



RELATIONSHIP BETWEEN MULTIMEDIA AND LEARNING ACHIEVEMENTS ON KISWAHILI GRAMMAR AMONG SECONDARY SCHOOLS IN NAKURU COUNTY, KENYA

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Abstract:

The MoEST (2006) initiated the integration of multimedia into teaching of Kiswahili grammar aspects so as to enhance the following language aspects: pronunciations, spellings, punctuations, constructing sentences correctly and general appropriate use of Kiswahili language patterns. Though, this has not been achieved as witnessed by students' low performance on Kiswahili grammar aspects CATs over years among Sub-County secondary schools in Nakuru County, Kenya. The objective of the Paper was to determine the differences between students taught Kiswahili grammar aspects using multimedia and those students taught the same content using TTMs on learning achievements on Kiswahili grammar aspects. This Paper employed a causal-comparative design. A sample of 750 participants was drawn from a target population of 12900 subjects. Stratified, purposive and simple random sampling methods were used to select the study sample. Questionnaires and Document Analysis Guide were used to collect quantitative and qualitative data. Piloting was done in three schools to determine the validity and reliability of the research items in two weeks before the commencement of the actual study, whereby the study confirmed that the instruments were valid and reliable; the students' each was computed separately using Cronbach's Alpha Formula internal consistency and students' alpha coefficient yielded an alpha of 0.75 which were considered adequate for the study. Mean and standard deviations were used to analyze quantitative data while independent T-tests were used to test the

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hypothesis so as to find out the differences between the two means on performance on Kiswahili reading comprehension between the two groups. Quantitative data was presented and interpreted in frequency table distributions, bar graphs and pie-charts. The findings of the study established that multimedia enhances learning achievements on Kiswahili grammar aspects. The t-test findings also indicated that there was a statistical significant difference in favour of the multimedia group students' it was concluded that the use of multimedia in teaching Kiswahili grammar aspects increases learning achievements on Kiswahili grammar aspects.

Keywords: relationships, multimedia, learning achievements, Kiswahili grammar aspects and among secondary schools in Nakuru County, Kenya

1. Introduction

Abilasha (2014) pointed out multimedia program was initiated in 1980s for language teaching in secondary schools with the employment of films, televisions, over-head projectors, video tapes, audio cassettes and lastly computers as learning devices. Currently, tutors are using multimedia to teach learners in secondary schools. With the implementation of information technology, many language skills are being instructed applying multimedia programs as teaching devices which were started in the form of a drill-and-practice in 1990s. Presently many tutors for language teaching are employing multimedia program in the teaching of language skills such as: grammar, speaking, listening and writing skills. Multimedia have variety of teaching formats such as slides, still images, text and audio-visual and videos aids. Multimedia presentations are important in the instruction of grammar skills. The application of multimedia make tutors teaches their lessons using components like: power point, and ready-made CDs available for teaching of languages. This encourages students to heighten grammar aspects.

Morales (2014) pointed out that majority of schools in U.S.A began using multimedia program in the instruction of listening, speaking, reading and writing skills in 2000 so as to assist students improve their performance on English language aspects. However, multimedia program in U.S is decentralized whereby many of the independent states in U.S have their own multimedia program for instruction. The multimedia program instruction has been initiated as mandatory for teaching of languages, sciences and technology subjects in higher levels. The objective was to make learners attain fundamental English language grammar aspects.

Mwangi, Nozaki, Ejima and Umeda (2013) noted that multimedia program uses three strategy models: technological devices, learning model and stakeholders. Technological tools refers to a set computer components (hardware and software) applied to offer teaching materials so as to enhance communication among learners and tutors, In addition, they are referred to as technological infrastructure consisting of employment of content making and content implementation. Learning model consists of an instructional environment, course development, student content teaching and evaluation assessment while the stakeholders in the teaching process consists of students and tutors who assists in making the teaching content, learners' aid and evaluation. In relation to this multimedia, this Journal Paper, therefore sought to establish the relationships between multimedia and learning achievements on Kiswahili grammar aspects.

