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# Effect of Literacy in Kenyan Sign Language on Academic Performance of Pupils with Hearing Impairment in Primary Schools in Kenya

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***Abstract:***
*The purpose of this study was to establish the relationship between literacy in Kenyan Sign Language (KSL) and academic performance of pupils with hearing impairment (HI) in public primary schools in western Kenya. Study objective was to find out the effect of pupils' literacy in Kenya sign language on academic performance. The study employed a mixed research approach and a descriptive survey design to collect qualitative and quantitative data. Using purposive sampling technique, 12 head teachers, 93 teachers and 108 pupils with HI forming a sample size of 213 respondents. Research instruments used were a Likert scale questionnaire and interview schedule. Piloting of the questionnaire was done in a public special primary school for the pupils with HI in Birunda School for the Deaf Trans Nzoia. The collected data was analyzed using descriptive statistics of frequencies, percentages, means, standard deviation and Pearson correlation coefficient and inferential statistics of chi-square using the statistical package for social sciences [SPSS] program of version 23. Qualitative data was analyzed by describing the emerging themes in relation to the study objectives. The study established that there was significant relationship between pupils' interpretation of KSL, literacy in KSL and challenges in using KSL and academic performance, all at $p<0.05$. Therefore, the null hypothesis was rejected and concluded that literacy in KSL significantly influences academic performance. The results will help stakeholders in the education sector to establish how KSL is used in the teaching of pupils with HI in schools, hence providing valuable data on the current policy and practice in the field of education and training of teachers of the learners with HI. The following recommendations were made: pupils should be equipped with more literacy skills for the KSL and adequate resources and support services be given to the learners.*

***Keywords:*** *Pupils, literacy, KSL, academic performance*

## 1. Introduction

In Kenya, children with HI face challenges when they are in their schools. This is not just getting to class to be taught or carrying out their daily activities, but also the mode of instruction to be used affects them both at school and back home. Sign Language if not effectively taught at school, gives a burden to the children with HI to learn properly at school and alienates them from the rest of family members who have no knowledge of the sign language. In Western Kenya there are a few hearing-impaired learners who have been enrolled in different schools owing to different factors both at family and community level. This is despite the government's commitment to support the provision of equal access to education by all children (Ogada et al., 2012). The government's commitment to special needs education has been demonstrated through establishment of a special needs education section and the appointment of a Special Needs Education Inspector in 1975 and 1978 respectively at Ministry of Education (MOE) headquarters. Community perception of the hearing-impaired learners has largely contributed to low level of enrolment in learning institutions because they are considered to have unique needs. It has however been noted that learners with HI tend to perform poorly compared to the normal pupils, a fact which has been attributed to poor facilities, inadequate resources and low number of competent teachers of KSL to implement curriculum as shown in table 1 above (Adoyo, 2004). The issue of poor performance signifies a critical impediment to a country since education is a major contributor to economic development (Atkinson, 1987).
However, lack of qualified personnel has been largely blamed for this poor performance thereby posing a great concern on the extent to which teacher competency contribute to academic achievement (Chesire, 2018). Studies have however shown that academic achievement starts with effective communication, curriculum, learning and ability of the teacher to emotionally connect with the learners. Basic Education Act 2013 Part iv Section 45 part 2 (g) states that the cabinet secretary is responsible to establishment of mechanisms to ensure that every special needs school or education institution offering special needs education has appropriate personnel, infrastructure, learning materials and equipment and establish monitoring and evaluation to advice the government on the quality of infrastructure and learning facilities in regard to special needs education (Clark et al., 2016). It is against this background that the study seeks to determine the

relationship between mastery of the Kenya Sign Language (KSL) of teachers and pupils and academic performance of learners with HI in selected public primary schools in Western Kenya region.

