special education.

Despite the remaining problems, special education has made a steady progress in the inclusion of students with disabilities into the general education settings. It owes a big debt to laws and court decisions. They have been successful because their focus was solely on the inclusion, and the inclusion is just the first step. Now, it is time to make policies to eliminate the remaining problems.

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INFANTILE AUTISM

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ABSTRACT
Infantile autism phenomenon is like an abyss in literature. It was very confusing what to add and what to eliminate in trying to explain autism. This paper aims to explain infantile autism in psychoanalytic fashion. In this paper infantile autism explanations will be limited to the history of autism and psychoanalytic counterparts of the infantile autism and Houzel's two articles called 'The Nest Of Babies' and 'The Psychoanalysis of Infantile Autism'. This paper can be divided into 4 major parts: Autism before Leo Kanner, Leo Kanner and Infantile Autism, Psychoanalytic Theory of Infantile Autism including Melanie Klein, Frances Tustin, Donald Meltzer, Didier Houzel.
Key words: infantile autism, Kanner, Houzel, Klein, psychoanalysis

INTRODUCTION

i- Autism Before Kanner

Hugh Blair was the first case who was a son of Scottish landowner, appeared in court in 1747 for a decision on his mental capacity to contract a marriage at the age of 39. According to Uta Frith's analysis of the case Hugh Blair has severe retardation and abnormality of language including echolalia, at school he replies with both question and answer. He has obsessive and repetitive behavior included odd motor mannerisms, always sitting on the same seat in church and insisting that domestic objects retained their same places.

John Haslam in his book named 'Observations on Madness and Melancholy' wrote a chapter called 'Cases of Insane Children' in 1809. He described 7 years of boy who had had infantile convulsions, slow to walk and very late to talk. In hospital he was inattentive and restless. He had a poor grasp of distance, attempting to reach the ceiling. He seen again at the age of 13, his language ability had progressed but he spoke of himself in the third person. He was solitary, and had a number of obsessive preoccupations (10, 16, 17).

'The wild boy of Aveyron' Victor's fame was rests upon Jean Itard's dedicated attempts to educate him. Victor was found in the woods at the age of 11-12 in 1789. When he was found Victor's gaze was shifting and expressionless, he was insensitive to loud or pleasing noise, he only made guttural sounds, he rocked to and front. Victor had a good memory and a great sense of order. Within 9 months he learned to match letters of the alphabet. Itard was worked with him for 5 years and at the end of this work he had learned to distinguish emotions expressed by different tones of voice, used objects imaginatively but his spoken language never progressed beyond meaningless monosyllables. Itard devoted his life to work with mute children and his teaching methods are still relevant today in the education of children with autism, language and intellectual disabilities (6, 7).

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Heller's 'Dementia Infantilis' a condition now recognized as disintegrative disorder. In Heller's work he reported children who was normally developed normally until their age of 3rd or 4th year when a regression occurred affecting first mood with irritability, anxiety, negativity and temper outburst, within a few months all language and self care skills were lost while motor functions were preserved, the children had tic-like movements. He also like Itard does not describe early infantile autism (10, 16).

De Sanctis' described 3 children with ages 6, 7 and 10 whom one seems to have had mental retardation with autistic features and two had been traumatized and deprived with the name of Dementia Praecocissima (10, 16).

ii-Leo Kanner And Infantile Autism

In 1943 Leo Kanner was the first researcher who describes autism in his paper named 'Autistic Disturbances of Affective Contact' and he suggests the term 'early infantile autism' for terminological identification of the condition. Early infantile autism in this paper described as ' the characteristic features consist of profound withdrawal from contact with people, an obsessive desire for the preservation of sameness, a skillful relation to objects, the retention of an intelligent and pensive physiognomy, and either mutism or the kind of language that does not seem intended to serve the purpose of interpersonal communication (10, 13, 20).

We can divide his work into 3 major parts. Papers between 1943-1954, 1955-56 and 1958-73. At the beginning of his work he considered psychopathology mostly but he changed his point of view to neurological reasons in following years. In his researches he used psychometric tools not projective techniques. During his researches he found the autistic children pay attention the geometrical figures and he started to search intensely with this issue. Again during in his work he always worked with parents of autistic children too (12, 21).