Hennessy, Onguko, Harrison, Ang'ondi, Namalete, Naseem and Wamakote (2014) pointed out that the Eastern African Countries: Ethiopia, Kenya, Uganda, Tanzania, Rwanda, Burundi, Sudan and South Sudan have initiated the employment of multimedia program in the instruction of school curriculum including teaching of languages in schools so as to enhance the quality of education starting from the year 2006. The department of education in these countries have equipped learning institutions with multimedia programs and capacitated tutors on how to apply multimedia for instruction reasons so as to enhance the quality of education including teaching of language grammar. Multimedia program is applied in schools in three ways: first, an integrated format which is initiating the use of multimedia in the subject so as to improve quality of teaching and increase students' performance, second, formulating the use of multimedia in teaching of school curriculum so as to enhance the quality of teaching of all subjects including Languages and third, a complementary approach: using multimedia programs so as to enhance students' instruction environment in schools. The fusion of multimedia in the instruction of languages could increase students' performance.

The Kenya Institute of Curriculum Development (KICD) 2013) initiated Kiswahili grammar components digital content (multimedia CD ROM Program for teaching Kiswahili grammar aspects). Furthermore, the Kiswahili grammar aspects are taught applying: audio, text, animations, pictures and video, commercial produced compact video disks [DVDS] mixing media and electronic communication to enhance the instruction process of Kiswahili grammar aspects. The Multimedia programs have also been fused in the teaching of the other four Kiswahili language skills namely: listening, speaking and writing so as to improve performance of Kiswahili language in general in Kenyan secondary schools.

Msanjila (2005) pointed out that Kiswahili grammar aspects were not taught in most secondary schools in Tanzania. This was due to, many tutors responsible for teaching Kiswahili grammar aspects were employing conventional teaching methods in the instruction of Kiswahili grammar aspects in their secondary schools. Due to this, most students in secondary institutions had the following Kiswahili regular language problems, namely: punctuation mistakes, mother tongue interference, pronunciation, poor sentence construction structures, write Kiswahili words wrongly, grammatical mistakes and lack ability to communicate fluently both in speaking and writing. As a result of this; tutors and students should employ multimedia programs in the instruction of Kiswahili grammar aspects which offer tutors and learners with collaborative teaching and learning strategies so as to increase students' performance on Kiswahili grammar aspects.

The Kenya National Examination Council (KNEC) 2014) point out in-proficiency in Kiswahili grammar aspects and low performance on Kiswahili grammar aspects. The in-proficiency and lowly performed Kiswahili grammar are: adherence to Kiswahili grammar rules use in general, mother tongue influence, spelling words correctly, use of diverse punctuation marks and lacking the competence to communicate correctly both in spoken and writing. Furthermore, most of the students have prevailed with the low competencies in grammar and writing. First, the learners proved in-competence by displaying cases of first language influence and second, most learners lacked ability to diverse construct correct sentences in both spoken and written sentences. This therefore expected students to construct syntactically and semantically correct sentences which should communicate across. Hence, the students have no alternative; but to attain the Kiswahili grammar aspects rules accordingly.

2. The Art of Literature Review

Regarding the influence of multimedia on learning achievements on Kiswahili grammar aspects. Al-Shamayleh (2014) established that multimedia programs improved performance on English grammar aspects among secondary schools in Jordan. The study used 40 participants. The participants were assigned randomly into treatment and control group students. The treatment group students were taught English grammar aspects integrating multimedia CD ROM while the control group students were tutored English grammar using the conventional teaching methods. The study findings revealed that the treatment group students outperformed the control group students in English grammar aspects.

Moghadan and Falafian (2015) determined the influence of multimedia programs on learning achievements on English grammar aspects among secondary schools in Iran. The study categorized learners into treatment and control group learners. The treatment group learners were taught English grammar aspects applying multimedia programs while the control group learners were tutored English grammar aspects using traditional teaching approaches. Both the treatment and control group learners were pre-tested and post-tested at the start and at the end of treatment to evaluate the effects of multimedia on learning achievements on English grammar aspects. The study results confirmed that the treatment group learners outscored the control group learners on English grammar aspects. This meant that the multimedia programs increased students' learning achievements on English grammar aspects.

