Effects of Information Communication Technology integration on Students' Academic Achievement in Kiswahili Language in Nandi South Sub-County, Kenya

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Abstract

The study sought to find out the effects of information communication technology (ICT) usage on students' academic achievement in Kiswahili language in public secondary schools in Nandi south sub-county–Kenya. The study was anchored on Bruners' constructivism theory which postulates invention or creativeness is the process of coming up with new knowledge on the basis of learners experience. Causal comparative design (Ex-post facto design) was employed for the study. The target population comprised of all the public secondary schools in the sub-county. Stratified random sampling and systematic sampling techniques were used to obtain a sample of 260 respondents; 10 principals, 50 teachers and 200 students. Research instruments that were used included questionnaires and document analysis schedule. Data was analyzed using both descriptive and inferential statistics with the help of SPSS. Descriptive statistics involved use of frequencies, percentages, means and standard deviation while inferential statistics involved use of t-test and Chi-square. The hypotheses were tested using t-test, Chi-square, correlation and ANOVA at 0.05 level of confidence. The results established that teachers had negative attitude towards ICT integration in teaching of Kiswahili language, but the attitude of students towards ICT integration in teaching and learning of Kiswahili was slightly positive. The results showed that there is a significant relationship between use of ICT and students' academic achievement Kiswahili language. Improvement in ICT integration in teaching and learning of Kiswahili is likely to result in better academic achievement in the subject.

Key words: Kenya, Information Communication Technology (ICT), academic achievement, Kiswahili Language.

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Introduction

The greatest achievement in the twentieth century was the development of Information Communication Technology (ICT) for the use of all facets of human endeavors. Computer technology was introduced in the early 1980s as an innovation that might be adopted in the classroom. Optimism was high that information and communications technology (ICT) would change the face of education. It was envisioned that there would be extensive integration of ICT, and that eventually, with e-learning in the classroom, textbooks might even be obsolete. Yet such a scenario has not come to pass after more than three decades. Nevertheless, the integration of ICT in education is considered an important innovation in classroom teaching, and is advocated by many educational policy-makers WongandLi, (2008). An innovative teaching process is important for attaining the desired knowledge; skills, values and attitude.

The integration of technology in teaching is viewed as an important strategy to increase the effectiveness of the teaching-learning process. Teachers are encouraged to integrate technology into their teaching, as ICT is believed to have the potential to revolutionize an outmoded educational system Aczeletal,(2008). As technology becomes an increasingly important part of human life, ICT integration in the field of education is inevitable Hew and Brush, (2007). In spite of varying degrees of ICT acceptance in schools in many countries, no major changes have occurred in teaching practice and classroom activities Colletal, (2009). The integration of computers in education is not a new phenomenon. In the 1970's, its promoters claimed that it would transform and save education (Lockard & Abrams, 1994).

In Kenya, the Ominde Commission, Republic of Kenya, (1964) placed emphasis on the preparation and use of instructional resources for the teaching of various subjects. The Commission called upon the Ministry of education to produce and avail to schools the relevant instructional resources which could be used for teaching and learning. Kenya has defined a national ICT policy with a view of creating an e-enabled and knowledge based society by the year 2015. The rapid growth of information communication technology (ICT) has brought remarkable changes in 21st century as well as affected the demands of the modern society. ICT is becoming increasingly important in our daily lives and in our education system, Andoh, (2012). The successful introduction and use of ICT in education and training institutions is seen to play a major role in the disseminating skills to the wider society and this creates a positive impact on the economy of the country, Kipsoi et al, (2012). Therefore there is need for schools to integrate computer technology in teaching and learning so as to prepare learners to fit in the rapidly growing digital world. In January 2006, Kenya put in place a National ICT Policy, whose

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aim is to advance the livelihoods of Kenyans by ensuring the availability of accessible, efficient, reliable and reasonably priced ICT services Kenya Ministry of Information, (2006).   The sessional Paper No.14 of 2012 captures information and communication technology under Chapter seven. The Kenyan government appreciates and recognizes that an ICT literate workforce is the foundation on which Kenya can gain the status of a knowledgeable economy by (2012).

The Kenya government has taken steps to support and implement the strategy with an aim of enhancing the quality of teaching and learning to enhance students' participation in the emerging knowledge economy and information based society. Some of the government's initiative is seen in the vision 2030 which seeks to reform curricula and modernize teacher training to establish a computer supply program that will equip students with modern ICT skills. This will transform the curriculum and ensure that usage of ICT knowledge becomes part of formal instruction MoE, (2004). Kiswahili language is a compulsory subject in the Kenya school education system KIE, (2002). Teachers teach Kiswahili like any other language using both traditional and modern approaches of teaching. Old classroom and instructional technologies include use of chalk and writing board, text books, charts, radio and television. According to Look (2005), new technology refers to using computer programs and facilities to teach. These programs and facilities include power point, CDs, DVD, Youtube, Internet, SMART boards, smart pens among others, depending on the level of technological development and use in the region. Menoli (2020) asserts that ICT plays a major role in education and if gives many opportunities and experiences to teachers and students, it changes the future process and the social environment.