Sign Language is a language used by deaf persons to communicate to each other and can be traced back to the Greek philosopher Socrates who lived in 469-359 B.C. who pondered how people could communicate if they were not having voice and tongue (Botswana Sign Language Resource Project, 2008). Sign Language is a language that dictionaries cannot be consulted when checking the definitions of signs, origin of sign, as one would use the English dictionaries instead. Sign Language dictionaries are guided on how to sign a word written in English (Uganda Sign Language Research Project, 2006) Sign Language is the use of symbols while communicating. For example, signs are used to show different movements directions like; contact point, single movement, double movement, slow movement, single circular movement, double circular movement, repeat to and from movement, vertical movement, horizontal movement., single up and down movement (Botswana Sign Language Resource Project, 2008).

The Amendment Act (2011) on Persons with Disabilities stipulates that Sign Language is an assistive device where the deaf person uses an interpreter in broadcast sense as a basis of all human communication (Ministry of Education (MOE) (2009). According to Kenya Society for deaf children (2006), Sign Language is a system of using manual-general signs as a medium of communication by the members of a given deaf community. Based on the linguistic research in the second half of the twentieth century Sign Language has been found to possess all the properties that distinguish human language from the other (non-linguistics) modes found in the animal kingdom (ref). Sign language is culture based by the deaf people and has not been colonized like the other languages. Sign Language is used naturally by deaf people in Kenya, just as is the case elsewhere. Sign is defined by its codification and standardization and it is developed using a system of graphic symbols and it is formed by a group of deaf persons living in a community and it is not imposed on them (Okombo, 2006).

Sign Language has signs that function as words (Wu et al., 2015). These words are composed of phonemes and morphemes that are combined in a unique way to make each word distinct. These signs are made up of four interacting elements (gestural parameters) namely: Handshape, location, movement or motion and orientation (Akaranga, Kaula, Mwachiti, Mweri, 2006). Sign Language is a mean of communication for and with persons who are deaf. The term deaf in this context is used to refer to persons whose HI is to the extent that they cannot use oral-aural modes of communication with or without sound amplification (Burgstahler, 2015). Sign Language therefore, is the first language for those who acquire deafness before they develop speech and language (KICD, 2010)

There is no possibility of translating a Sign language sign for a word into English or translating an English word for a sign into Sign language. This is because the two languages have entirely different in their grammatical structures and processes (Wu et al., 2015). For instance, Wakumelo & Miti (2010) observe that Sign language is expressed through the combination of hand shapes and movements, body movement and facial expressions. It contains structures and processes that spoken languages do not have and it has grammatical structures which are suited to the visual medium only (Sadiki, 2008). According to Smith (2000), Sign languages in linguistic terms are as rich and complex as any oral language despite the common misconception that they are not real languages (Napier & Leeson, 2016). Hence, it is extremely important for facilitators to understand the structures of both Sign language and English and to be aware of the differences between them (Wu et al., 2015). A simple illustration of the process of Sign language would be an instruction "turn right at the traffic light". In Sign language it would simply be "Traffic Light" (one sign) followed by "Turn Right" one sign again. This not only reflects the real order of events, a crucial and distinguishing feature of visual language, but also uses classifying hand shapes to indicate lights and vehicles that are located in space with appropriate directional movement to suit the context. In this way, information is condensed into just two signs enabling the expressions of an instruction that would require six words in oral English language. Learners can then be assisted in acquiring a meta-linguistic understanding (knowledge of how language works) of the structure and processes of Sign language in order to give them a bridge to becoming aware of the salient features of English (Glaser & Lorenzo 2010).

### *1.1. Purpose of the Study*

The purpose of this study was to establish the effect of literacy in Kenyan Sign Language (KSL) by pupils on academic performance of pupils with hearing impairment (HI) in primary schools in Kenya.

### *1.2. Specific Objective*

To establish the effect of learners' literacy in KSL on academic performance of learners with hearing impairment (HI)

### *1.3. Research Hypothesis*

The study will seek to test the following null research hypothesis:

- $Ho_1$ There is no significant relationship between the learners' literacy in KSL and academic performance of learners with hearing impairment (HI).