In his article 'The conception of wholes and parts in early infantile autism', he said that autistic children show a peculiar type of obsessiveness that forces them to postulate imperiously a static, unchanged environment. Any modification meets with perplexity and major discomfort. The patients find security in sameness; a security that very tenuous because changes do occur constantly and the children are therefore threatened perpetually and try tensely to ward off this threat to their security (15).

In 1971 he wrote an article 'Follow-up Study of eleven autistic children originally reported in 1943' and he mentioned an increasing tendency to tackle the whole problem through a multidisciplinary collaboration. He also states genetic investigations are begun to conduct and he suggests new insights can be gained with ethological experiences (12).

iii- Autism In Psychoanalysis

In psychoanalysis the word autism has two meanings. The first meaning refers to the investment of a person's psychic energy in his/ her own delusions, which prevents the person from investing in the outside world. The second -which I am going to try to explain in this paper- refers to an absence of development of communication with others beginning in the earliest infancy (8).

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In fact the word autism first enters the psychiatric vocabulary by Eugen Bleuler in 1911 in his description of schizophrenia. For Bleuler the autism of schizophrenia is a shutting-in of the subject in an impenetrable, incommunicable world, closed in on itself, made up of unorganized delusional elements to which all the subject's disposable mental energy is attached (8).

From the developmental psychopathology viewpoint, the story of the development of self-other relations begins in the earliest months of life, when infants apprehend and copy certain of the facial and manual actions of other people and adjust to the interactive style of their caregiver. Then towards the end of the first year, infants relate to others' actions and attitudes with reference to a shared world, for example by showing things to others and making requests, imitating others' actions on objects and engaging in social referencing. Then between the middle and the end of the second year children show conceptual understanding of self and other, like adjusting their actions to the needs and feelings of others, referring to themselves as 'I' and addressing others as 'you' and talking about their own and others' mental states. This reflects child's growing theory of mind (6).

But I have to mention that from the psychoanalytic view point the formation of self and other starts from *in utero*. (8) Many clinicians have noted the importance of traumatic events in the case histories of children with autism, whether these occur in utero or in the child's early life or whether they exert their influence through trans-generational transmission (15). Suzanne Maiello in her paper 'The sound object' suggests that the sound of the mother's voice alternating with silence gives the child a proto-experience in utero of both presence and absence. Mother's voice is recognized, proffered and distinguished from other voices after birth. Maiello hypothesizes that the fetus is exposed to both sonic continuity and discontinuity, because the bodily noises are continuous but the mother's voice is intermittent. She focuses on the sense of absence created by the silence of the mother's voice rather than the presence produced by the sound of her voice because she is trying to elucidate how the preconception of an object is formed. There the Bion's theory of thinking helped her to conceptualize her theory. It is the disappearance that makes possible a proto-experience of absence. The silence releases the fetus' listening ear from its primary sonic oneness and stimulates the creation of a thought to bridge the gap. This intra-uterine thought becomes the sound-object (preconception) that prepares the fetus to know its mother/breast after birth (19). The Cyril case of Houzel showed us the mother's mental states are important in prenatal stage. Cyril's mother found it difficult to experience herself as a good container for her baby (7, 8).

Melanie Klein's 'The importance of symbol formation in the development of ego' article written in 1930 she described a case which she called him Dick, was a typical case of infantile autism. Dick described by Klein as 'he had let his nurse go without manifesting any emotions, follow Klein with a complete indifference, he run in the therapy room to and fro without any aim or purpose. She states that sometimes Dick run around her acting as if she was a piece of furniture herself. Dick's expression of his eyes and face were fixated and lacking in interest'. (8) Melanie Klein put the oedipal conflict earlier onset than Freud with starting in the second half of the first year of infant's life. The psychopathological evidences of the treatment of autistic child go more primitive levels that Freud and Klein had described (5, 8).

