



## Relationship Between Proficiency in Kenyan Sign Language and Signed Exact English and Performance in English by Learners with Hearing Impairment

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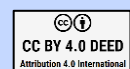
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### ABSTRACT

Students with Hearing Impairment (HI) encounter various challenges in learning due to their hearing loss, significantly impacting their academic performance, particularly in exams such as the Kenya Certificate of Secondary Education (KCSE). This study aims to explore the correlation between proficiency in Kenyan Sign Language (KSL) and Signed Exact English (SEE) with English performance among HI learners. Conducted in four special secondary schools for the deaf in Kenya's Nyanza region, the study involved 48 participants, including 33 Form 3 students, 7 English teachers, 4 Curriculum Support Officers, and 4 School Principals. Utilizing a qualitative multiple case study design, the research employed purposive sampling to select schools, saturated sampling for English teachers, and stratified sampling for Form 3 students. Data collection methods included in-depth interviews, focus group discussions, classroom observations, and document analysis. Thematic analysis was used to analyze the data, revealing that pre-lingual HI students, deaf before speech development, exhibit greater proficiency in KSL than SEE and Standard English (SE). Conversely, post-lingual HI students, deafened after speech acquisition, may struggle with KSL initially but tend to excel in SEE due to their prior speech development. Over time, post-lingual students may achieve proficiency in KSL after integrating into the Deaf community.

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## 1. Introduction

The role that language plays in the society is very important. One scholar, Malinowski (reiterates the importance of language in communication by espousing the responsibility language plays in creating the ties, hence facilitating the unified social actions. This cannot take place without language (Diamond,2014). There are various functions that language is endowed with, the basic function is usually communication. Fafunwa (1990), asserts that language is a product that is integrated in the community and it develops as the needs of the community and culture increases. This is also true with the reduction in complexions. In essence, language is the pointer of the progress of the society, and the society grows and develops together with language. Mother tongue can be used a channel through which knowledge is imparted in both formal and non-

formal settings. The language(s) used at the community level when used in reading and writing will trigger learning and improve the academic performance of learners.

Language evolves continuously throughout life as individuals engage with others who speak the same language. Initially, language serves as a tool for communication, which involves the exchange of information, ideas, and experiences among various participants through spoken, written, or signed means. Spoken and written languages offer diverse communication avenues, such as sending letters or emails to distant friends and relatives, engaging in phone conversations, or accessing live events through television broadcasts. Akmajian, Demers, Farmer, and Hamish (2001) emphasize that language, regardless of its mode or system, plays a crucial role in facilitating effective communication, thereby contributing to educational success.

The United Nations Convention on the Rights of the Child (UNCRC) espouses the rights of children with hearing impairment as all other children despite their communication barriers. This document is a legally-binding international agreement setting out the civil, political, economic, social cultural rights of every child, regardless of their race, religion or abilities. These rights include the right to access all basic necessities of which education is one of them. It is however noted that lack of effective communication hinders them from being able to express their views and receive the same attention that children without hearing impairment receive. This is an experience they encounter at home, in school and in the wider community at large (MacCracken & Sutherland, 2013)

Learning takes place at different levels. However, hearing provides a basis for almost all kinds of learning an individual is subjected to. A child is expected to respond to sound stimuli after some weeks from the date of birth. However, for this to happen, the child's auditory system must be developed well. Children with well-functioning auditory perception usually respond to the voices of parents and also identify them. This is made possible through auditory discrimination. The effectiveness of learning is only made possible when all the five senses a human being has are fully integrated. In this, hearing is no exception. According to Akmajian et al. (2001), early discrimination of and response to sound stimuli recorded by the child marks very important characteristics of early development of the auditory system that makes parents cheerful.

Moore (2001) suggests that early signs of hearing loss manifest when a child demonstrates difficulty in hearing and distinguishing sound sensations, leading to a lack of responsiveness to auditory cues. This poses various challenges to their learning process. During this phase, terms such as "hard of hearing," "deaf," or "hearing-impaired" are commonly used to describe children with hearing impairments (Moore, 2001). Generally, society tends to focus more on the difficulties these children may encounter rather than their potential achievements, often resulting in parents opting to send them to boarding schools to alleviate their own concerns. Many households primarily consist of individuals who can hear, leading to a lack of effective communication within the home environment. Consequently, numerous deaf children feel apprehensive about returning home during school breaks. This stands in stark contrast to the experiences of hearing students who eagerly anticipate the end of the school term to reunite with their families. The reluctance of deaf children to return home stems from the communication void they perceive, making the school environment—where they can communicate with fellow deaf peers through sign language—more appealing (Okwaro & Bakari, 2003). The societal attitude towards

children with hearing impairments often results in their limited exposure, contributing to distinct developmental patterns such as inattentiveness, incomplete tasks, and memory-related issues. It is evident that many members of the community inadvertently contribute to the academic underperformance of children with hearing loss (Moore, 2001).

According to Kirk (2007) loss of hearing can be mild, moderate, severe and profound depending on the cause, seriousness and the age of onset. The skill of hearing is very important in the concepts of abstractions and mental representations which inform reasoning skills that directly affect academic performance. Children with hearing impairment do not have the capacity to associate sound and object. This greatly affects them since it is an important cognitive process that leads to limitation in the way they process their learning. Learning, for learners with hearing impairment do not take place holistically since they do not have all elements of communication. While the other learners have the elements of sound, learners with HI depend majorly on the use of sight which poses constraints to their academic progression.

Children with hearing impairment usually prefer being referred to as deaf or hearing impaired. In a situation where a child who may be having some ability to use oral language and embraces it, the deaf peers may reject them. The justification being on them perceiving this as a rejection of their own culture where they are supposed to use sign language (Kirk 2007). The effects of this will automatically be felt in the academic of the learner with HI since the learner needs to interact and socialize with the peers adequately.

Spoken language serves as the primary means of communication for the majority of individuals, rendering other forms such as sign language relatively marginal due to their limited usage and awareness among the general population. Sign language, being a visual gestural system, is predominantly utilized by the deaf community, who represent a minority. For deaf individuals, the vocal-auditory channel commonly used for communication is inaccessible, necessitating the use of sign language as an alternative mode of communication. Given the unique communication requirements of learners with hearing impairments, their educational needs may be better addressed in specialized schools or specialized classes and units within mainstream educational settings, where sign language is often employed as the primary mode of communication. However, the adoption of sign language in education has not been uniform across all countries, and the lack of universality in sign languages poses an additional challenge in the education of the deaf.

