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CHALLENGES FACED BY THE HEARING IMPAIRED LEARNERS IN COMPOSITION WRITING AND IN ANSWERINGCOMPREHENSION **QUESTIONS IN ENGLISH LANGUAGE LESSONS**

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Abstract:

Hearing impaired learners are exposed to the same curriculum as those without the impairment. This paper is a report of a study on the challenges faced by the Hearing Impaired learners in composition writing and in answering comprehension questions in English language lessons. The study was carried out in selected special schools for the Hearing Impaired in Homa Bay County in Kenya in the year 2012. The study adopted Knowles (1973) theory of learning. The study utilized a descriptive survey design with a mixed methods approach. Head teachers were purposively selected to take part in the study while simple random sampling method and census technique were used to select the teachers and students who took part in the study. A total of 3 head teachers, 8 teachers and 39 learners with Hearing Impaired participated in the study. The study used structured interview guides for the head teachers, questionnaires for the teachers and tests for the pupils for data collection. Descriptive statistics were used in the analysis of quantitative data while qualitative data was analyzed thematically. The research established that the Hearing Impaired faced challenges in composition writing and in answering comprehension questions in English language lessons. The study recommended that teachers should train the learners to develop good handwriting, master correct spellings and acquire adequate vocabulary for effective composition writing. Teachers should assist the Hearing Impaired to develop a reading culture for effective comprehension skills. This study sheds light on some of the challenges encountered by the Hearing Impaired learners during English language lessons which if addressed can facilitate them to achieve to their full educational potential for selfreliance.

Keywords: hearing impaired; English language; composition writing; comprehension

1. Introduction

Hearing Impairment is a general term indicating a disability that may vary in severity from mild to profound (Kirk, 1992). According to the Persons with Disabilities Act (2003), no persons or institutions shall deny admissions to a person with such disability to any course of study by reason of such disability, if the person has the ability to acquire substantial learning in that course. The learning institutions shall therefore take into account the special needs of persons with disabilities with respect to the entry requirements such as pass marks, curriculum, examinations, use of facilities, class schedules, physical education requirements and other similar considerations. However, upon admission into these institutions, learning arrangements seem not to favour the Hearing Impaired in terms of curriculum differentiation.

This study was an investigation of the challenges faced by the Hearing Impaired learners in coping with some aspects of the Primary school curriculum in English lessons and in particular the challenges faced in composition writing and in answering comprehension questions.

2. Statement of the Problem

The Sessional Paper No. 1 of 2005 states that special education is important for human capital development as it prepares those who are most likely to be dependants to become self- reliant. Of importance is the fact that the Hearings Impaired are subjected to the same curriculum that the hearing pupils in regular primary schools follow. This may be unfair because there are some aspects of that syllabus which they cannot cope up with due to their disability or special needs.

Moores (1978) notes that the Hearing Impaired children's language development is more frequently assessed through written language because of their problem with spoken language. Furthermore, sign language has a grammatical structure of its own which does not follow the spoken or written English (Ndurumo, 1993). An example is that the normal English structure follows Subject, Verb and Object (SVO) such as *Tom is going home*. The sign language structure is however completely different as it follows Object, Subject and Verb (OSV) such as *school Tom go*. As a result, when the hearing impaired child's sign language is compared with the spoken language, the learner is penalized because of the differences in language structure which negatively affects the way learners write compositions or answer comprehension questions.

The researcher has confirmed these arguments from his experience in teaching the Hearing Impaired learners for the last twenty four years. The researcher has worked

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with the hearing impaired learners during this period both in class and in co-curricular activities. The performance of the hearing impaired learners is therefore wanting in composition writing and in answering comprehensive questions.

When children are unable to hear the language being spoken, they are also unable to learn its rules until special instruction is provided. The impact of this can be better appreciated when one considers that the children with normal hearing will usually have acquired all the basic structure of that language that is a vocabulary of up to 700 words by the time they are three years (Walter, 2003).

This problem is fundamental because unless the deaf are given a suitable curriculum, they will continue to fail in examinations and this will affect their progress in education in order to develop to their full potential and will not be able to go for further training, get jobs and be self-reliant. The hearing impaired is considered to be among a group of learners referred to as Learning Disabled (LD). LD is a condition in which one or more of the basic psychological processes involved in understanding or using language are deficient. They therefore require special attention or additional instructional support in order to escape the labelling of impaired academic performance which is a major element in most current definitions of LDs (Hallahan, 2002). This study was an investigation of the challenges faced by the Hearing Impaired learners in composition writing and in answering comprehension questions in English language lessons.

