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COMPUTER ASSISTED LEARNING ON LANGUAGE WRITING SKILLS AMONG LEARNERS WITH HEARING IMPAIRMENTS IN KIAMBU COUNTY, KENYA

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Abstract:
The paper presents some of the key findings of a study that explored computer assisted learning on language writing skills among learners with hearing impairments in Kiambu County, Kenya. The study adopted a quasi-experimental research design consisting of 19 respondents who were learners with hearing impairments. These were from two learners were purposively sampled. The study adopted the cognitive theory of multimedia learning by Mayer. Data was collected using pre-test and post-test and a computer application 'English Grammar Test'. The research data was analyzed using SPSS version 22 and primary data analyzed per objective. The findings on computer assisted learning on language writing skills among learners with hearing impairments were reported. The study findings showed that the learners' language writing skills improved greatly at the posttest affirming the effectiveness of computer assisted learning.

Keywords: computer assisted learning, language writing skills, learners with hearing impairments

1. Introduction

United Nations Educational, Scientific and Cultural Organization ascertains that education is for all is a right and accessibility of it should be matched with its quality

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(UNESCO, 2016). Ministry of Education in Kenya states that there are four English language skills which include listening, speaking, reading, and writing (MoE, 2020). Writing is the structure of written symbols, expressing the sounds, syllables, or words of the language, using a number of mechanisms such as the use of capital letters, spelling, punctuation, word form, and function (Wengelin & Arfé, 2017). Alghammas (2020) states that learners should develop the art of good writing which is important for them to outdo in both academic and professional levels. All learners are required to have good writing skills so as to be employable and as a part of educational requirements.

Computer assisted learning is categorized as learning through computers. Computer assisted learning is used as a form of presenting information, testing, evaluating, and providing feedback using computers. It nurtures creativity and problem-solving skills leading to independence among the learners (Şeker & Kartal, 2017).

Some learners with hearing find it hard to learn the art of writing. According to Ching, Dillon, Leigh & Cupples (2018), learners with hearing impairments have shown more difficulties in developing writing skills. Due to their auditory limitation, learners with hearing impairments find difficulties in accessing and learning English syntax and morphology, and thus problems are revealed by the many errors in the sentences. In addition, educators of these learners choose to embrace approaches limited to writing at the sentence level, learners with hearing impairments write work albeit correctly, may disinterest the reader, and lack cohesion and informativity (Dostal & Wolbers, 2016).

In Kenya, learners with hearing impairments do not excel academically despite many curriculum adaptations in place. This is in contrast with hearing learners of the same age and academic level. This is manifested in nearly all the subjects examined by Kenya National Examination Council (Adoyo, 2019). From the various studies, computer assisted learning has been tested and proven effective in improving English language skills and other subjects among hearing learners. This brings about the question; what can be done to improve the writing skills of learners with hearing impairments in Kenya? This created a need for this research to explore the effectiveness of computer assisted learning on the language writing skills of learners with hearing impairments.

2. Literature Review

The majority of Kenyan students with hearing impairments appear to exit school without having achieved the necessary literacy levels for a smooth transition to life after school (Adoyo, 2019). Adoyo goes on to add that Kenya started teaching pupils with hearing impairments decades ago and has not made the expected progress in this area. According to Cupples, Ching, Button, Leigh, Marnane, Whitfield, and Martin (2018), there are various support paradigms that can be used to help students who have hearing impairments acquire language skills. Language acquisition for learners with hearing impairments is dependent on a number of variables, including the learner's age, the teacher's teaching style, the school's physical setting, and the support being provided.

Computer assisted learning has been cited as the best technique for enhancing the learning process through interactions and engagement. Each of the many shapes that computer assisted learning might take is intended to engage students. More frequently than not, students are more likely to respond favorably to these innovative and engaging methods of learning than they are to traditional classroom education (Haseski, 2020).

A study by Adejumo, Abioye, and Tar (2016) among hearing secondary students in Nigeria showed that for one to successfully acquire a second or foreign language, the choice of a learning strategy that is effective is important. Hence, computer assisted learning resources can be adopted to facilitate the learning process of developing writing skills. The study further asserts that computer assisted learning, similar to other instructive software has the possibility to aid, hasten, stimulate, and develop language learning skills. Findings of this study conducted in Nigeria among hearing secondary learners will be compared to the current study which was conducted in Kenya among secondary school learners with hearing impairments.