## 2. Research Design and Methodology

### *2.1. Research Design*

The researcher adopted a cross-sectional descriptive survey design to provide detailed analysis of the study population and was suitable for a study due to its ability to rapidly collect data in an extensive nature (Willis & David,

2005). This design enables the researcher to collect data simultaneously at various levels of study in the schools. In this case, class seven and eight pupils, teachers attending to hearing-impaired pupils and head teachers were used for study at the same time.

*2.2. Target population, Sampling techniques and Sample size*

This study targeted a total of 12 special schools namely (Mundika, Givavei, Ebukuya, Chekombero, Kakamega, Mumias, Mwikhomo, Eregi, St. Antony, Kabuchai and Kimwanga schools for the deaf), for the pupils with HI in Western Kenya, 93 sign language teachers and 108 class seven and eight pupils from public primary schools for the learners with HI in the region (Table 1). Given the small number of the teachers, pupils and head teachers, all of them were included in the study. Gay (1992) observes that the larger the sample the smaller the sampling error.

| Stratum | Target population | Sample size |
|---|---|---|
| H/ Teachers | 12 | 12 |
| Teachers | 93 | 93 |
| Pupils | 108 | 108 |
| Total | 213 | 213 |

*Table 1: Target Population and Population Size*

## 3. Results and Discussion

*3.1. Perception on Impact of pupil's literacy in KSL on academic performance*

3.2.1 Ability of Pupils to Read English Words in A Paragraph Or Sentence

From the results in table 2, 17 (18.3%) of the teachers strongly agreed that pupils had the ability to read all English words in a given paragraph or sentence (table 2). Only 20 (21.5%) agreed while 15 (16.1%) were undecided. The results also revealed that 27 (29.0%) of the teachers disagreed that pupils have the ability to read all English word in a given paragraph or sentence while the other 14 (15.1%) of them strongly disagreed. Teachers in this case said that majority of the students are not able to read English words. This could be contributing to poor performance among the hearing-impaired pupils. In the study, 7 (58.3%) of heads also said that some students could not read properly.

| Pupils | | | | |
|---|---|---|---|---|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Strongly disagree | 14 | 15.1 | 15.1 | 15.1 |
| Disagree | 27 | 29.0 | 29.0 | 44.1 |
| Undecided | 15 | 16.1 | 16.1 | 60.2 |
| Agree | 20 | 21.5 | 21.5 | 81.7 |
| Strongly agree | 17 | 18.3 | 18.3 | 100.0 |
| Total | 93 | 100.0 | 100.0 | |

*Table 2: Ability of the Pupils to Read English Words in Paragraph*

3.2.2. Pupils ability to interpret English words in KSL

The study established that 38 (33.3%) of the pupils strongly agreed that their ability to interpret English word in KSL affects their academic performance, 50 (46.3%) of them agreed that their ability to interpret English word in KSL affects their academic performance while 10 (9.3%) were undecided. The research further noted that 11.1% of the pupils strongly disagreed (table 3). Students therefore have a strong believe that interpretation of English words affects their performance. This is also observed in a study carried out on performance by Mogen (2013).

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Strongly disagree | 4 | 3.7 | 3.7 | 3.7 |
| Disagree | 8 | 7.4 | 7.4 | 11.1 |
| Undecided | 10 | 9.3 | 9.3 | 20.4 |
| Agree | 50 | 46.3 | 46.3 | 66.7 |
| Strongly Agree | 36 | 33.3 | 33.3 | 100.0 |
| Total | 108 | 100.0 | 100.0 | |

*Table 3: Pupils Ability to Interpret All English Words in a Given Paragraph*

3.2.3. Ability to Read and Comprehension of KSL and Academic Performance

The results revealed that 35 (32.4%) of the pupils strongly agreed that their ability to read and do comprehension based on KSL affects their academic performance, 46 (42.6%) agreed while 8 (7.4%) were undecided. The study further noted that 10 (9.3%) disagreed while 8 (7.5%) strongly disagreed that their ability to read and do comprehension of KSL

affects their academic performance. Concerning teachers, 8 (8.6%) strongly disagreed, 10 (10.8%) disagreed, 6 (6.5%) undecided, 28 (30.1%) agreed, and 41(44.1%) strongly agreed. Results from interview schedule, majority of the respondents agreed that reading and doing comprehension affected performance (Table 5).