3. Purpose of the study

The purpose of the study was to investigate the challenges faced by the Hearing Impaired learners in composition writing and in answering comprehension questions in English language lessons.

4. Research objectives

This study was guided by two research objectives:

- 1. To identify the challenges facing learners with Hearing Impairment in composition writing in English language lessons.
- 2. To identify the challenges faced by the learners with Hearing Impairment in answering comprehension questions during English language lessons.

5. Theoretical framework

This study was guided by Knowles's Theory of learning. According to Knowles (1973) emphasises that learners should be shown why something is important to learn. This

theory explains that learners should be shown how to direct themselves through information. The theory contends that teachers should relate the topics to learners' experiences in order to maximise content delivery and performance.

The theoretical framework of the study depicts that teaching should be child centred and related to the learner's environment. This will motivate the learners to overcome the challenges they face in selected aspects of the school curriculum. The curriculum planners are equally expected to develop content that is conducive to learners with special needs so that they can succeed like others through cognition. The hearing impaired learners however lack the ability to use their cognitive ability to relate to their experiences thus resulting into difficulties in composition writing and in answering comprehension questions. The challenges they face in coping with these aspects of the school curriculum are also compounded by other factors such as lack of speech and language development and ineffective use of hearing aids. This theory guided the researcher in investigating the challenges faced by the Hearing Impaired learners in composition writing and in answering comprehension questions in English language lessons.

6. Literature review

6.1 Hearing impairment: Some basic information

The term hearing impaired is used to describe individuals who have hearing defects ranging from a very slight loss to a total loss of hearing. Hearing impairment affects a large percentage of the population and is indeed probably the single most prevalent chronic physical disability. Hearing could be impaired as a result of many different factors including heredity, disease and accident. When deaf people have difficulty communicating with hearing people they often write notes to them. Some deaf people are able to speech read, and understand the lip movements and facial expressions of a hearing person and comprehend what is said (Project IDEAL, 2013). This is a very difficult form of communication and when used in the learning process, it is slow and tedious and can hardly be used effectively to cover the syllabus. This state can affect the learners in composition writing and in answering comprehension questions in language lessons.

Ndurumo (1993) states that hearing impairment affects developmental areas in children such as: language, speech, intelligence, educational achievement and psychological development. The needs of the hearing impaired should therefore be considered when preparing a curriculum. Ndurumo adds that one of the major difficulties the Hearing Impaired children experienced was language development. 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 1.

Table 1: 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	With H.I	62	46	34	30
	Without H.I	97	95	89	71

From Table 1 it's clear that the learners with Hearing Impaired lag behind in their ability to understand printed words compared to their counterparts without hearing impairments. This negatively affects them in composition writing and in answering comprehension questions.

When children are unable to hear the language being spoken, they are also unable to learn its rules until special instruction is provided. The impact of this can be better be appreciated when one considers that the children with normal 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 Special Education Guide (2013-2016), the most important difference between the hearing and the hearing impaired is that the hearing children acquire language by hearing it and then producing it. The Hearing Impaired children 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 may be a cause of difficulty in composition writing and answering comprehension questions.

Most hearing impaired learners also have limited speech and reading skills. In educational setting, when detailed information must be understood, deaf people will often enlist the aid of a certified sign language interpreter who translates the spoken information to sign language and then vocalise in English what the hearing impaired person wishes to say.

Problems in the use of the English language typically persist throughout a deaf person's life which is a great challenge in his or her education. Those who lose their hearing in infancy or at birth usually do not benefit from language stimulation from their parents and siblings during the early period when language is acquired. However,

by learning sign language, deaf children can acquire the language base which assists in the acquisition of English as a second language. People who lose their hearing after acquiring English language skills have less academic handicap than those with mild hearing loss (Edward & William, 1981).

6.2 Implications of hearing impairment in communication and language development

Language is the process and means through which learning takes place. Deaf children have difficulties in oral skills hence they may not acquire enough receptive and expressive language which is needed in reading for comprehension and for writing compositions. The development of reading and writing depend upon the satisfactory language foundation and is facilitated by a reasonable speech vocabulary.

When learning to speak, a hearing child follows a series of stages such as gurgling and swallowing sounds into babbling. He/she experiments with his voice as he babbles, hears himself/herself and sometimes repeats the sound over and over again. He/she later repeats other peoples' sound by imitation of his own babbling sounds and the sounds his parents make. He/she then connects the sounds as he/she learns to talk (Otiato, Kithure & Osong 2007). However the hearing impaired child cannot hear his own babbling and it soon stops. He doesn't hear sounds and words from his own parents and hence neither imitates them nor attaches any meaning to them. He/she doesn't learn to speak by ordinary channels and has to use other routes which are tedious, if he/she is to learn to speak.

