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Educational resources used in teaching learners with hearing impairment in mumias primary school for the deaf, Kakamega County, Kenya

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Abstract
Kiswahili is rated among major languages of the world today. It is broadcast widely in the media and taught by many Universities. The language has continued to receive appraisal both locally and globally. This paper examines the educational resources used in teaching and learning Kiswahili among the hearing impaired learners. The study was carried out at the Mumias School for the Deaf in Kakamega County, Kenya. The school was purposively selected because all the pupils in the school had hearing impairment. A sample size of six teachers and thirty-two pupils was involved in the study. The study was guided by the behaviourist theory of language acquisition which emphasizes language learning through Stimulus-Response-Reward (S-R-R) chains. It employed qualitative approach as a major research methodology and was carried out in the form of a case study. Quantitative analysis was used to compare KCPE results between Kiswahili and other subjects in the school. The instruments used for data collection were: non-participant observation guide, three interview guides for the head teacher, Kiswahili teachers and learners with HI, document analysis and data sheets. Raw data collected was categorized into themes and data presentation was done using frequency distribution tables, pie charts, histograms line graph and descriptive passages. Interpretation of the study findings was done in the light of the tenets of the study guiding theory of Stimulus-Response-Rewards (S-R-R). It was observed that the school had adequate visual aids for Kiswahili such as charts, flash cards, posters, drawings, pictures, object labels and others on display. Nonetheless, these visuals were hardly used during the lessons. In addition, it was observed that there were very few assistive technologies available at the school. At the time the research was conducted, there were only two cassette players that were used by teachers to carry out speech training, no group hearing aids were available, and the few individual hearing aids available were not fully utilized. It was recommended that teachers need to fully utilize the resources available in order to enhance pupils' learning capabilities as well as improve their expressive skills. These are imperative in comprehension and communication using Kiswahili language.

Keywords: educational resources, teaching learners, hearing impairment, mumias primary school, deaf, kakamega county, Kenya

Introduction
Educational resources, otherwise referred to as teaching/learning aids (Kithure, 2002) [6], are a vital element in the learning process for the children with hearing impairment. They can be categorized into visual aids and assistive technology. Use of visual aids is most helpful since vision is the students' primary means of receiving information (Solit, Taylor & Bednarczyk, 1992).

These compensate for the hearing loss as they employ multi-sensory modalities in concept presentation. Concrete objects relevant to the content and sensitive to learners' special needs create and sustain interest in the lesson. Besides these, textbooks are among the most useful devices (Bamgbose, 2004). Visual aids should be placed at strategic positions in the classroom for learners' clear viewing and manipulation. Class displays should be done in an orderly manner in subject corners for ease of reference and enrichment of the learning environment. Replacement of the displays should be done regularly in accordance to subject content. Continuous use of visual aids culminates into over-learning, a very important learning strategy when dealing with the deaf.

Assistive technology is any item, piece of equipment or product system that is used to increase, maintain or improve functional capabilities of individuals with disabilities (Scherer, 2002) [9]. It can be acquired commercially off the shelf, modified or customized. When used by a person without a disability it makes an activity easier but for a person with a disability, it makes that same activity possible. According to this author, devices are available for a range of disabilities, activities, prices and technology level. A variety of these devices are available in the market for use in the classroom situation by learners with hearing impairment (HI).

Personal Frequency Modulation System
This system transmits sound to hearing aids through direct audio input or a looped cord won around the neck. It enables the student to hear the teacher no matter the distance. The microphone of the hearing aid can be turned off to enable the student focus only on the teacher.

Loop Induction System
The loop system wire can be permanently installed and connected to a microphone used by a speaker. A person talking into the microphone creates a current into the wire which makes an electromagnetic field in the room. When a hearing aid is switched to the telephone setting, it picks up the electromagnetic signal whose volume can be adjusted according to the user's need.

Infrared System
Infrared technology allows computing devices to communicate via short range wireless signals. Adapters are

installed in many computers and hand-held personal devices such as cameras, telephone or portable media player. The device transmits the television signal to the receiver which can be adjusted to the desired volume. It could be located in areas where picture or video capture is prohibited so as to generate signals with encoded data, for the child with HI to access.

Closed Circuit Television

This is the use of a video camera to transmit a signal to a specific place. It enables a deaf child to still watch a film that is being shown to the class. The video camera is set to capture the image of the reading material and display it on a monitor, for the child to read.

Electronic Communication Device

Kelker (1997) [3] proposes this device for students who are unable to correctly talk due to hearing impairment or other causes. The device has small pictures representing different words. If a student is in need of something, they push a button representing their own selves, by name and push another button representing what they need. A robotic voice will then state the student's name and the item required. This is extremely helpful for these students. It allows them to be able to communicate in a way they would normally not be able to.