Jarata (2015) research on 30 students in their first year at Don Mariano State University in Philippines found that the use of computer assisted learning had greatly impacted the results of the learners. This is because the learners had changed their attitudes towards language learning. The findings showed students positively learned language using computers and this helped to improve the language performance of the learners with a mean difference of 8.0 in the pretest and posttest. The current study was carried out on 19 learners with hearing impairments in secondary school in Kenya.

Research conducted by Abhijit et al. (2005) on the effectiveness of using computer assisted learning, where they taught mathematics skills to hear learners in grade four in urban settings in India using computer assisted learning found it effective in improving performance. This was after it was identified that most of the primary school learners indicated low levels of performance even for those who attended school regularly for many years. The current study tried to fill the gaps in that the study was conducted in Kenya, on learners with hearing impairments who were in high school and focused on improving their writing skills. In addition, the study above was conducted in 2005 while the current study was conducted in 2021 where there have been notable technological advances.

3. Methods

The study adopted a single-subject quasi-experimental design. The researcher used the quasi-experimental design to collect quantitative data through the pretest and posttest (White, & Sabarwal, 2014). Comparison was made on the results of pretest and posttest after giving the treatment using computer assisted learning to determine the effectiveness of the treatment. The posttest was administered after 12 weeks since the learners were familiar with the 'English Grammar Test' application.

The locale of the study was Kambui Secondary School for the Hearing Impaired in Kiambu County, Kenya. The school was ideal for the research study because in 2020,

a Community Based Organization called Githunguri Youth United was contracted to teach the learners on basic computer skills and packages and these skills were useful to the researcher on the usage of computer assisted learning to improve their writing skills. The school also had a well-established computer lab as compared to other schools for learners with hearing impairments in the different counties. The researcher aimed to utilize those basic computer skills in the study to enhance the learner's writing skills.

The study targeted learners with hearing impairments in Kambui secondary school for the hearing impaired. The learners were taught the writing skills from form one to form four. The total number of learners with hearing impairments in the school were 83 where male was 42 and female were 31. The reasearcher purposively sampled all form two learners because this is the level where the learners develop their writing skills and seek proficiency. In the Kenyan syllabi, learners are introduced to concepts in form one, and in form two, the learners are led to develop these skills in-depth.

The total number of form two learners was 19, 11 of these were male while 8 were female.

Table 2.1: Sampling grid

	Female	**Male**	**Total**
Target population	41	42	83
Sample size	8	11	19

3.1 Logistical and Ethical Considerations

An authorization letter was sought from Kenyatta University, and Kenyatta University Ethical Committee since the researcher was dealing with children. Next, the researcher sought authorization from National Commission for Science Technology and Innovation (NACOSTI) after approval of the proposal by the Graduate school. Secondly, the researcher proceeded to notify the County Commissioner of Kiambu County and County Director of Education Kiambu of the proposed research. Lastly, contact was made with the principals of the schools to discuss the need for the study. Parental consent was sought for the learners in the sample population.

3.2 Data Collection Techniques

With the help of the school principal, the researcher was allocated two English lessons per week, 35 minutes each, for a period of 12 weeks, for the form two class in the school timetable. The researcher worked closely with the English teacher in form two, to compliment what was taught in class and the learners did not grasp the content. A pre-test was given after one week before the initiation of the treatment. The researcher introduced the use of 'English Grammar Test' application to the learners which was the mode of learning that was used to complement what had been taught in class. Sign language was used as a medium of teaching because both the researcher and the learners were conversant. At the end of the 12 weeks, the researcher administered a post-test that helped to compare the results before and after the treatment.

3.3 Data Analysis

The data was analyzed using SPSS version 22 program generally used for social science studies. The data from the pretest and posttest was used analyze the objectives. Data was presented in form of tables. The findings led to conclusions and recommendations.