Donald Meltzer's contributions to infantile autism are as follows:

i- Explorations in Autism (1975): Based on a longitudinal study of several autistic children who had been treated during some 10 years by a close-knit group of therapists all trained in the psychoanalytic method of work with children as developed by Klein. In this book he describes the psychology of autistic states especially in terms dimensionality. According to Meltzer

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description the autistic child when confronted with intense and forceful emotions, as being drawn to letting his mental organization passively fall to pieces.

ii- The Apprehension of Beauty (1988): In this work Meltzer introduces the idea of the aesthetic conflict one which vividly describes the impact on the baby of experiencing the most beautiful thing in the world – the mother and the breast- and the frustration and humiliation of not being able to possess either. (3)

Meltzer describes as for him the "dismantling" psychic as the shape of refuge in one passive split of the sketch of the self according to the sensory axes. The consequences are dramatic there because for him, "the past in the autism is lost for the maturation " (16).

Frances Tustin is another important clinician and theorist in the infantile autism. Tustin has described autistic objects in her earliest work on childhood psychosis in her later writings she became increasingly interested in developing and exploring the related concept of autistic shapes (2).
Tustin's early autistic objects formulation (1972) is as follows:

a- parts of the child's own body
b- parts of the outside world experienced by the child as if they were his body

The autistic objects are to avoid awareness of psychological catastrophe. The autistic object is an object which is experienced as being totally 'me'. The function of the autistic object is to obviate completely any awareness of the 'not me' because it is felt to be unbearably threatening.

In later of her writing (1990) the evaluation of the autistic objects continues and she stresses autistic objects hard, physical nature and particularly those they are sensation dominated objects which she later re-named the term as autistic sensation objects. She comments on the functions of autistic objects as 'an outstanding characteristic of autistic object is that they are not used in terms of the function for which they were intended. From the realistic point of view they were used in a way which was useless and meaningless: from the child's point of view it became obvious that they were absolutely essential.'

Later she states that with the contribution of Anne Alvarez Tustin enlarge the concept of autistic objects as sometimes language can be an autistic object which blocks the communication instead of facilitating it (2). Tustin considered autism as a reaction that is specific to trauma. Maiello also has some adding to Tustin's description like 'Trauma can have both external and internal origins but in both cases it leads to what she described traumatic awareness of bodily separateness from the mother before their psychic apparatus was ready to take the strain'.

Also Tustin in 1994 added a new vocabulary in her writings; illusionary trauma. She observed illusory trauma in autistic children who seemed to experience the loss of the feeding mother as though, the entailed the loss of part of their own mouth (1).

One of the major contributions of Frances Tustin description of the failure of the containing function in autistic children due to a splitting between the masculine and feminine aspects of the containing object. The 'nest of babies' fantasy, highlighted the importance of imaginary brothers and sisters for autistic children by Frances Tustin. She described the two main stages in the treatment of autistic children (7).

i- The child has no sense of having an internal psychic life and it is the analyst's task to revive this
ii- They become aware of the fact that they do have a mind of their own, a mind that is quite distinct from any other person's.

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What is the 'nest of Babies' fantasy according to Tustin?

The 'nest of babies' begin to appear at the start of this stage with the fantasies of rivalry. The 'nest of babies' fantasy is associated with the notion that there are special babies who are given special food. There is a fantasy that he is in competition with predatory rivals on the other side of the breast who wants to snatch the nipple away from him to take away his chance of life and sustenance. The 'nest of babies' fantasy develops when the child experiences rivalry too early in life. The autistic child has the premature awareness of bodily separateness from the instinctual gratification. The child is faced with a vast number of greedy, threatening mouths, the principal of paranoid anxiety. This anxiety lurks somewhere in the autistic black hole (7, 8).

The bisexuality of the psychic envelope is another term described by Tustin. The psychic envelope has the care-giving aspect of the mother as its principal foundation. The relationship between mother and the infant depends on the quality of her bisexual identifications. In order to function adequately the maternal elements have to be reinforced by paternal aspects if the psychic envelope is to have the necessary qualities. If this criterion satisfies the psychic envelope will have resilience and elasticity. On the other hand the psychic envelope must be solid and resistant. Masculine elements are penetrating and feminine elements are receptive (8).

iv- Didier Houzel

Before start the Houzel's contributions to psychoanalysis of infantile autism I prefer to start with 'Who is Didier Houzel?'