Currently, other technological advances in services and opportunities are availed to people with hearing impairment. Digital hearing aids are the newest aids that can be programmed by computer and customized to match the individual hearing loss and characteristics of the environment. Cheng and Neparko (2000) advocate for cochlear implants that are surgically inserted in quite a small number of profoundly deaf children, with sensory-neural hearing loss. These assist children in speech perception, production and intelligibility. Besides, telecommunication devices have made communication over a standard telephone line possible (Smith & Tyler, 2010). These telephones have small screens that display the message of the sender. Captioning, paralleled with verbal content of television programs make it easier for deaf persons to access broadcasts on television (Bynton, Gannon & Bergey, 2007). In addition, large television sets have been caption chip equipped, allowing viewers to select captioning of available programs. Technology instruction allows visual representation of course content. Computers, curricular support, access to content, research, resources and others have shown promise of becoming an integral part of classroom instruction (Lang, 1996) [7]. Internet sites for users with hearing impairment are also proliferating.

Barchiers (1994) categorizes educational resources into print display and audio-visual equipment. Audio-visual equipment includes record players, cassette players or recorders, earphones overhead projectors, film strips, television sets and computers among others. Loughlin and Martin (1987) [8] outline three kinds of print display which include readable display, appreciative display and visitors display. Readable display is in the form of symbols and print that are easy to read such as labels and charts among others. Appreciative display includes collection of materials and writings such as posters or charts. Visitors display offers useful information about the class schedule to parents and other guests while enriching the learning environment.

The Kenya Institute of Education (KIE) (2004) recommends some print resources to be used in teaching language to learners with HI. These include: maps, word/syllable cards, sentence cards, charts, drawings, pictures, journals, dailies and directories among others. Resource persons such as sign language interpreters to work with video tapes and cassettes or to facilitate educational visits in computer labs are also recommended. The language teacher should carefully select educational resources to suit the content at hand and the learners' needs in order to facilitate meaningful learning.

Statement of the Problem

From the review of past studies, it is clear that Kiswahili has increasingly become prominent due to its demand and use not only as a national and international language but also as a medium of instruction in lower primary and as a compulsory examinable subject (Shiundu & Omulando, 1992) [10]. Since the existing curriculum does not give special preference to children with hearing impairment, it poses many challenges to the teaching/learning of the subject. As such, the study focused on challenges to learning of Kiswahili among children with hearing impairment as was necessitated by the fact that performance in Kiswahili had remained dismal (Kilei, 2003) [5]. This paper examines the educational resources used to aid teaching and learning for learners with hearing impairment in Mumias School for learners with HI.

Materials and Methods

The study was carried out in Mumias School for learners with HI in Kakamega County in western Kenya. This is one of the oldest schools for learners with HI. The school is representative of a homogeneous target population existing as an integral part of the school community. The learners have to face a number of challenges as they contend with the regular school curriculum put in place for all learners. Mumias School for the Deaf is a public mixed boarding primary school. It is also known as St. Martin DE Porres. The school is situated in Mumias Nabongo location in Kakamega County. It was founded by Ursuline Sisters from Holland, way back in 1961, with an enrolment of five pupils only. The figure remained static until in eighties when it started posting a commendable rise.

Mumias was the first school to offer education to learners with hearing impairment locally. Today, it is an international school, admitting pupils from the entire nation of Kenya as well as the neighbour countries such as Uganda, Burundi and Sudan among others. The school follows the 8-4-4 school curriculum marked by the national KCPE examination. At inception, Luhyia language was used as a medium of instruction. The rationale was to integrate children back to the hearing community. Later, with the extension of the catchment area to include pupils from other parts of the country, this tradition was relinquished. Presently, Kenyan Sign Language is used to accommodate learners in the school.

Mumias Primary School for the HI is divided into four sections: the pre-school admits children aged between four and six years. The primary section comprises classes one to eight. The third section is that of children with multiple handicaps, mainly hearing impairment and mental challenges. The vocational unit admits big girls that have academic challenges. They are introduced to skills like dress making, knitting, handicraft, gardening and cookery among others as they await placement at St Angela vocational institute, just adjacent.

The study adopted a qualitative approach, to explore in detail teaching and learning of Kiswahili among children with hearing impairment. In the study the conditions requisite for excellence were independent variables. These were the vehicles through which effectiveness in learning of and academic performance in Kiswahili was gauged. Learning of Kiswahili was the dependent variable.