Sign language originated from France by Abbe Charles de L'Eppe who is regarded as the father of sign language. Charles started the initiative of using sign language in 16<sup>th</sup> century. This came as a result of his interaction with deaf people who were using sign to communicate. Charles took an initiative of refining these signs and adopted them to become sign language. The sign language that was used in France was then formalized and spread to United States of America and Europe as well. Since then, there has been many myths and misconceptions regarding sign language but the deaf community across the world embrace it to the core. In the field of education, sign language dates back to when deaf people started using it to communicate among themselves. However, the documented use of sign language is traced to Greece when Socrates who lived in 469-359 BC, in his book, Levinson shows how important Greeks thought of the value of Sign

language. St. Augustine also made a reference to Sign Language as a mode of communication used to reach deaf people for Christ.

Natural sign languages exhibit remarkable similarities to natural spoken languages in various significant aspects. These languages emerge spontaneously within deaf communities as conventional means of communication, acquired during childhood through exposure without formal instruction (Okwaro & Bakari, 2003, p. 7). Each country develops its own unique sign language, primarily influenced by the cultural differences within the community, leading to variations in signs. Consequently, distinct sign languages exist for different countries, such as Kenyan Sign Language (KSL), British Sign Language (BSL), Ugandan Sign Language (USL), and American Sign Language (ASL), among others. Despite these variations, people within a country typically share similar experiences, resulting in a relatively consistent process of abstraction, wherein meanings are assigned to signs. This phenomenon contributes to the formation of national sign languages. The emergence of these sign languages fosters the development of a deaf culture within the broader hearing culture. Similar to other co-cultures, the deaf community forms a cohesive group, partly through exclusion from the dominant hearing culture and partly through collective association. Consequently, they establish a community of signers who also identify as members of the Deaf culture.

Historically, in terms of sign systems, it dates back in United States of America in the mid-20th century when some educators of the Hearing Impaired came up with an idea of making English visible by representing the spoken word in the sign form. This gave rise to Sign Systems. Richard Paget was one of the earliest educators who developed such a system. He called it the "Systematic Sign Language" and published an account of it in 1951. Paget first proposed that a sign is representation of English word and therefore signs should be ordered in the same way that English words are ordered. About a decade after the formal publication or a description of the Systematic Sign Language, another educator- David Antony, began work with individuals with Hearing Impaired in Michigan with the same ideas and goals. Antony, on his side devised a system called Seeing Essential English (SEE-I), which sought to represent the sound, spelling and meaning of parts of English words, more specifically, word roots, prefixes and suffixes. This was not so much different from what Paget had developed. Disagreements concerning the rules of the system resulted in a second sign system named Signing Exact English (SEE-II). This system was developed by Gerilee Gustason, Pftzig and Zawalkov in 1972. SEE-II was best characterized as an attempt to limit SEE I, in order to prevent the system from becoming so distant from American Sign Language (ASL) that it was rendered unintelligible to ASL signers. In 1983 Harry Bornstein and Karen Saulnear developed another system, "Signed English (SE)" This system was specifically for use by and with pre-school and elementary level hearing impaired children in United States of America. In this system, gestures or signs are used to represent the meaning of words. There is an ongoing discussion on the effectiveness of sign systems in the education of the deaf. Ruth (2018), posits that teachers of learners with hearing impairment should endeavor to expose learners to different sign systems of the tense for irregular verbs and use of continuous tense markers by use of Signed English (SE) and Signed Exact English (SEE) and plural and singular markers in written English by use of SE and SEE.

In the Kenyan Context, there are three sign systems which are in use by the various practicing stakeholders. These sign systems are not only used in special schools for

learners with hearing impairment but also outside the institutions of learning. These systems include Signed Exact English (SEE), Signed English (SE) and Kenyan Sign Language (KSL). Fingerspelling is integrated in all the three systems. On considering SEE, just like all other sign languages, it is a manual communication. The vocabularies are in English and the word order used is same as that of English. The syntax (sentence structure) is in the form of English language. One unique thing with this sign system is that the signs are superimposed on words in English sentences but affixes such as “s” and “ing” are indicated by finger spelling. The second sign systems which is Signed English uses sign words and sign markers and, in each case, each sign stand for an English word and the arrangement of the signs are in exact adherence to the English sentence order. SE uses fourteen markers. Majorly, the sign markers indicate plural or singular, tenses or show the possessiveness of an object. In this system, some words are left out. Word classes like articles, interjections and prepositions are not signed. The suffixes in English therefore are often dropped enabling the signer to speak easily while signing and to keep pace with spoken English (KIE, 2002). It is based upon signs drawn from sign language, for example KSL and expanded with words, affixes, tense markings and endings to give a clear and complete visual representation of English for educational purpose. Fingerspelling or manual alphabet, on the other hand represents letters of the alphabet using the fingers. This is integrated in all the three sign systems, especially in a case where there is no known sign for a given word. In fingerspelling, each letter of the alphabet is represented by its own sign. There are two types of manual alphabets; One handed manual alphabet and Two-handed manual alphabet (Okwaro & Bakari, 2003). Some countries like England, Australia and New Zealand uses two-handed manual alphabet while the one-handed system is used in Kenya, United States, Ireland, Singapore, the Philippines among others. In South Africa both one- and two-handed alphabets are used. The last sign system is Kenyan Sign Language. KSL is a language used by the hearing impaired in Kenya (Adoyo,2010). KIE (2002) defines KSL as a visual-gestural language used by deaf persons in Kenya. KSL is a language that uses manual symbols to represent ideas and concepts and is independent of any spoken language (KIE, 2004). Its sentence features and grammatical rules are different from any other language. Information in KSL is written by glossing in any form that is understood and is acceptable to a given deaf community. In most cases KSL is glossed in English, this is simply because English is the official medium of instruction from upper primary to higher level of education system in Kenya.