Didier Houzel is a psychoanalyst, an honorary member of the French Psychoanalytic Association, and a child and an adolescent psychiatry professor at the Caen University (France). He is particularly interested in the psychiatry of very small infants and especially the ones with serious personality disorders (autism and childhood psychosis). In this area, he has developed treatment methods based on psychoanalysis, individual psychoanalytic treatment and psychoanalytic home observation (Esther Bick method). In 1980s he has received supervision from Donald Meltzer and Francis Tustin in London. In psychoanalysis, he has been mostly influenced by the post-Kleinian movement.

Didier Houzel is the author of many books and articles some of which are: *Dictionnaire de Psychopathologie de l'Enfant et de l'Adolescent* (directed by and in collobration with F. Moggio et M. Emmanuelli, Paris, PUF, 2000), *L'aube de la vie psychique* (Etudes psychanalytiques, Issy Les Moulineaux, 2002), *L'enfant, ses parents et le psychanalyste* (directed by and in collobration with C. Geissmann, Paris, Bayard, 2003), *Psychothérapies de l'enfant et de l'adolescent* (directed by and in collobration with C. Geissmann, Paris, Bayard, 2003), and *Le concept d'enveloppe psychique* (In Press, Paris, 2005) (4).

The rest of the paper is based on these two articles, 'The 'Nest of Babies' Fantasy' was published in the Journal of Child Psychotherapy in 2001 and 'The Psychoanalysis of Infantile Autism' was published in the same journal in 2004 (7, 8).

In his paper 'The 'nest of babies' fantasy' he presented a clinical illustration of a case Cyril according to the 'nest of babies' fantasy. And also he mentioned the same case. Cyril diagnosed as autistic spectrum

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disorder. Cyril psychoanalytic treatment started when he was at the age of 3, his sessions schedule three sessions per week. His father holds an academic post, his mother also graduated from university. Cyril was the elder of two children; he has two years younger brother. Cyril was the first child of the family but his mother has 3 miscarriages before Cyril because of the uterine malformation. Cyril's mother have to lay down for the whole pregnancy, and she found it difficult to experience herself as a good container for her baby, she felt she posed such a threat to him that he had to protect himself against her. Cyril was a quite baby; he was breast-fed for 6 weeks. Cyril's motor development was slow he start to sit unaided about one year old and began walking when he was 22 months old. Cyril's mother became pregnant when he was 15 months of age, again she had some complications and had to hospitalize for the last month of pregnancy. She had depression after giving birth.

Symptoms of Cyril:

- his psycho-motor development was slow
- he had no speech
- he would bang his head on the floor or on the wall
- rock his body back and forth
- about 20 months of age his parents recognize he withdrawn himself from social contacts and closed himself on him
- he had stereotyped behavior like opening and closing doors
- he had no symbolic play
- He did not point things that he wants he use an adult hand to obtain it.

Cyril's Sessions:

Initial sessions:

- Scatter everything he could find in the therapy room. Then he wanted to bring things together and control the containers. He was interested in modeling-clay boxes and lids that covered these boxes. And the word 'lid' is the first word in the therapy room.

2 months later:

- He started interested in water. He used to play with hot water saying first 'warm' then 'it's warm'.
- After starting to play with water, he put his head against Houzel's stomach, after the interpretation leaned backwards Houzel holds him, then he turned round and put his back firmly against Houzel's body. After this he emptied all of the modeling-clay boxes and he wanted to leave.

The interpretation made by Houzel in this part of the therapy is as follows:

i- Putting the head to stomach: ' A wish to get inside my stomach, like a baby in the mother's tummy'
ii- Leaned backwards and holding of Houzel from preventing him to fall brought a fantasy of birth.
iii- Putting his back against Houzel: Looking for support
iv- Empting of modeling-clay boxes and wanted to leave: he may have had emptying me of everything, and wanted to leave interpreted as he felt I could be dangerous.