Chen (2016) compared the effects of multimedia and traditional teaching approaches on learning achievements on English grammar aspects among secondary schools in Taiwan. The study used a quasi-experimental research design. The study categorized learners into treatment and control group learners. The treatment group learners were tutored English grammar aspects employing multimedia while the control group learners were taught English grammar aspects applying the traditional instruction strategies. The study found out that the treatment group learners scored less than the control group learners on English grammar aspects. This implied that both the multimedia and conventional instruction approaches if employed well; could heighten learners' learning achievements on English grammar aspects.

Milima, Ondigi and Mavisi (2014) established the multimedia programs used in the instruction of Kiswahili language among secondary schools in Kakamega County, Kenya. The study targeted teachers, students and Quality Assurance and Standards officers (QASOS). The study used stratified, simple random and purposive sampling techniques to select the study participants. The study analysed data quantitatively. The study found that tutors were employing multimedia programs such as: text, audio, video and animations. However, the multimedia programs for the teaching of Kiswahili grammar were insufficient in many of the secondary schools and also tutors for Kiswahili language lacked competencies of integrating multimedia for the reasons of teaching Kiswahili grammar aspects. Finally, the study recommended that the tutors should be capacitated on how to employ multimedia in the teaching of Kiswahili grammar aspects in schools.

Kang'ahi, Indoshi, Okwach and Osodo (2012) compared the influence of learner centred instruction strategies and conventional instruction approaches on learning achievements on Kiswahili language among secondary schools in Kakamega County, Kenya. The study targeted tutors and learners. The study classified learners into Group

one and Group two learners. The Group one learners were tutored Kiswahili language applying learner-centred instruction strategies such as audio and video while the Group two learners were instructed employing traditional instruction approaches. The results found that group one learners outperformed the group two learners on Kiswahili language. This implied that the employment of learner centred instruction strategies increased learners' learning achievements on Kiswahili language.

3. The Statement of Problem

Despite the application of multimedia programs in the teaching of Kiswahili language so as to enhance teaching of Kiswahili grammar aspects so as to enable learners' master Kiswahili grammar components among all secondary schools across the country. The multimedia was employed in the teaching of Kiswahili grammar so as to enhance the following Kiswahili grammar components such as pronounce words correctly, spell words appropriately, use punctuation marks appropriately, construct diverse sentence structures appropriately and appropriate use of language patterns in general. However, until then, it was not yet clear about the relationship between multimedia and learning achievements on Kiswahili grammar among sub-county secondary schools in Nakuru County as evidenced by students' weak proficiency in Kiswahili language use in general and low performance on Kiswahili grammar among sub-county secondary schools in Nakuru County over years. Students' in-proficiency and low performance on Kiswahili grammar was an issue of great concern among students, teachers, parents and stakeholders; and it left a lot to be desired about, what needed to be done so as to improve students' proficiency on Kiswahili grammar? This means that some secondary school learners were not mastering Kiswahili grammar proficiencies as expected by KICD (2015). Pre-survey observations revealed that revealed that high performance on English grammar has been attributed to the application of multimedia in classrooms while low performance on English language has been blamed on employment of traditional teaching methods in the teaching of English grammar. Until then, however, little was known about the relationships between multimedia and learning achievements on Kiswahili grammar among public secondary schools in Nakuru County.

4. The Purpose of the Study

The purpose of this study was to compare students' performance on Kiswahili grammar between students taught Kiswahili grammar using multimedia and those

students taught Kiswahili grammar using traditional teaching methods (TTMs) among public secondary schools in Nakuru County, Kenya. The main objective was to determine the differences between students taught Kiswahili grammar using multimedia programs and those students taught the same content using TTMs on learning achievements on Kiswahili grammar and study tested the following hypothesis: H_{01} . There are no significant differences on Kiswahili grammar between students taught grammar using multimedia and those students taught Kiswahili grammar using traditional teaching methods on learning achievements on Kiswahili grammar.