Kenyan Sign Language is not random. There are certain orders that can be used while others cannot. The most used being: SVO, SOV and OSV (S= SUBJECT, V= VERB O=OBJECT). The OSV sign order seem to be the most preferred in KSL. According to Zambian National Association of the Deaf -ZNAD (2001), sign language largely follows the sentence structure of object subject verb (OSV). For example, “The girl is kicking the ball” maybe written as BALL/GIRL KICK. Glossing in KSL is the writing of spoken words in capital letters. Glossed sentences are punctuated by using a slash (/) for a comma and double slash (//) to denote a full stop (KIE, 2002)

Example: KSL: IF INTERPRETER THERE / ME GO //

English: I will go if there is an interpreter. (KIE, 2004)

A glossed sentence has its meaning enhanced by using non-manual features and facial expressions. These are critical aspects in sentence formation because they give more meaning by showing mood of the speaker. English grammar is divided into morphology, which describes the formation of words, and syntax, which describes the construction of meaningful phrases, clauses, and sentences out of words.

According to the KIE (2002) KSL is the sign language regarded as the mother tongue to the deaf community in Kenya. Martin (2001) further asserts that the same applies in all other countries, such that the national sign language of each of the respective countries will form the mother tongue of the deaf in each of the country. The development of KSL was heavily based on the grammatical structure of size, shape and position of things. This was also connected to objects in space (Gargiulo, 2006). As most of the African countries sign languages, the grammar of KSL was borrowed from ASL. The adoption of KSL to be the medium of instruction, in the schools for the deaf, and later on as an examinable subject was hoped to enhance academic performance of students with deafness at secondary school level (KIE, 2008). However, there is a debate as to whether this system is serving the purpose on which it was introduced.

Sign languages that are used in English-speaking countries are not uniform. However, in the Arab Countries, Arab Federation of the Deaf, which promotes the understanding of Arabic sign language developed a uniform sign language for Arabic countries. In 2001, the Federation approved the Unified Sign Language Dictionary to enable the entire Arabic deaf community to use Arabic sign language (Alamri, 2017).

Documentations regarding deaf people started in the year 1958 when the Kenya Society for Deaf children was established (Ndurumo, 1986). By then, the official language of instruction that was being used was oral language. However, the students had the audacity to use sign language outside classroom. As time went by, there arose need to use sign language in schools for the deaf and by 1981, the MoE proposed a program that saw the separation of schools for the deaf into two groups to cater for oral/aural (oralists) and sign language (manualists). A proposal by Dr. Ndurumo (1986) to the Hearing-Impaired Subject Panel of Kenya Institute of Education (now Kenya Institute of Curriculum Development) saw the acknowledgement of the need to have a specific sign system for instruction in special schools for the deaf, which led to official adoption and acceptance of sign language as a method of instruction in 1988. However, this came along with its own challenges on how to have the same implemented in schools. A number of concerns were raised which included lack or shortage of KSL books, too basic vocabulary used by the deaf people which was inadequate for instructional purposes. The vocabulary was consisting of numbers, pronouns, nouns and other concrete based signs (Ndurumo, 2008).

There has been a record number of effort and measures that have been undertaken by various stakeholders to promote Kenyan Sign language. However, a number of Special Needs Educators within schools for the deaf have had contrary opinions on the use of KSL. While some schools have had instructions given to the teachers and students with hearing impairment to strictly use Signed Exact English during teaching and learning, some hold that KSL is better placed to be used as a system. There is an ongoing debate among various scholars on the sign system that should be used in classroom for learners with Hearing Impairment for instruction. Adoyo (2010) maintains that KSL is the most easily understood sign system by the deaf while those who hold on SEE critique KSL indicating that it is mother tongue hence cannot be used

for instruction in other learning areas especially for academic competency and performance. They also say that using KSL will deny the Learners with hearing Impairment competition in the job market since they will be seen as having done a completely different examination.

Kenya has experienced a record number of special schools which have been started all over the country to cater for learners with disabilities. The hearing-impaired learner is a beneficiary of this and has seen Kenyan Sign Language (KSL) gain legal recognition (Constitution of Kenya 2010). The curriculum body in Kenya in the year 2004, currently KICD suggested that teachers of English should consider using KSL while teaching English to learners with HI. KSL is easier for learners with HI as it enables them to understand and recall concepts. Wamae (2002) further asserts that it is logical to use KSL as a language of instruction in the classes for learners with HI. However, the questions on whether and how KSL is helping learners with HI to comprehend concepts and to write competently and undertake fluent and complex composition in Standard English in class are still glaring (Wamae, 2002).

The language policy in Kenya was first developed and informed during the colonial era following the invasion and annexation of the African continent by European powers (Nabea, 2009). However, after then, there has been a number of commissions which were instituted to inform the language policy but only a few recommendations made by such commissions were put in practice. Gachathi recommended that the language used in the catchment area be used for instruction up to Grade 4 then English takes over as a medium of instruction from Grade 4. As a result, English was considered as the official language of communication and was seen as more advanced compared to the native languages. This gave English language a higher status symbol to anyone who learnt it hence they began abominating the peasant majority thereby becoming alienated from the values of their native language (Nabea, 2009).

The use of sign systems has received little or no attention among the commissions formed in Kenya yet it is among the issues on the table when it comes to the special schools for the HI. There is therefore no known clear-cut policy on the use of KSL as the MT of the deaf in Kenya. The only document is The Kenya Sign Language Bill of 2021 which was published in the Kenya Gazette Supplement number 25 of 8<sup>th</sup> March, 2021 and passed by the Senate of Kenya with amendments on 11<sup>th</sup> January, 2022. The Bill was received in the National Assembly on 2<sup>nd</sup> February, 2022, but is yet to be ascended to. In the Kenya Sign Language Bill of 2021, there is no clear information on which sign language systems should be used during classroom instruction.

Spoken language and sign language are different. While the policy in place gives clear and distinct guidelines regarding the spoken language of instruction to be used schools, it is very silent on the part of the sign system that should be used during instruction in special schools for the deaf, especially for English lessons, considering that KSL uses English words and the learners with HI do not take Kiswahili as a learning subject.

Very few hearing people (including the policy makers) are aware of the differences that exist between English and KSL and the impacts that KSL has on the English as a subject and on comprehension of other subjects which are examined in English. In the language policy, the statement which directs that “language used in the catchment area is used as a language of instruction in the lower grades and English takes over as a medium of instruction from Grade 4” emanate from people who are in the era where

language was seen as equivalent to speech. This does not necessarily apply to learners with HI. Majority of deaf learners are born in an environment where the language of the catchment area is spoken. That is, the parents and immediate family members are hearing people hence they use speech in communication. What happens to them when they reach Grade 4, where again a spoken language is supposed to take over? These are some of the issues that no known policy has addressed in as far as the education of the deaf is concerned.