In the 'nest of babies' fantasy paper he discussed a distinction between autistic reactions and the autistic state (structure). In autistic reactions as manifested at times of separation, emotional deprivation or in infantile depression, the child usually manages to use transitional objects as objects that can be used as a vehicle for his projections and on which he can base imaginary scenarios that help mind to tolerate frustration. In autistic state every object is experienced as a rival baby who has the right to have

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everything that the autistic child deprived. When the child acknowledges otherness and starts to become aware of his mental functioning, everything contained in the therapy room may be experienced as representing the rival babies that stay permanently inside the therapeutic setting.
After the first summer break: A new activity in the sessions:

- He emptied his box of toys, threw pens and pencils, climbs on to the table saying 'big, big, big' and in a subsequent session in the same scenario using the words of 'grown-up'.
- After this scenario he draw several long lines, saying they were 'little cats', then throw the sheet of paper on the floor.

The interpretation made by Houzel of this change in the sessions as
- Wish to grow in to a big boy
- Drawing support from Houzel
- Little cats are the rival babies who Cyril wanted to chase them.

The next repetitive scenario was he started to empty his box and fill with water, put some toys in it and manipulate them. He seemed to feel that they were less of a threat as they were then to a considerable extent impregnated with this maternal element.

After seeing Houzel with walking with a women psychologist he start to ask questions about this women and then saying Houzel that he can break his feet, knees, legs etc and then ask to count with him. Then he picks the pencils up, asked the Houzel to sharpen them one by one then scatter all over the therapy room but this was the first time he picks them up. Then he takes three pencil and start to do a new drawing. Interpretation made by the Houzel for this last part of the session extract was Cyril is beginning to explore the world of the primal scene and sexuality. Maybe he is looking for his own masculine way within the triangulated universe.

Houzel's psychoanalytic work with autistic children occur in several stages, each of which corresponds to a dominant transference modality. These four stages are:

1- Transference onto the container
2- Analysis of the infantile transference
3- The transference neurosis
4- The process that brings the analysis to a close

Now I am going to give some details about these stages.

1- Transference onto the container: Working through the transference onto the container leads to establishing stable frontiers for the self. It dominates the early stages of analysis. The child unloads his psychic states into the therapeutic situation in order to able to discover some way of integrating them, preserving them and being able to get in touch with them again. These are the containing function and the therapist put him/herself as a container by showing the child conveyed have been kept in mind and attempts are being made to bring them all together.
2- At the beginning of analysis the function of receptivity and integration is very important, the premature interpretations must be avoided to prevent the repetition premature psychic birth trauma in the analysis. In the bisexuality of the psychic envelope, the envelope must be the same containing object possesses feminine/maternal and masculine/paternal features in the correct proportions. In autistic syndrome the main problem is the pathology of otherness. To be able to differentiate oneself from other people, to establish a frontier between self and other implies in terms of distance, limits, differences and frustrations endowed with bisexual qualities combined in correct proportions.

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In the therapy of autistic children it is mainly working-through in the counter transference that the psychoanalyst can help the child reintegrate split-off parts of psychic bisexuality in the containing object.

3- Analysis of the infantile transference: Analysis of the infantile transference leads to the stabilization of the internal world. The infantile transference is a way of representing relationships with others characterized both by trust and rival. In this phase, fantasies are particularly violent and resemble those fairy stories and comic strips that children seem to be fond of and sometimes enact through their nightmares.
4- The transference neurosis: The transference of neurosis leads to stabilization of sexual identity corresponds to the oedipal period as described by Freud. During this period the child establishes his or her sexual identity and representations of the attributes and roles of each sex. When the autistic children reaches this developmental stage, integration as far as states of mind are concerned. The great majority of autistic children never get as far as this phase or in very fragile extent. Stability as a criterion combined with developmental progress and creativity.
5- The process that brings the analysis to a close : The closing of the psychoanalytic therapy with an autistic child is when recognition not only that the child is adapting to new environments but also that he goes on making significant progress between sessions; particularly during in summer breaks. Stability as a criterion combined with developmental progress and creativity as in the transference of neurosis.

CONCLUSION

I think the autistic children have a deep pain in their psychic apparatus and by closing all of the gates to the external and internal world of communication and social contacts the try to protect themselves for both the rival babies waiting in the nest and also for the real rivals in the outside.

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