5. Research Methodology

This study adopted a causal- comparative research design to determine the cause and effect relationships between independent and dependent variables after an action has already happened. The purpose of employing causal-comparative design was to establish whether independent variables (computer instruction education and traditional teaching methods) affected the dependent variable (learning outcomes on Kiswahili reading comprehension). In relation to this study, independent variables: computer instruction education such as text, audio, video, graphics, animations, simulations and PowerPoint presentations while traditional teaching methods such as: lecture methods, textbook; and chalk and talk were both measured in relation to their influence on dependent variable (Kiswahili reading comprehension such as reading comprehension among public secondary schools as cited in Salkind (2010).

Regarding the study locale: This study was conducted in Nakuru Public Sub County secondary schools so as to determine the cause of low proficiency and weak performance on Kiswahili reading comprehension CATs among Public Sub- County secondary schools in Nakuru County. The study targeted 12900 form two students spread out in the 130 sub-county secondary schools in Nakuru County. The employed stratified, purposive and simple random sampling techniques to select 750 participants consisting of 350 students taught Kiswahili grammar aspects using multimedia programs and 350 students tutored the same content employing TTMs while 30 form two students' class documentary analysis guides containing CATs marks for both term one and two in the year 2016, consisting of 15 form two classes tutored Kiswahili grammar aspects applying multimedia and 15 form two classes instructed Kiswahili grammar employing TTMs from the 30 sampled secondary schools.

Concerning the research instruments: This study used Students' Questionnaires, and form two students CATs Document analysis guide to collect data while Document analysis guide from the 30 Form Two secondary schools' Students' Progressive Records provided quantitative data on trends of Form Two students' Continuous Assessment Tests (CATs) performance on Kiswahili grammar both term one and term two of the year 2016. Piloting of questionnaires for 24 students; and was pre-tested in three different target public Sub-County secondary schools from a different County but with same characteristics to the 30 sample secondary schools, purposively selected in two weeks before carrying out the actual study and which were not included in the actual study. Piloting aided this study to correct errors in the items before conducting the actual study. The validity of students' questionnaires was enhanced by using content validity whereby by the researcher and curriculum experts validated the content of students' questionnaires with regard to, the relevance of the items to content, its suitability to study objectives and null hypothesis. Questionnaires for students were administered once to students to check for its reliability. Students' reliability coefficient was computed employing Cronbach's Alpha Formula for Internal Consistency and students' reliability coefficient yielded an alpha coefficient of 0.75 which was regarded reliable for the study to be carried out. This is because Cronbach's Alpha reliability coefficient is regarded as suitable to compute internal consistency of perception scale or an achievement test when a research item evaluates a unidimensional trait when it is scored by ratings such as (1-5) scoring procedure. The reliability from document analysis guide was not computed because the information to be gathered was already in existence in the 30 sample secondary schools.

Regarding data collection: This study sought permission from the County Education Director before visiting the secondary schools enlisted for this study to seek consent to carry out the study. This study also sought appointments with the 30 principals of the sample secondary schools to notify them about intention to conduct the study in their secondary schools. This study further sought confirmation of dates of carrying out the study so as to draw timetable schedules when the study would commence and when it would end. The study then explained the purpose and importance of participating in the study. The study administered students' questionnaires to students and also collected data from documentary analysis on Form Two classes' students' progressive records on Continuous Assessment Tests (CATs) both for term one and term two in the year 2016 at the same time.

Concerning data analysis: Quantitative methods were used to analyse data so as to determine the difference between learners tutored Kiswahili grammar aspects applying multimedia and those learners instructed Kiswahili grammar employing