Mitchell (2008) raises the concern of the significantly poorer reading comprehension, literacy skills, and overall depressed academic performance among learners with HI when compared to their hearing peers. Further, Allen (1994) report that more than half of the students with HI in United States were reading below the fourth-grade level at the time of their high school graduation and that only 7–10% of deaf high school graduates were reading at the seventh-grade level or above (Cawthon, 2004).

After the Geneva Conference of 2008, Kenyan Sign Language (KSL) was introduced into the school curriculum, replacing Kiswahili as the second language for learners with hearing impairment (HI) (Geneva Conference, 2008). Despite this change, there has been limited improvement in the academic performance of HI learners, particularly in English. English language syllabus objectives for students with HI aim for proficiency in various areas such as reading comprehension, literary appreciation, awareness of contemporary issues, and sustained interest in reading (KICD, 2013). However, HI students in Kenya often complete their schooling without achieving these objectives, struggling with reading, writing, comprehension, and grammar tasks. Several studies attribute this poor performance to the inadequacies of the sign language instructional approach (Adoyo, 2010). Additionally, deficiencies in English proficiency correlate with underperformance in subjects like Social Studies. Research suggests that HI learners encounter significant challenges in reading English, contributing to diminished self-esteem and confidence in their academic abilities.

A study conducted by Otieno (2010) showed that lack of proficiency in English exhibited by learners with HI lowers their general performance in academics especially in the subjects whose language of instruction and examination is English. This was due to the fact that English is a service skill. It is therefore used in teaching and examining all subjects in secondary schools for learners with HI other than KSL. Ogada (2014) agrees with Otieno (2010) by observing that hearing impairment primes to meager language development. Ogada (2012) espouses the critical role played by language in a child's literacy learning. 90% of children with HI are born hearing parents (Ogada, 2014). This means that majority of Children with HI are with score low on literacy test whether the language was spoken or signed until they start school leading to delay in language development.

Students with HI always experience a lot of challenges in learning English. Lucas (2001) states that learners with HI whose first language is sign language experiences challenges in writing English composition since sign languages are not written languages. According to Moses and Mohamad (2019) English language writing has always been a challenge for second language students to master. Moreover, writing has always been a major difficulty faced by students in English language learning. Furthermore, teachers of English in most schools are faced with the challenge of developing students' ability in writing. Misbah, Mohamad, Yunus and Ya'acob (2017) in agreement posit that lack of



vocabulary has caused the students to face challenges in acquiring writing skills. Afrin (2016) also adds that students have the habit of spelling according to their pronunciation and this will lead to wrong spelling. The results from some studies also point at low level of awareness by the deaf students on their capability to undertake reading comprehension than hearing peers (Marschark et al., 2004; Gapur, 2024).

The sign systems that special needs educators use for their students are determined by their beliefs, perspectives and decisions (Woolfolk Hoy, Hoy & Davis, 2009). Dada and Atlanta (2002) adds that the sign systems used by the special needs educators is not only associated with teaching practices but also with the features displayed by students such as special educational needs. A study conducted by Siima (2011) indicated special needs Educators supposed learners with HI as slow learners and this prejudiced their acquaintance and of use of approaches in teaching reading and writing. Another study by Ludago (2014) indicated that most special needs educators for learners with HI in Ethiopia were not spirited and psychologically ready to do their duties as expected. The current study employed self-reports and observations to compare teachers' perspectives towards sign systems and their actual classroom practices.

The four basic skills in English, namely listening, reading, writing and speaking are taught through an integrated approach. An integrated approach is adopted in the teaching of English where four skills are taught namely listening, speaking, reading and writing. Bunyasi (2010) points out the efforts that have been put in place to improve the academic standards of the students with HI. However, this has not been realized as performance is still depressing. In the article report of Kenya National Examinations Council (KNEC), Lewis (2009) discloses some language divergences used in the educational activities of students with HI.

In Kenya Certificate Secondary Education examinations, students with hearing Impairment perform below average. (KNEC; 2021, 2020, 2019, 2018 and 2017). This can be confirmed in Table 1 which shows the mean scores in English versus KSL for A, B, C, D, E and F secondary schools for the deaf in Kenya for the 5 years, that is, 2017 to 2021.

Table 1. Kenyan Secondary Schools for the deaf K.C.S.E. English and KSL Mean Scores for the Years 2021, 2020, 2019, 2018 and 2017

Year Subject/ School	2017		2018		2019		2020		2021	
	ENG	KSL	ENG	KSL	ENG	KSL	ENG	KSL	ENG	KSL
A	3.0	8.0	2.4	8.6	2.9	9.7	4.1	9.6	3.8	10.8
B	-	-	2.1	8.7	2.0	6.4	2.2	5.6	2.6	8.9
C	2.4	9.7	2.3	8.7	2.4	6.8	3.0	8.9	2.3	8.2
D	1.7	7.9	2.2	8.7	1.8	5.8	2.1	5.6	2.8	8.9
E	-	-	-	-	-	-	2.5	7.5	2.0	7.6
F	1.41	7.9	1.6	8.6	1.47	4.3	1.4	7.6	2.42	6.5
MEAN SCORE	2.4	8.5	2.3	8.7	2.3	7.2	2.8	7.4	2.7	8.9

*Source: County Directors of Education (Siaya, Busia, Migori, Bomet, Vihiga, Nandi)-2022*

NB : *School B had not registered KCSE candidates before the year 2018*  
*School E had not registered KCSE candidates before the year 2020*

KEY : ENG- English, KSL- Kenyan Signed Language,

Special secondary schools for the deaf have been posting a below average record in the results of English in Kenya Certificate Secondary Education examinations. This is depicted in table 1. In the years 2017, 2018, 2019, 2020 and 2021 out of the mean of 12, students registered mean scores of 2.4, 2.3, 2.3, 2.8 and 2.7 respectively. All these grades are D Minus (D-) (K.N.E.C. results, 2017- 2021). In the Kenyan grading system, these results are regarded below average and may not enable the students to enter courses that are regarded as competitive and marketable. Even if the affirmative action is considered, learners with HI who score such grades may not enter higher institutions of learning like teachers’ training colleges. The reason for this low performance is suspected to be associated with the sign system used in classroom.