However, it has been found that a totally deaf child can learn to speak if properly taught by skilled parents and teachers through vibrations, sense of touch, visual aids, kinaesthetic and proprioceptive cues, and the use of residual hearing through a hearing aid, are all part of the process as he learns to speak. This process is slow and laborious and may not develop good speech for learning and hence may be a challenge for the hearing impaired in coping with some aspects of the school curriculum.

In a study by Cooper (1988) found out that deaf children also apply general rules to words, but not to the same extent as hearing children. Brown and Bellugi (1990) gives three processes by which children develop language (i) by imitation (ii) by expansion in which the parent repeats what the child says (iii) by induction in which the child constructs language he has not heard. The performance by the deaf in school subjects and examinations is in most cases is affected by lack of well-developed language for reading, communication and concept formation.

The hearing impaired child's ability to develop speech and language has been compounded by their articulation disorders. Articulation disorders include substitutions, omissions, distortions and additions of one letter sound or phonemes with another thus affecting their reading, spelling and writing abilities (Kirk, 1992).

Kirk, (1992:82) states that articulation disorders may be caused by inability to effectively use their tongue, lips, teeth, palates, and jaws to modify the flow of air sound from the larynx by changing their positions and contacts in order to make intelligible speech sounds. This may cause difficulty in writing compositions because learners tend to write the way they articulate the words.

6.3 Challenges facing the deaf in composition writing during English lessons

Writing is an advanced language skill that requires the learner to communicate ideas effectively and has wide ranging implications for the way we think and learn. It is an expressive language skill that requires a high degree of organization (Vikiru, 2007). It also encourages and trains the learner to think critically and to be organized, logical and creative in his thinking as she/he responds to situations. Learners need help to acquire skills that enable them to express their ideas clearly and effectively in writing (KIE, 2006)

According to Vikiru, (2007) composition is a continuous piece of writing following a logical sequence and made up of different points that are organized together in a certain order. Composition writing involves putting ideas or pieces of information together for others to read. Good composition writing therefore entails good handwriting, correct spelling, sentence building skills, paragraphing and punctuation marks. However, most learners especially those with special needs such as the hearing impaired face problems in grasping the above skills in order to enhance their composition writing skills. They also have difficulties such as wrong shaping of letters, size of letters, spacing of letters and words, mixing capital and small letters.

Spelling is critical in good composition writing. It refers to the formation of words with letters in the correct order. Learners need to pay closer attention to spelling since incorrect spelling hinders effective communication and sometimes may change the meaning of the text which is detrimental particularly in examinations. The hearing impaired have problems in composition writing because they are not fluent in reading, have limited vocabulary, cannot read extensively to help them remember spelling of words and at times tended to use Sign Language structures in composition writing. Relevance and choice of vocabulary is equally critical. It is important to choose a wide range of appropriate vocabulary that allows a student to imaginatively communicate his/her ideas by using appropriate expressions and spelling words correctly is imperative in order to write a good composition (Mungai, et al 2006).

In order to be successful in any academic discipline, the ability to write well is essential as it enhances acquisition of knowledge and is a cornerstone in academic success. It influences our chances of success, personal development and our relations with other people. The hearing impaired however faced difficulties in composition writing mainly because the Sign language structure is different from the English

language structure. Their composition therefore appear haphazard and disorganized when compared to the hearing pupils. This makes them be penalized for writing poor compositions without taking into account their special needs and since good writing is necessary for academic success, they cannot do well due to their inability to write well.

The teacher of the deaf should therefore design tasks that will lead to gradual development of the learner's writing ability putting into account their special needs. It is important to make the activities in teaching composition writing be interesting and manageable tasks so as not de-motivate the learner.

6.4 Challenges facing by the Hearing Impaired Learners in answering comprehension questions in English lessons

According to Vikiru (2007), comprehension questions tests a student's ability to read and understand information. The comprehension questions are therefore designed in such a way as to elicit answers either out of memory or through inference. The questions should be able to test the ability of the learner to infer the meanings of the words used in a particular way and not to take the literal meanings of the words as used in the passage.