4. Results and Discussion

4.1 Effect of Computer Assisted Learning on Learners' English Writing Skills

The study sought to analyze the effects of computer assisted learning on learners' language writing skills. The researcher administered a pretest before introducing the treatment. The pretest was marked out of 50 marks and the results analyzed as follows:

Table 4.1: Learners pretest scores

Learner	Gender	Age	Pretest	% total
A	M	14	5	10
B	F	17	11	22
C	M	20	30	60
D	M	17	1	2
E	F	22	41	82
F	F	16	18	36
G	M	15	9	18
H	M	16	24	48
I	F	17	34	68
J	M	19	16	32
K	M	24	26	52
L	F	18	2	4
M	F	15	8	16
N	M	16	24	48
O	M	17	12	24
P	F	18	21	42
Q	M	15	15	30
R	F	23	26	52
S	M	16	20	40

In many countries including Afghanistan, Egypt, Honduras, Japan, and Kenya, 40% is considered as pass mark at high school and college levels (Kleinman, Leidman, & Longcore, 2018). In this study, above 40% was also considered as the pass mark. From this pretest, most of the students scored 40% and below representing 11(57.9%) of the learners while the rest 8(42.1%) scored above 40% in the test.

After the pretest, learners were taught English writing skills using computer assisted learning for 12 weeks with the utilization of an application called 'English Grammar Test'. The application allowed them to choose areas of difficulty that required more in-depth teaching. To establish the effect of computer assisted learning on learners' English writing skills, a post-test was administered after 12 weeks which was similar to the pre-test and tested on writing skills of learners after they were exposed to computer

assisted learning. The scoring procedure of the post-test was like a pre-test and the results were analyzed as shown below.

Table 4.2: Learners' performance in post-test

Learner	Gender	Age	Posttest	% total
A	M	14	17	34
B	F	17	25	50
C	M	20	34	68
D	M	17	6	12
E	F	22	44	88
F	F	16	35	70
G	M	15	24	48
H	M	16	35	70
I	F	17	42	84
J	M	19	33	66
K	M	24	36	72
L	F	18	9	18
M	F	15	14	28
N	M	16	34	68
O	M	17	17	34
P	F	18	35	70
Q	M	15	31	62
R	F	23	30	60
S	M	16	23	46

From the analysis of the post-test, all learners had a positive increment from the scores of the pretest. The results show that the majority of the students 14(73.69%) scored above 40% which was the pass mark while those who scored below 40% were 5(26.31%) learners.

The analysis of the pretest and posttest are presented in Table 4.3 as follows:

Table 4.3: Analysis of pretest and posttest results

Statistics		
	Pretest	**Posttest**
Valid (n)	19	19
Missing (n)	0	0
Mean	18.05	27.58
Standard deviation	10.695	11.95

From the analysis in Table 4.3, after the administration of the pretest, the learner's scores improved greatly from a mean of 18.05 with a standard deviation of 10.695 to 27.58 with a standard deviation of 11.95.

The improvement in English writing skills among learners with hearing impairments in form two after administration of the posttest revealed the effectiveness of using computer assisted learning in language writing skills among learners with hearing impairments. The findings of this study are in line with studies from various

research included in the literature review. The findings of this study complement a study by Adejumo, Abioye & Tar (2016) on the adoption of computer assisted language learning software which asserts that computer assisted learning, similar to other instructive software has the possibility to aid, hasten, stimulate, and develop language skills.

5. Recommendations

Due to the limitation in scope of the current research study, the researchers were unable to carry out extensive research on learners with hearing impairments. Therefore, as one of the key recommendations, research is to be conducted on the effectiveness of using computer assisted learning in teaching other subjects among learners with hearing impairments. The study also recommends that similar studies be undertaken in other locations to provide comparative data on the effect of computer assisted learning on learners with hearing impairments performance. Lastly, there is a need for research on the effect of computer assisted learning on English writing skills targeting learners with different impairments such as visual and physical impairments.

6. Conclusion

Logical inference can be made based on the findings that computer assisted learning improves English language writing skills among learners with hearing impairments. Computer assisted learning is one of the tools that can be used to complement other teaching strategies used to teach writing skills to learners with hearing impairments.

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Conflict of Interest Statement
The authors declare no conflict of interest.

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