In Kenya, English final national examination at secondary school consists of three papers. English Paper One (101/1) which is marked out of 60, tests on functional skills, cloze test and oral skills. Paper Two (101/2) which is marked out of 80, tests on comprehension, literary appreciation and grammar. Paper Three (101/3) which is marked out of 60, tests creative and imaginative writing and essays based on set texts. In relation to the total marks from the three papers, reading comprehension accounts for 105 marks, which represents 52.5%, writing accounts for 40 marks, which represents 20%, grammar accounts for 25 marks which represents 12.5% and finally, receptive and expressive skills together with oral skills accounts for 30 marks which represents 15%”. It is clear that reading comprehension carries the highest percentage, but this does not lower the value of the other sections tested. Given that reading and comprehension are also needed in other subject areas where the deaf too are examined, then this may have an influence on deaf students’ academic performance in English. For the first three highest skills in English, that is, Reading Comprehension, writing and receptive and expressive skills being important skills in English, they are also service skills in other subjects written in English. There is no doubt therefore, English as a subject has an influence on the overall academic performance of deaf students.

A check on the performance in the specific areas also showed that the learners with hearing impairment face challenges across the sections that are examined in the English paper. This is evident in Table 2 and 3 which show English results of Form 4 and Form 3 sub county joint examinations that were conducted in the year 2022.

Table 2. Performance of Form 3 learners with hearing impairment in various sections of the English Paper in Sub County Joint Evaluation Tests, in the year 2022

Skill Area/ School	Reading comprehension			Grammar		Writing		Expressive, Receptive and Oral Skills
	Comprehension	Literary Appreciation	Essays from Set Texts (2)	Grammar	Cloze Test	Functional Writing	Imaginative Writing	
Section								

Maximum Score	25	40	40	15	10	20	20	30
A	3.5	2.0	1.92	5.3	1.2	3.33	3.3	2.0
B	6.17	3.5	5.0	7.1	2.1	6.83	3.5	5.1
C	6.1	2.67	5.2	8.4	2.6	4.2	2.8	8.4
D	4.0	1.15	1.36	0.00	1.43	4.0	2.0	3.72
E	6.3	3.3	3.1	8.1	2.2	4.5	4.4	6.8
Average	5.214	2.523	3.316	5.78	1.906	4.572	3.2	5.204

*Source: County Directors of Education (Siaya, Busia, Migori, Bomet, Vihiga, Nandi)- 2022*

From tables 2 and 3, it can be clearly seen that learners with HI perform below average in all English skill areas. In reading comprehension which accounts for 52.2% of all marks in English paper, form 4 students with HI have an average of 2.912 out of the possible 105 while form 3 have an average of 3.684. In writing skill too, the learners with HI have below average performance with form 4 having 3.616 while Form 3 having 3.886. The low performance across the skill areas in the sub county joint examinations may not be so much different from what may be witnessed in the National Examinations as shown in Table 1.

While learners with HI seem to be grappling with below average performance in English, learners with visual impairment seem to be performing averagely in the same subject. This raises further questions on the cause of the low performance among the learners with HI. Table 3 shows the performance of three schools for learners with visual impairment for the KCSE examinations administered in 2021, 2020 and 2019

Table 3. English Results of 3 schools of learners with Visual Impairment for the KCSE examinations administered in 2021, 2020 and 2019

School/Year	2019	2020	2021
A	3.00	5.12	6.15
B	3.00	3.750	4.278
C	5.05	6.38	6.738
AVERAGE	3.68	5.083	5.722

*Source: County Directors of Education (Siaya, Bungoma and Kisumu)- 2022*

From Table 3, it can be seen that in the year 2021, the schools for the HI in the lake region had an average mean score of 2.7 in English while the schools for learners with Visual Impairment had average of 5.722. In the year 2020, learners with HI had average of 2.8 while learners with Visual Impairment had an average of 5.083 and in 2019, the learners with HI had 2.3 while the ones with visual Impairment had 3.68. This leaves many questions on what could be the cause of the major difference in performance between the two categories of learners with disabilities. It is noted that the while learners with visual impairment are taught using speech, leaners with HI are taught in sign language. However, given that they are both examined in English, it was in the interest of the researcher to find out whether the sign systems used have any impact on the performance of learners with HI in English. There are no known studies

which have been undertaken on the sign systems used in the teaching and learning of English and the specific sections being tested among deaf students in Kenya.

Students with hearing impairment face numerous challenges in managing their academic responsibilities due to their hearing loss, which often impedes their academic performance. Key aspects such as reading comprehension, writing, receptive and expressive skills, and grammar significantly contribute to English grades. Despite their below-average performance in these areas, which constitute a substantial portion of overall marks, English proficiency remains crucial as it facilitates understanding of subjects taught in English. However, there is a lack of research exploring the correlation between proficiency in Kenyan sign language and signed exact English and English performance among students with hearing impairment. Additionally, the most suitable sign system for teaching English in special secondary schools for the Hearing Impaired remains unspecified despite their lower average English performance. Therefore, this study aimed to investigate the relationship between proficiency in Kenyan sign language and signed exact English and English performance among learners with hearing impairment in special secondary schools.

## **2. Literature Review**

Wang and Geva (2003) conducted a study in the United States concerning spelling performance of Chinese children using English as a second language. The study compared lexical and visual–orthographic processing in the spelling performance of 30 Cantonese Chinese children who are using English as a Second Language (ESL) to that of 33 native English-speaking (L1) children. The results of the study showed Chinese ESL children have poorer performance in spelling to dictation of pseudo-words than L1 children. The study further revealed that Chinese ESL children outperformed their L1 counterparts in a confrontation spelling task of orthographically legitimate and illegitimate letter strings. Whereas Wang and Geva (2003) compared two different native speakers of language, the current study sought to establish the proficiency of learners with HI who are non-native speakers of English in sign systems. The results from the current study may differ from the finding of Wang and Geva (2003) since it will involve a range of informants with different responsibilities, that is, Principals, curriculum support officers for SNE, teachers and learners. Therefore, it could fill the knowledge gap. Whereas Wang and Geva (2003) collected data through written test, the current study collected its data through focus group discussion guides, observations schedules, document analysis and in-depth interviews. America being an upper economy country, may have more investment in the education sector than Kenya which is a lower middle economy country. This could lead to different findings.