To overcome the challenges in answering comprehension questions, some grammatical aspects will be examined based on the passage or piece of literary work that the learner has read. The ability of the learner to make notes and to summarise what has been read is equally important. It is therefore imperative that to answer comprehension questions correctly, the learner needs to have built an adequate vocabulary, to have a good grasp of literature and oral literature aspects and a good knowledge of the grammar of the English language (KIE, 2006). In addition, a learner must be able to read well in order to answer comprehension questions. This is because reading enhances retrieval of information from different types of printed media.

It is however unfortunate that the hearing impaired learner lacks the potential and knowledge to use the required skills in order to effectively answer comprehension questions. They are equally unable to use the skills needed when answering comprehension questions due to their lack of adequate vocabulary, reading fluency, speech and language development.

To tackle comprehension questions effectively, the learners need to apply the following skills which the hearing impaired learners do not have (Gathumbi & Mugambi, 2008): Read with understanding, identify facts, respond to questions correctly in English as regards spelling, punctuation and sentence structure, infer meanings of words from their text, evaluate what is read and give opinion or judgement, apply learnt knowledge, synthesize information and make conclusion from what is read, analyse information and apply gained knowledge in other situations.

Further, most hearing learners use the following methods which the hearing impaired finds difficult to use or grasp in handling comprehension passages: read (skim) through the passage once, in order to give the learner the gist or an overview of the passage, noting down what the subject matter of the passage is, read the questions set on the passage then read the passage a second time bearing in mind the subject matter and the questions asked, read all the questions again before you start answering them, start answering the questions methodologically without lingering too long on any one question and if one question is difficult move to the next one. The hearing impaired however faces challenges in understanding and applying the skills to answer comprehension questions. They often find it difficult to differentiate a simple question from a difficult one thus taking a lot of time in attempting a question.

Scores of studies have asserted that deficiencies in basic language are the sources of low comprehension among deaf readers, suggesting need to eliminate these gaps in knowledge (La Sasso & Davey, 1987; Quigley, 2000; Strassman, Kretschmer & Bilskey, 1987). Other research with deaf readers presents evidence that is consistent with low automaticity as an explanation for low comprehension. But the cognitive processes of working memory are normally covert, when breakdown in reading comprehension occur, the source of the problem remains hidden, obscuring whether it stems from limited capacity for storing information, low automaticity processing information, or some other source.

7. Research design and methodology

The study adapted descriptive survey design with a mixed methods approach. This design was preferred since it involved collecting of information by interviewing, administering of questionnaire or tests to a sample of respondents or individuals selected from known research population (Orodho, 2003). Head teachers were purposively selected to take part in the study while simple random sampling method and census technique were used to select the teachers and students who took part in the study. The study was conducted in three schools for the Hearing Impaired in Homa Bay County in Kenya in the year 2012. A total of 3 head teachers, 8 teachers and 39 learners with Hearing Impaired participated in the study. The study used structured interview guides for the head teachers, questionnaires for the teachers and tests for the pupils for data collection. The instruments were tested for validity and reliability. Descriptive statistics were used in the analysis of quantitative data while qualitative data was analyzed thematically.

8. Findings

The first research objective was to identify the challenges facing learners with Hearing Impairment in composition writing in English language lessons. From the findings, the major difficulty the learners with Hearing Impairment faced in composition writing was inadequate vocabulary as mentioned by majority of the teachers. This was also noted in the students performance in the tests given. Composition writing was about how much vocabulary a student had acquired so that he/she organized facts and through critical thinking about the topic to write on. Without enough vocabulary it was difficult to write a composition as required hence their difficulty. The deaf also tended to use Kenya Sign Language Structures instead of the English Language structures when writing compositions. Other challenges included inability to read fluently, poor spellings, omissions, reversals and substitutions of words.

The second research objective was to identify the challenges faced by the learners with Hearing Impairment in answering comprehension questions during English language lessons. From this objective, the study established that the Hearing impaired faced challenges in relation to poor comprehension skills, poor memory skills, inability to read fluently, inadequate vocabulary and poor inference skills.

In Table 2 the results showed that both standards 7 and 8 pupils had difficulties in answering comprehension questions. Only two pupils, one from school B and C for the Deaf scored above average in the test given. The rest of the learners scored below average.

Table 2: The scores recorded in answering comprehension questions by the learners with Hearing Impaired

School	Class	Score out of 50	No. of pupils
School A	7	17	1
	8	21	1
School B	7	29	1
	8	21	1
School C	7	29	1
	8	17	1
Total	6		6

9. Conclusions

The first research objective was to identify the challenges facing learners with Hearing Impairment in composition writing in English language lessons. The study concluded that the Hearing Impaired faced various challenges in composition writing in relation to inadequate vocabulary, lack of organization and creative skills, poor spellings, poor

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handwriting, use of sign language structures instead of English language structures, inability to read fluently and generally poor reading skills.