traditional instruction approaches on learning achievements on Kiswahili grammar aspects. Descriptive statistics such as means and standard deviations were applied to describe and summarize data statistically from closed ended items and likert scale items. The analysed data was presented and interpreted using frequency table distributions, bar graphs and charts. Quantitative data from document analysis guide from form two students' Kiswahili CATs marks indicating students' performance scores in Kiswahili reading comprehension was analysed using descriptive statistics such means and standard deviations so as to compare the two means of the two different groups for each of the Kiswahili grammar aspects separately at the same time quantitatively so as to measure the influence of both multimedia and TTMs on learning achievements on Kiswahili grammar aspects. The analysed data was presented and interpreted in each of the descriptive statistics tables separately so as to support or contradict the results yielded from students' questionnaires so as to establish the differences or relationships on means between the two groups taught by either applying multimedia or TTMs on learning achievements on Kiswahili grammar aspects. Inferential statistics such as independent t-tests were used to compare the means for the two form two groups (one group tutored Kiswahili grammar aspects applying multimedia and the other group instructed the same content employing TTMs) on quantitative data received from documentary guide analysis of form two Kiswahili CATs marks for two terms (term one and two, 2016) to compute the three hypothesis at significance level of 0.05 (95% confidence interval) so as to demonstrate whether significant relationships or differences existed between learners tutored Kiswahili grammar aspects applying multimedia and those learners instructed Kiswahili grammar aspects employing TTMs on learning achievements on Kiswahili grammar aspects.

6. Discussions and Findings

The questionnaires were issued to student respondents to fill and return, though, the student questionnaires were not all filled and returned as expected. Out of the 750 students targeted by the study, 710 students managed successfully to fill and return the questionnaires. This presents a response rate of 94.667% of the 750 target student population. The response rate was deduced as adequate and reliable for the study to be conducted as Orodho (2017) noted that a response rate of 70% and above is reliable to validate the findings of a study.

The main objective of the study was to determine the differences between students taught using computer aided instruction and those students taught the same content using Traditional teaching methods on students' performance on adherence to Kiswahili grammar rules among secondary school students in Nakuru County. The student respondents were provided with questionnaires to get their opinions concerning this objective. The student respondents were issued with a range of questions on a likert scale where one represented strongly disagree, 2= disagree 3= undecided 4=agree 5= strongly agree. The table 4.1 illustrates their responses.

The students were also provided with parameters of the relationships between multimedia programs and learning achievements on Kiswahili grammar aspects and the table 4.1 displays the findings.

Table 4.1: Students' Opinions on Relationships between Multimedia Learning Achievements on Kiswahili Grammar as Aspects

	N	Minimum	Maximum	Mean	Std. Deviation
Computer programs enable students to use diverse parts of speech in Kiswahili correctly in this school.	710	1	5	3.26	1.35
Computers enable students to identify diverse tense components and use them appropriately in this school.	710	2	5	3.56	1.16
Computers enable students to develop diverse vocabulary elements and use them correctly in this school.	710	1	5	3.12	1.44
Computers enable students to use punctuation marks in spoken and writing appropriately in this school.	710	1	5	3.27	1.25
Computers enhance students' performance in pronunciation and vocabulary in this school.	710	1	5	3.45	1.23
Computers enable students to construct diverse sentence structures correctly in this school.	710	1	5	3.31	0.97
Average	710	1.17	5	3.33	1.23

The views of learners on relationships between multimedia on learning achievements on Kiswahili grammar aspects were sought by the study and table 4.1 display their views which were biased towards disagree. The minimum and maximum values were picked by the learner respondents as displayed by the presence of a maximum value 5 and minimum value 1 in all the responses except the statement, "multimedia make learners identify diverse tense elements and use them proficiently," where all learners strongly disagreed with the statement. With the mean average of ($m=3.33$) it can be concluded that many of the learners disagreed with the study views while other learner respondents were neutral. For example, many of the learners agreed and strongly agreed that multimedia make learners construct different sentence structures appropriately and it scored ($m=3.31$).

Furthermore, the learners accepted that 'Multimedia empower learners to apply punctuation marks both in spoken and written correctly' ($m=3.27$). However, there is a clear difference on views among the some learners who responded that their tutors employ multimedia and those learners whose teachers use the traditional instruction approaches. For example, the learners whose tutors do not employ multimedia programs strongly disagreed and disagreed that 'Multimedia programs make learners use diverse parts of speech in Kiswahili grammar proficiently,' as compared with those learners whose tutors apply multimedia who accepted the significant of multimedia in improving their parts of speech skills.

In addition, the difference in views about the relationships between multimedia programs was slightly high varied at a rate of 1.23 displaying that learners' views were more varied and biased towards a specific alternative. This was shown in the view that, 'Multimedia make learners attain a variety of vocabulary components and use them fluently, ($SD=1.34$). However, again learners' views were slightly scattered as was on the opinion that 'Multimedia make learners construct different sentence structures appropriately,' ($SD= 0.97$) meaning that the learners generally accepted that multimedia empower learners to construct different sentence structures.