Dodd (2016) analysed how first language affects acquisition of English literacy. This was a comparative study that involved the analysis of performance of 40 university students from The People's Republic of China, Hong Kong, Vietnam and Australia. A series of tasks that assessed phonological awareness reading and spelling skills in English were administered. The results from the study indicated that the Hong Kong students (with non-alphabetic first language literacy) had limited phonological awareness compared to those students with alphabetic first language literacy. The reading and spelling tasks showed no differences between the groups on real word processing". The results supported the hypothesis that people learning English as a second language (ESL) transfer their literacy processing skills from their first language to English. Whereas the

informants in the study by Dodd (2016) study constituted university students, the current study could fill the gap in secondary schools for the HI. In addition, the study by Dodd (2016) had a limited sample as compared to the current study which had more participants. This could have led to collection of more data hence leading to different results. Dodd (2016) engaged students from different countries (China, Hong Kong, Vietnam and Australia) whereas the current study only involved students with HI from secondary schools in Kenya only. The current could have filled the knowledge gap by involving principals, teachers of English, curriculum support officers for SNE and learners with HI in the study. Dodd (2016) was also concerned with the effects of written language on acquisition of English literacy while the current study was based on the implication of deaf learners' proficiency in sign systems (which is not a written language) on English performance.

A study conducted by Fender (2008) to establish how spelling knowledge relates with the development and acquisition of reading skills was very important. Participants in this study involved two separate groups. The total number involved was 37 participants who included 21 intermediate-level ESL learners in English for Academic Purposes (EAP) program and 16 intermediate-level Arab learners of English as a second language (ESL). The knowledge in spelling was tested via a spelling assignment. In addition, general language processing and comprehension skills of the two groups was assessed through a Standardized reading and listening exercises. The findings showed that the Arab and non-Arab ESL students were not significantly different in listening comprehension; however, the Arab students scored significantly lower on the spelling assessment and the reading comprehension test. Spelling difficulty involved multi-syllabic words that included spelling patterns across syllables such as customer, bottle, success and derivational spellings like decision, knowledge, responsible. The current study sampled secondary school learners in addition to Principals and Teachers of English thus filling the knowledge gap. The current study collected data through interviews, focus group discussions, document analysis and lesson observations which provided in-depth information. While Fender (2008) established how spelling knowledge relates with the development and acquisition of reading skills, the current study focused on proficiency in signs systems and performance in English performance.

A study conducted in Switzerland by Niederberger and Prinz (2005) which involved 39 deaf students aged between 8 and 17 indicated that linguistic competencies are necessary to support the learning of written language. The study also indicated that written language can be developed through a natural sign language, either as an alternative or complement to language skills developed orally. This shows the need to instruct students who are deaf in sign language which is supported by UNESCO (2003a) which espouses that mother tongue is a means of improving education quality by building on the knowledge and experiences of the learners and teachers. Therefore, if learners with HI are competent in KSL, they can equally be competent in the language of English. This study thus sought to determine if the learners with HI are competent in KSL and English. While Niederberger and Prinz (2005) involved students with HI alone, the present study engaged also teachers of English, principals and CSOs SNE. The increased number of participants led to collection of more data hence could have led to different results. The study by Niederberger and Prinz (2005) was conducted in Switzerland which in an upper middle-income economy whilst Kenya is a lower middle-income economy. This could have led to different results since the two states may have

different investments in education sector hence the stakeholders could have had divergent views regarding various educational practices.

A study by Ndurumo (1993) showed that a number of developmental areas in children are affected by hearing impairment. These areas include; language, speech, intelligence, educational achievements and psychological development. As a result of this, it is important to note that the educators and curriculum developers ought to put into consideration the needs and interests of the learners with HI when preparing a curriculum. A part from this, another major challenge that children with HI are faced with is the issue of language development (Ndurumo, 1993). This is an important area since difficulties in it affects other areas of hearing since language is crucial in learning all subjects of the school curriculum.

Walter (2003) compared the abilities of hearing and hearing-impaired children in understanding printed English words and found that the hearing impaired performed at a level far below that of hearing children as shown in Table 4.

Table 4. A comparison of learners with Hearing Impairment and the hearing learners in their ability to understand printed words in percentages

Age	Group	2000 words	5000 words	10,000 words	20,000 words
10 years	With H.I	32	29	21	22
	Without H.I	85	73	61	44
11 years	With H.I	40	29	23	23
	Without H.I	92	80	69	50
12 years	With H.I	39	28	22	22
	Without H.I	99	85	76	57
13 years	With H.I	59	38	27	23
	Without H.I	95	90	82	69
14 years	With H.I	62	46	34	30
	Without H.I	97	95	89	71

*Source: Walter (2003)*

From Table 4, comparison shows that learners with HI are not as competitive as their hearing counterparts in their ability to comprehend printed words. This would automatically be reflected in their ability to write and answer comprehension questions. Learners with hearing impairment would experience more difficulties in answering comprehension questions as well as in writing. There is a very high connection between hearing the language being spoken and learning the rules of that language. If this is missing, then the need to have special instruction rises. The impact of this can be better be appreciated when one considers that the children with regular hearing will usually have acquired all the basic structures of that language, that is a vocabulary of up to 700 words by the time they are three years. According to Walter (2003), hearing students are different from their hearing-impaired counterparts in that hearing children acquire language by hearing it and then producing it. However, children with HI on the other hand either do not hear it or else they may hear it in such a distorted way as to make learning it impossible. This impedes their understanding hence affecting their

undertaking in assignments and examinations in English as a subject. One common thing among children with hearing impairment is limited speech and reading skills. In educational setting, the hearing-impaired students will depend on the service of a certified sign language interpreter, who will have to translate the spoken information to sign language and then vocalize in English what the hearing-impaired person wishes to say.

In analysing deaf learners' English literacy in Kenya, Ndung'u (2013) specifically focused on reading for comprehension and writing for communication competences in deaf learners. This was a survey where five schools for learner with HI that are found in the Central part of Kenya were involved in the survey. Purposive sampling was used to select eight (8) learners with HI from each of the school. The total number of respondents was forty (40). Written composition and written exercises were given to the learners so as to test their communication and reading of passages. The learners were subjected to the questions which had been derived from the passages so as to test their reading comprehension. The results from the study showed that the learners with HI at standard four cannot read for comprehension or write for communication. The current study provided more rich data by engaging the principals, Curriculum Support Officers and teachers of English. The present study also used a qualitative approach which provide a provide for the researcher to have a one-on-one interaction with participants hence more robust data could have been collected hence leading to different results.