The second research objective was to identify the challenges faced by the learners with Hearing Impairment in answering comprehension questions during English language lessons. From this objective, the study concluded that the Hearing impaired faced challenges in relation to poor comprehension skills, poor memory skills, inability to read fluently, inadequate vocabulary and poor inference skills.

10. Recommendations

The study recommended the following:

- To alleviate the problems faced by the Hearing Impaired in composition writing, the teachers should assist the learners to develop legible handwriting, correct spellings; adequate vocabulary; organisational and creative ability skills; and the need to differentiate Kenyan Sign Language structures and English Language structures so as to avoid confusion in composition writing.
- To alleviate the problems faced by the Hearing Impaired in answering comprehension questions, the study recommended that there is need for teachers to assist the Hearing Impaired learners to develop a reading culture that would expand their vocabulary and enhance fluent reading; assist learners in developing inference skills and memory skills. This would enable the Hearing Impaired learners to overcome their inability to read.

References

- 1. Brown, R. and Bellugi, U. (1990). Second Language acquisition and Second Language learning. Harvard Educational Review 34, 133-151.
- 2. Cooper, R. L. (1988). The development of morphological habits in deaf children. In Roseinstein, J. & Macginitie, W. H. (Eds). *Research studies on psycholinguistic behaviour of deaf children*, pg 3-11. Research monograph series B, No. B02, Arlington Virginia Council for Exceptional Children. Edward, B. A. & William, B. H. (1981). *Introduction to Special Education*. Canada: Little Brown and Co.
- 3. Gathumbi, W. A. & Mugambi, H. (2008). *Access KCSE Revision Series English with answers*. Nairobi: Jomo Kenyatta Foundation.
- 4. Kenya Institute of Education (KIE) (2002). *Integrated English secondary education syllabus*. Vol. 1. Nairobi: KIE.
- 5. Kenya Institute of Education (KIE) (2006). *The role of curriculum in fostering national education*. Vol 1. Nairobi: KIE.

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- 6. Kenya Institute of Education (KIE) (2003). *Secondary Education Syllabus*. Vol 1, Nairobi: Jomo Kenyatta Foundation
- 7. Kirk, S. A. (1992). *Educating Exception Children* (2nd Ed.). Boston: Houghton Millan Co.
- 8. Knowles, M. S. (1973). *The adult learners: A neglected species*. Houston: Gulf Publishing co.
- 9. La Sasso, C. & Davey, B. (1987). The relationship between lexical knowledge and reading comprehension for prelingually profoundly Hearing Impaired students. Volta Review, 89(4), 211-220
- 10. Ministry of Education, Science & Technology (MOEST) (2005). Sessional Paper No. 1 of 2005: A policy framework for education, training and research in Kenya in the 21st Century. Nairobi: Government printers.
- 11. Moores, D. F. (1980). Application of 'close' procedure for the Assessment of psycholinguistic Abilities of the Deaf.
- 12. Mungai, J. et al (2006). *Peak Revision KCSE*. East Africa Educational Centre Nairobi: Kenya.
- 13. The National Council for Disability (2003). *Persons with Disabilities Act.* Nairobi: Government Printer.
- 14. Ndurumo, M. M. (1993). Exceptional Children's Developmental Consequences and Intervention. Nairobi: Longman Kenya Ltd.
- 15. Otiato, C. O. (2007). *Module 16, Teaching and learning strategies for learners with special needs.* Nairobi: KISE.
- 16. Quigley, S. (1969). The Influence of finger spelling on the Development of Language achievement of Deaf Children.
- 17. Project IDEAL (2013). *Hearing impairments*. Texas Council for Developmental Disabilities. Retrieved on 3rd March 2015 on http://www.projectidealonline.org
- 18. Special Education Guide (2013-2016). *Hearing impairments*. Retrieved on 5th March 2015 on http://www.specialeducationguide.com
- 19. Strassman, B., Kretschmer, R., & Bilsky, L. (1987). The instantiation of general terms by deaf adolescents/adults. Journal of communication Disorders, 20 (1), 1-13.
- 20. Vikiru, L. (2007). *Gateway to Secondary Revision English*. Nairobi: Longman Publishers.
- 21. Walter, G. G. (2003). *Lexical abilities to hearing and hearing impaired children*. American annals of the deaf 123, 976-982.

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