In addition, the conducted a documentary guide analysis from form two Kiswahili marks for two terms (term one and two in the year 2016) to determine whether the Kiswahili grammar performance of form two learners tutored using multimedia and those learners instructed Kiswahili grammar using TTMs were significantly different. Two Kiswahili CATs marks evaluation assessments were employed so as to complement study results from students' questionnaires. An independent t-test was employed to test the hypothesis that "*there is no difference on Kiswahili grammar aspects learning achievements between learners tutored Kiswahili grammar aspects employing multimedia and those learners instructed grammar aspects applying TTMs*".

The form two learners included in the study were those whose CATs results were available for both two one and two for the year, 2016. The findings are shown in table 4.2 and 4.3.

Table 4.2: Descriptive Statistics on Performance on Kiswahili Grammar Aspects

	Multimedia	N	Mean	Std. Deviation	Std. Error Mean
Performance on Grammar	Using multimedia on Grammar	322	21.7966	3.07509	.17137
	Not using Multimedia Grammar	345	16.9493	5.47467	.29475

The findings in table 4.2: illustrate that learners tutored Kiswahili grammar aspects employing multimedia scored 21.80 marks out of 40 while those learners who were instructed employing TTMs scored 16.95. Furthermore, learning achievements of learners who were tutored employing TTMs was highly scattered ($s=5.47$) compared with those learners who were instructed multimedia, this meant the integration of multimedia was attributed with decreased dispersion between high and low performer on Kiswahili grammar aspects.

Table 4.3: Independent Sample on Test Performance on Kiswahili Grammar

		t-test for Equality of Means					95% Confidence Interval of the Difference	
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Performance in Grammar	Equal variances assumed	13.964	665	.000	4.84731	.34713	4.16571	5.52890
	Equal variances not assumed	14.217	548.687	.000	4.84731	.34094	4.17759	5.51702

Since the learners whose tutors integrated multimedia in the instruction of Kiswahili grammar aspects and those learners whose tutors employed TTMs were not equal, 'Equal variances not assumed' option was used to discuss the findings. At 95% confidence interval, the hypothesis was rejected ($p=0.000<0.05$), hence the study deduced that the integration of multimedia in the instruction of Kiswahili grammar aspects significantly enhanced learning achievements on Kiswahili grammar aspects.

Regarding findings, it was clear that many of the learners whose tutors never integrated multimedia to instruct them in Kiswahili grammar aspects had negative opinions concerning the significant role of multimedia programs on learning achievements on Kiswahili grammar aspects. For instance, there are those learner respondents who lacked basic knowledge of programs like CD-ROM. However, those learner whose tutors used multimedia appeared to understand majority of the particulars under study and were also more positive on their views. Majority of those learners whose tutors integrated multimedia programs accepted that multimedia had significantly increased learners' performance on Kiswahili grammar aspects. Furthermore, the independent t-test findings displayed in table 4.3: indicate that there existed a statistically significant difference on Kiswahili grammar aspects performance of learners whose tutors integrated Multimedia. For instance, both term one and two CATs performance, learners whose teachers used multimedia performed slightly better than those learners whose teachers used TTMs, which indicate that integration of multimedia was attributed to increased performance on Kiswahili grammar aspects.

7. Conclusions and Recommendations

From the findings, the Paper concluded that multimedia enhanced learners' learning achievements on Kiswahili grammar aspects such as: pronunciations, spellings, punctuations, constructing sentences correctly and appropriate use of Kiswahili patterns. Though, even in secondary schools where the multimedia was employed, some few secondary schools had inadequate multimedia programs such as functional audio and graphical systems while other schools did not employ them frequently.

The study recommended that the Ministry of Education should make integration of multimedia programs mandatory for all secondary schools so as secondary schools teachers and students to use in the teaching of Kiswahili grammar aspects and provide more multimedia resources that are centered on Kiswahili grammar aspects content.

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