According to Marshchark (2007), deaf children who use signs from infancy are academically, linguistically and socially superior. The study is in line with studies conducted by Marchshark (2001), who pointed out those children with HI who learn manual signs at early childhood development canters (ECD), show better academic achievement and social adjustment during the school years and superior gains in English literacy.

### **3. Research Design**

This study adopted multiple case study design.

#### *3.1. Location of the Study*

This study was conducted in secondary schools for the deaf in Nyanza region of Kenya. The Nyanza region consists of the former Nyanza province. The counties in the region are Siaya, Homabay, Migori, Kisii, Nyamira and Kisumu.

#### *3.2. Target Population*

The target population consisted of Principals of secondary schools for the deaf in Nyanza region, Curriculum Support Officers for SNE, Teachers who are teaching English in secondary schools for the HI and the form three students in secondary schools for the deaf in Nyanza region. Total target population was 111.

#### *3.3. Sampling Techniques and Sample Size*

The sample was drawn from four special secondary schools for the deaf in Nyanza region. The researcher then used saturated sampling to sample all the four secondary schools for the HI. Purposive sampling was used to sample 4 Curriculum Support Officers

for SNE; 4 Principals and 7 English language teachers were selected while stratified random sampling was used to sample 33 students

### 3.4. Research Instruments

The study employed interview schedules, focus group discussion guide, Classroom Observation Checklists and the document analysis guide as the research tools for data collection. The interviews were used to get in-depth information from the principals and teachers of English.

### 3.5. Data Analysis

This study adopted thematic analysis to generate the findings.

## 4. Results and Discussions

Teachers of English were asked to comment on how the proficiency of learners with HI in KSL and SEE or SE impacts on their performance in English. They stated;

*The pre-lingual are more proficient in KSL. The post lingual would be doing better in SEE. The post-lingual perform better in English. In KSL, the post-lingual still performs better that means post-lingual are better in KSL and English subject as well (ToE 4)*

*We had a student here, who would write statements that you would understand, in SEE and in exam performance, he performs better in English. He was post-lingual. These students also perform well in English. (ToE 5)*

*The post-lingual will perform better in English than the pre-lingual. (ToE 7)*

*Yes, the post lingual have high proficiency in SEE and they also perform better in English. Those who are post-lingual are better in SEE compared to the pre-lingual. Now in performance of English, it is the same thing- if they can write in SEE, they will perform better in English. So post-lingual are better placed to perform well in English than the prelingual. (ToE 5)*

*Yeahh... hmm..... we have post- lingual, you will find their performance is almost equal, although in KSL will be higher, but at least, will have a C, C+ in English, but in KSL, they get an A (ToE 2)*

*Those who are proficient in KSL, English becomes a problem, you find that English they have a D, their writing is not even English, something like that, but when you come to KSL, that is where you will find most of them, they will get an A in KSL, but when you come to English, they will be having D's and E's. Their performance in English is very dismal. (ToE 6)*

*The learner who acquired KSL at a younger age, and has grown with that KSL (proficiency in KSL) that learner might have challenges in English. They will see English as being wordy, yet they don't like wordy things. For example, they just say, ME HOME COME instead of telling them, tomorrow I will be coming home, that is too wordy for them, so it will automatically have an impact on their performance. (ToE 5)*

The principals were also asked to comment on the performance of the learners with HI in English with respect to their proficiency in the sign systems. They stated;



*There are some differences, those who acquire deafness after sometime they are able to use SEE as compared to KSL. They are able to express themselves very well in English during examinations. Most of them don't use KSL when expressing themselves. They hence perform better than those who were born deaf. This basically means the proficiency in the given sign system affects or determines their performance in English. (P. 2)*

*Most definitely, the ones who are writing SEE in most cases, they are at the top as compared to their fellows who use KSL. So I don't know, it is not research which I have done, but I have seen it in many cases. Our top performers, by the time they are expressing themselves, answering questions, they use SEE and teachers easily understand them and they get high marks. But those who express themselves in KSL, I don't know they are limited, you may try to find any point which you may not get.... So unfortunately, the proficiency in a given sign system, unfortunately affects or determines their performance in English. That is the experience that we have seen. (P. 4)*

*Ahhh.... Okey, I have 2 cases, and I would like to cite them. In our schools, we have an outgoing head boy who is currently in form 4, very proficient in KSL, he can make all sense of humor, you see KSL is all about epic, mostly through demonstrations. As they sign, they demonstrate. You see that makes the flow of communication very sweet. But when it comes to writing on paper, it is terrible. He is not able to express himself well in SEE. Like you tell him to write a composition, he cannot write but now signing and giving out those words, he is perfect in KSL. There is this other case who is very good in SEE, he does very well in class, because I think SEE goes with what we are delivering. So that is why finally we are saying that we should train our learners from grassroot so that they use SEE. (P. 3)*

*I have had experience with the two categories, like in one of the schools for the deaf in my division, in 2021, there was a boy who scored 280 marks, the next student who followed him had 167 marks. The reason was very simple, these one of 280 marks was a post-lingual. He had learnt up to grade 5, then he developed complications and became deaf, so at the time he was being brought to special school for the deaf, he had mastered those skills, different from this other one who was born deaf. So according to performance, the post-lingual will perform better than the pre-lingual. (CSO SNE 4)*

From the interview excerpts above, it can be concluded that students with HI who are proficient in SEE perform well in English as compared to KSL. The cases of post-lingual (acquired deafness at a later stage in life), hence having higher proficiency in SEE as a result of the language that they had acquired, they have higher proficiency in SEE which automatically enables them to perform better in English language as compared to KSL. However, once they have been fully integrated into the systems of signing, they perform well in KSL as well.