| Pupils perception | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Strongly disagree | 8 | 7.5 | 7.5 | 7.5 |
| Disagree | 10 | 9.3 | 9.3 | 15.9 |
| Undecided | 8 | 7.4 | 7.5 | 23.4 |
| Agree | 46 | 42.6 | 43.0 | 66.4 |
| Strongly Agree | 35 | 32.4 | 32.7 | 99.1 |
| Total | 108 | 100 | 100.0 | |
| Teachers Perception | | | | |
| Strongly disagree | 8 | 8.6 | 8.6 | 8.6 |
| Disagree | 10 | 10.8 | 10.8 | 19.4 |
| Undecided | 6 | 6.5 | 6.5 | 25.8 |
| Agree | 28 | 30.1 | 30.1 | 55.9 |
| Strongly agree | 41 | 44.1 | 44.1 | 100.0 |
| Total | 93 | 100.0 | 100.0 | |

*Table 5: Ability to Read and Comprehension of KSL and Academic Performance*

*3.3. Testing of the Null Hypothesis*

In order to determine the relationship between the independent variable (Mastery of KSL) and the dependent variable (teaching and learning expressed in terms of KCPE mean scores) Chi-square was used at the significance level of $p<0.05$.

The study sought to determine how mastery of LSL influenced teaching and learning in public primary schools in western region. To accomplish this, Chi-square was used to test the effects of, literacy in KSL on teaching and learning as expressed in terms of KCPE performance. The results of the analysis are summarized in table 6 and 7 for the teachers and Pupils respectively. The results of the analysis summarized in table 6 and 7

| | **KSL literacy** | **Mean Score 2014-18** |
|---|---|---|
| Chi-Square | 263.499[b] | |
| Df | 15 | |
| Asymp. Sig. | .001 | |

*Table 6: Chi-Square for the Teachers' Responses*

| | **KSL Literacy** | **Mean Score 2014- 2018** |
|---|---|---|
| Chi-Square | 282.951[b] | |
| Df | 21 | |
| Asymp. Sig. | 0.002 | |

*Table 7: Chi-Square for the Pupils' Responses*

The results indicated that there was significant relationship between literacy in KSL and teaching and learning at $p<0.05$ and $p<0.01$ and thus concluded that literacy in KSL significantly influenced learning process of the hearing-impaired learners. The study therefore rejected the null hypothesis and concluded that literacy in KSL has significant impact on teaching and learning.

## 4. Conclusions and Recommendations

*4.1. Conclusion*

Master of KSL by pupils has significant influence on academic performance of learners with HI. The teachers understanding of KSL determines the extent to which they are able to give instruction to the pupils in similar language being the language of instruction. This in turn affects the academic performance of learners in other subjects since the mastery of KSL by teachers influences the understanding of pupils in the subjects. Master of Kenya Sign Language by teacher and pupils ensures wide covered of the curriculum content within a short time. When both pupils and teachers have good understanding of the KSL, the pupils are able to grasp the curriculum content much faster and therefore they teachers take lesser time to cover all the content and with sea. On the other hand, when both teachers and pupils have little understanding of the KSL, then the curriculum content might not be adequately covered by the teachers because both teachers and pupils will be struggling to understand the contents. These descriptive research results were supported by the chi- square results where mastery of KSL has significant effect on academic performance at $p< 0.005$.

*4.2. Recommendation*

The study recommends that there is for programs to enlighten and adequate community and other stakeholders on the importance of supporting pupils with HI to learn and understand Kenya Sign Language. Such programs should be geared towards having the community including parents to support the government efforts to provide KSL among learners with HI at an early age. The government should also train and deploy more teachers to schools with learners with HI as one of the challenges facing the learners with HI was inadequate rained and skilled teachers. This move should be geared towards reducing the number of Teacher to pupil's ration and enable the teachers to give personal attention to learners.

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