Mumias School has a teaching staff of thirty-six members: twenty-five females and eleven males. Thirty-five among them are employees of the Teachers' Service Commission and one male is a Peace Corp from the USA. Majority of the teachers have taught in the school for many years. The target population in the study comprised a total of four hundred and two pupils enrolled in Mumias Primary School for children with HI. Out of these, two hundred and twenty-one were boys and one hundred and eighty-one were girls. The results would be generalized to the learners in thirty-four primary schools for learners with HI across Kenya due to the homogeneity of their characteristics.

In the study, purposive sampling was used to select the school, the head teacher, Kiswahili teachers and pupils for focus interview groups and observation classes. Focus interview groups were purposively selected by gender and academic performance in Kiswahili. The sample size for the study comprised one head teacher, five Kiswahili teachers and thirty-two learners with HI in Mumias Primary School for the deaf. There were four focus groups for discussion selected as follows: by gender, eight boys, eight girls, and by academic performance, eight high performers and eight low performers in Kiswahili, bringing the total sample size to thirty-eight (six teachers and thirty-two pupils).

Data collection adopted three methods: observation, interview guide and document analysis. Triangulation of six instruments was employed to increase chances of depth and accuracy of data. Raw data collected was categorized, ordered, coded and then tabulated. This was done according to themes from which objectives were generated as follows: analysing academic performance, teaching/learning methods, conditions requisite for excellence and educational resources. Qualitative data collected using observation guides was categorized under the last three themes indicated above.

Data gathered from the head teacher's interview guide was categorized under conditions requisite for excellence in Kiswahili and educational resources. Specific sub-themes under this theme were the learning environment, learning experiences, evaluation modes, attitude and reinforcement. Data gathered from teachers' interviews was categorized under: teaching and learning methods, educational resources and conditions requisite for excellence whereas data from the focus groups discussion was categorized under all the four themes. From the document analysis, data gathered was categorized under analysing academic performance of Kiswahili by learners with HI. Quantitative data gathered from data sheets was categorized under the first objective: academic performance of Kiswahili by learners with HI. It was later analysed using a measure of central tendency-the mean score.

After categorization of the raw data, analysis was done in descriptive nature. Data interpretation was done in light of objectives of the study and on the basis of the three tenets of the guiding theory of the study: Stimulus-Response-Reward. The findings of the study were presented descriptively through narrative passages as well as in frequency distribution tables, pie charts and histograms.

In the study, ANOVA was run to statistically assess whether the observation that Kiswahili was poorly performed compared to other subjects in KCPE was indeed a pattern or just a phenomenon that occurred by chance. Since ANOVA showed that the means between the KCPE subjects were indeed statistically significant with Kiswahili having a lower mean than the other subjects, it was concluded that Kiswahili more than any other subject was indeed poorly performed amongst learners who are hearing impaired.

Results and Discussion

The main resources vital in the enhancement of learning in learners with HI are: visual aids, assistive technology, and human resources.

Visual Aids

For learners with HI, visual aids are the main means of receiving information as they compensate for hearing loss. However, as presented in Table 1 and Figure 1 below, there are very few visual aids in the classroom and they are hardly used to enhance learning.

Table 1: Educational Resources Available in the Classroom

Classroom Visual Aids	Charts & Maps	Posters	Drawings	Flash cards	Pictures	Journals and Textbooks	Daily Newspapers	Object labels
# on Display	7	2	8	25	9	15	1	5
# used in lesson	1	1	0	5	0	5	0	1
% used in lesson	14%	50%	0%	20%	0%	33%	0%	33%