In document analysis guide, it was noted one of the pre-lingual students had serious difficulties writing correct English sentences and the teacher could barely locate any correct English word to mark. Figure 4.23 shows a section of a test attempted by a pre-lingual learner with HI

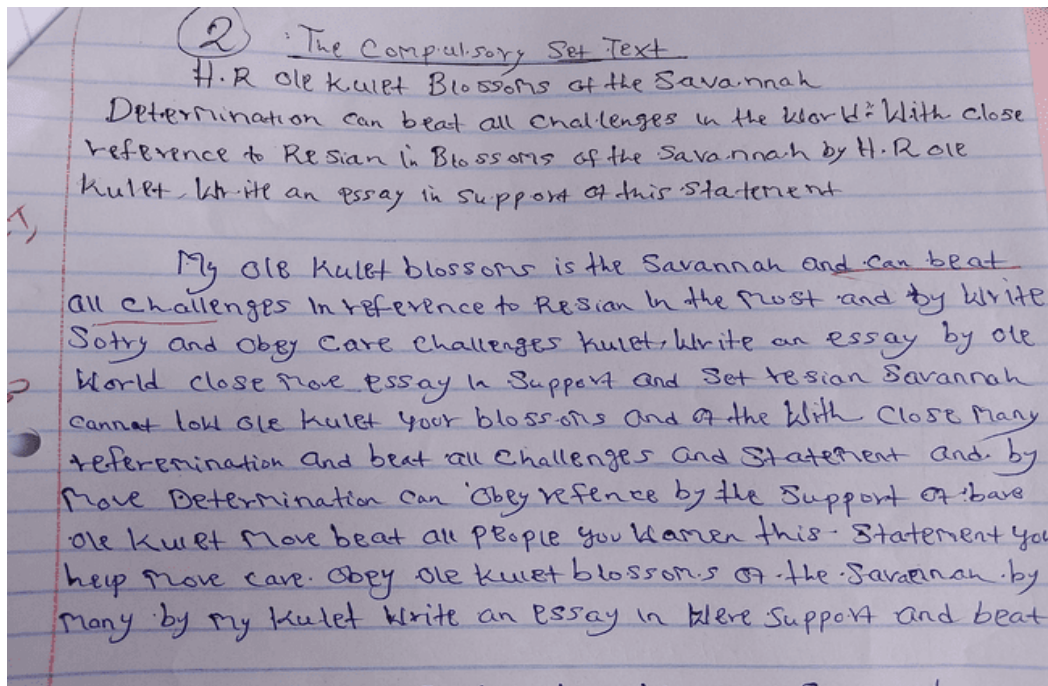


Figure 1. A section of a test on set book attempted by a form three pre-lingual learner with HI

From figures 1, it can be observed that some pre-lingual students with HI cannot write correct English words. They have difficulties constructing sentences. They tend to write KSL structures and words yet they are writing English examinations.

These findings disagree with findings by Niederberger and Prinz (2005) who indicated that linguistic competencies are necessary to support the learning of written language. They further asserted that written language can be developed through a natural sign language, either as an alternative or complement to language skills developed orally.

The present findings disagree with recommendations of UNESCO (2003a) which espouses that mother tongue is a means of improving education quality by building on the knowledge and experiences of the learners and teachers. From the current study, it has been established that students with HI, whose mother tongue is KSL, and they are proficient in KSL, perform below in English despite of them being taught in KSL majorly in primary schools.

These findings also disagree with findings by Marshchark (2007, 2001) who established that deaf children who use signs from infancy are academically, linguistically and socially superior. Marchshark (2001) further affirmed that those children with HI who learn manual signs at early childhood development canters (ECD), show better academic achievement and social adjustment during the school years and superior gains in English literacy. This is in contrast with the findings from the present study which shows that students with HI have low academic achievement despite having high proficiency in KSL and had been using KSL all the way from childhood development canters.

## 5. Summary, Conclusion and Recommendations

### 5.1. Summary of Findings

Proficiency in KSL, SEE and SE by students with HI will depend on a number of factors. One main factor that brings difference in the proficiency is the time of onset of hearing disability. For the student who acquired deafness at birth or before birth, that means before they developed speech (pre-lingual hearing impaired), they are more proficient in KSL than SEE and SE. They tend to be very good in both expressive and receptive skills of KSL as compared to SEE. On the other hand, the students who acquire deafness at later time in their years after they have acquired speech (post-lingual deafness) they tend to struggle with KSL. For SEE they do not have much issues with since they would have developed speech and may have been used to SEE before acquiring deafness. They post-lingual students will therefore be more proficient in SEE as compared to KSL. However, with time, once they have been in the Deaf community for some time, they become equally proficient in KSL. Students with HI who are proficient in SEE perform well in English as compared to KSL. The cases of post-lingual (acquired deafness at a later stage in life), hence having higher proficiency in SEE as a result of the language that they had acquired, they have higher proficiency in SEE which automatically enables them to perform better in English language as compared to KSL.

However, once they have been fully integrated into the systems of signing, they perform well in KSL as well. Learners with HI use words, especially in composition writing and other concepts without understanding their meaning, whether it is making sense or they are just writing for the sake of writing. The complex nature of English also makes it difficult for learners with HI to make constructive use of vocabularies. In essence, the learners with HI find it difficult to construct complex sentences obeying the syntax of English, while at the same time adhering to all the components of a sentence.

### 5.2. Conclusion of the findings

Students with HI are proficient in KSL than SEE. When teachers are teaching in class, majority of the students with HI will understand faster when the teacher uses KSL as compared to SEE. For the student who acquired deafness at birth or before birth, that means before they developed speech (pre-lingual hearing impaired), they are more proficient in KSL than SEE and SE. The post-lingual students will therefore be more proficient in SEE as compared to KSL. Students with HI who are proficient in SEE perform well in English as compared to KSL. The students with HI who are post-lingual are better placed in terms of vocabulary usage as compared to the pre-lingual. KSL knowledge by learners with HI cannot help them pass English. Their KSL knowledge instead lowers their English capability since when they apply the KSL knowledge in English, they fail exams. Students with HI tend to transfer the structure of KSL into English when they are writing English sentences.

Although both KSL and English are languages, they have different syntax (sentence structure). KSL uses English words. The difference comes in where the words are arranged differently. Given the use of words from the same language, having the same teacher to teach same class the two subjects lead to confusion of the learners as well as the teacher themselves.

### 5.3 Recommendation

- The syllabus for students with HI should be modified to suit the needs and interests of the learners. Concepts that are abstract to student with HI like sounds and speech production should be removed from the syllabus for learners with HI.
- Students with HI should be provided with dramatized set books in signs so that they can follow.
- Teachers of English should not teach KSL the same class they are teaching English

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