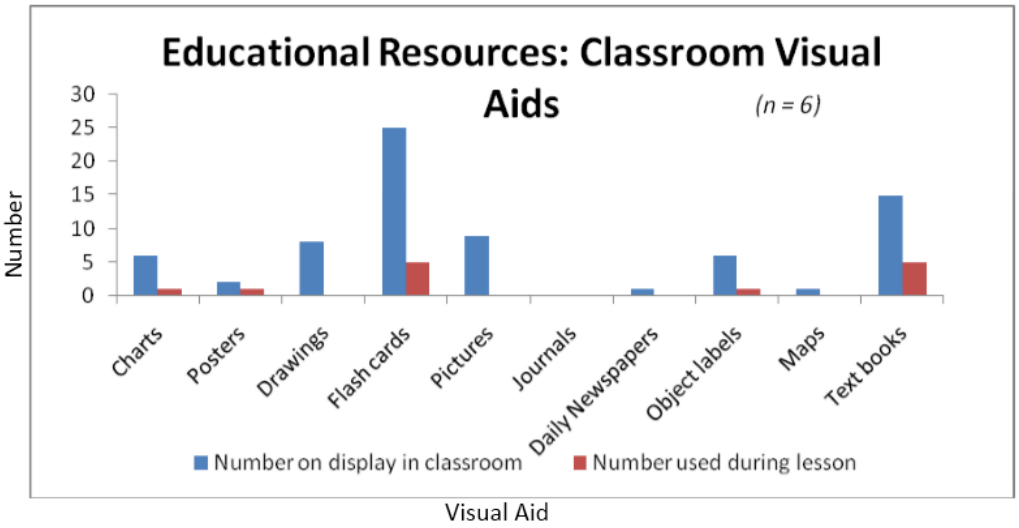

Fig 1: An analysis of the educational resources available in the classroom

Visual aids are deemed important because of the following reasons:

i) They function as educational tools for effective learning
ii) They convey what a piece of text or classroom text cannot fully convey
iii) They enhance learner's retention of what is learnt in the classroom
iv) They help pupils to use their visual capacity and stimulate thinking hence enhancing their expressive communication skills
v) They help break the monotonous cycle in classroom settings thus getting pupils more interested in learning Kiswahili.

However, the research established that, in fact, the visual aids available in the classrooms at this school are used less than 50% of the time. The study concluded that the learning environment is consequently not optimized, hence the poor performance in Kiswahili.

Assistive Technology

For pupils with HI, assistive technologies such as hearing aids and digital recorders make activities in the classroom possible. However, in this school there were very few of these technologies (see Tables 2 and 3) and even when available, pupils are hesitant to use them because they complain of irritation and discomfort. Consequently, learning activities would be effective if these technologies were available and put into use.

Table 2: Assistive Technology and Other Resources

School Resources	Number available	Number in working condition
Cassette Players	2	2
Computers	None	None
Television Sets	None	None

Table 3: Other Classroom Resources

Sounds Amplifications	Response
Group hearing aids	None
Individual hearing aids	5
Digital hearing aids	None
Cochlear implants	None
Reference materials	Not adequate
Sound amplification	Adequate
Supplementary reading materials	Not adequate

Human Resources

One of the important measures of quality in teaching is the amount of one-on-one attention that is provided to each learner. This is determined by the teacher to learner ratio. A small teacher to learner ratio ensures that teaching is individualised to suit each learner's needs. The KIE recommends a teacher to learner ratio of 1:12 as the maximum ratio to allow effective teaching of HI learners. This study established the ratio of KSL-competent teachers to learner ratio at 1:20, meaning that the teachers were over-loaded and could not provide the one-on-one attention that was needed in order to ensure that each pupil was learning as they best could (see Table 4). In addition, teachers adopted a teaching style that was applicable to the learning styles of majority of the learners hence any learners with a different learning style could not learn optimally thus slowing the learning process for them.

Table 4: Resource Persons for Schools for Hearing Impaired Children

School Resource Persons	Number available	Total number of pupils in school
Teachers competent in KSL	20	402
Group Actors	5	402
Teachers competent in speech training	20	402
KSL – competent teachers to pupils ratio	1:20	

Lastly, there were only five group actors available to the whole school. As such, the group actors were also overwhelmed while directing group activities such as drama and coaching for large groups. It was clear that the number of resource persons available to the school was not enough to individualize the learning experiences of the pupils at the school, a factor that contributed to the learners' poor performance in Kiswahili.

Conclusion and Recommendations

It was observed that the school had adequate visual aids for Kiswahili such as charts, flash cards, posters, drawings, pictures, object labels and others on display. Nonetheless, these visuals were hardly used during the lessons. Text books for Kiswahili, which are among the most useful learning devices, were not adequate in number and were not used optimally. Visual aids are helpful since vision is the pupils' primary means of receiving information. Visuals provide memory links and thus learners' recall mechanism is boosted. When visuals aids are not fully utilized in the learning process, learner's memory is not enhanced. This reduces their retention of material learnt, thereby contributing to the learners' poor performance.

In addition, it was observed that there were very few assistive technologies available at the school. At the time the research was conducted, there were only two cassette players that were used by teachers to carry out speech training, no group hearing aids were available, and the few individual hearing aids available were not fully utilized. In addition, only twenty teachers out of thirty-six were competent in speech training as well as in KSL. Subsequently, the researcher concluded that the educational resources available in the school were not enough to cater to the needs of the entire school. Teachers need to fully utilize the resources available in order to enhance pupils' learning capabilities as well as improve their expressive skills. These are imperative in comprehension and communication using Kiswahili language.

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