Kenya disseminated its ICT policy in 2006 with its vision to become a prosperous ICT-driven Kenyan society and its aim is to better the welfare of the citizen by ensuring the accessibility, efficiency, reliability and affordability of ICT services to ensure effective integration of ICT in teaching and learning. The policy spells out the goals, aspirations and strategies of integrating ICT in education. Therefore, the Kenyan government has the task and responsibility of encouraging integration of ICT in all the schools and other institutions of learning in order to better the quality of teaching and learning National ICT Policy (2006).

According to the Kenya national examination council, (KNEC) report of 2016, one of the reasons why Kiswahili academic achievement continue deteriorating is because some of the teachers continue using teacher centered approaches in their teaching and learning activities and do not integrate ICTs which is more learner-centered. This study aimed at investigating the effects of ICT integration in student academic achievement in Kiswahili language in public secondary schools in Nandi south sub county, Kenya.

Statement of the Problem

Despite the fact that schools have had the computers for almost two decades, ways to use them effectively have evolved sluggishly and patchily Muriithi, (2015). Integration of ICT in teaching and learning improves the quality of education Gomes, (2005). All over the world today, Kenya included the education systems are tailored towards achieving Millennium development goals and vision 2030 which embraces use of ICTs in all the daily operations and sectors. Technological revolution in schools has been beset by theoretical inadequacies that have kept education at the margins of the established educational system Banju, (2014).The government of

Kenya through the ministry of education has provided ICT policy and guidelines on integration of ICT in education. Studies have shown that lack of adequate attention to technology integration in teacher preparation programs limits its use. Many teachers put emphasis on teaching about technology rather than teaching with technology Farrel, (2007).Further studies showed that teachers do not make real use of ICTs at their disposal hence slow integration and usage in classroom activities during teaching and learning Muriithi et al (2015); Wafula(2014). Many teachers in Kenya continue using non-ICT based approaches in teaching various subjects especially languages despite the effort being made by the government of Kenya to equip schools with computer infrastructure.

Case studies have confirmed the potential of ICT to have a major impact on classroom practices in computer and science related subjects Dwyer, (2000). In Kenya, use of ICT has not reached optimum level and the researcher did not come across any evidence of empirical study done in this area and level of integration of ICT required. Although various studies have been carried out in relation to ICT integration in teaching and learning in public secondary schools, for example Ikwuka and Adigwe (2017) studied on effects of ICT on secondary school students' academic performance on CRE in Oshimili North local government Area in Nigeria; Florence Abuyeka (2014) conducted a study on integration of ICT in teaching and learning of Kiswahili language in public secondary schools in Kakamega county, Kenya.

ICT promotes quality education and effective teaching-learning process Ruth Atieno and Mildred Ayere (2019.) In Nandi County, many schools are equipped with computer facilities. With such a large investment in ICT facilities, teachers are expected to integrate ICTs in their teaching and learning activities competently and effectively without caring about their perception and competency. It was not very clear whether the Kiswahili language teachers in the county are integrating ICTs in their teaching and learning activities. The Kiswahili language performance as indicated by KNEC results is low and integration of ICTs is likely to improve the situation. Considering that Kiswahili language is gaining higher status due to its place in the Kenyan new constitution and the emphasis in the Ministry of Education policy and considering that the students need to be competent in Kiswahili language that could be reflected in their academic achievement and that from the review of literature, results show that none of the studies has investigated the effects of ICT integration in teaching and learning of Kiswahili in Nandi south sub-county. Therefore, this study will investigate the effects of ICT integration on students' academic in Kiswahili language in Nandi south sub county Nandi County.

Significance of the Study
This study helps to evaluate ICT effectiveness on students' learning outcomes and implications for education and raises awareness for students to take advantage of many benefits of ICT and get more involved in the utilization of ICT hence take control of their learning. Additionally the research makes a significant contribution to how MoEST can improve the quality of students' experience. Furthermore, the study brings to a better understanding the positive contribution of ICT integration into teaching and learning process and does becomes invaluable to the curriculum developers in the MoE. This study would assist the school authority to be able to know more about ICT and its functions especially in the life of the student. The school authority

would be enabled to expand its policy on the availability and the usage of ICT in the school system

Review of Related Literature

The hype about ICT has also implications about its effect on students' achievement and engagement in learning activities. There is a great deal of research in line with this Liaw et al., (2007); Marwan & Sweeney, (2010)); Teyfur, 2010; Efe, (2011). The implications of it are promising considering the infusion of ICT into every aspect of human life. Human experience as we know it has been changing in interaction, entertainment, commerce, health and education due to ICT. Teachers have no or very little power on the integration of ICT in students' lives. Moreover, the best teachers can only give the best education for productive generations. In order for the teacher to be able to meet expectations in teaching, the teacher needs to be able to constantly improve himself/herself and carry out teaching innovations, Ozcan, (2011). The positive impact of ICT on students' achievement is what educators would want to happen in a situation that is going to happen anyway. What they need is to adopt themselves and their practice to make the best out of ICT. There are other numerous studies claiming that ICT positively affect students learning Teyfur, (2010); Watson, Mong and Harris, (2011); Pili and Aksu, (2013). The essence of these studies suggest that because of ICTs' flexible nature, educators and learners themselves can find ways to accommodate learners need for better achievement. Despite these theoretically sound advantages of ICT, there is a little evidence that it actually makes any difference in students achievement levels in Kiswahili (Maddux & Cummings, 2004).

Hussain, Suleman, Naseer and Shafique (2017) carried out a study on effects of ICT on students' academic achievement and retention in chemistry at secondary level in Karak ,District ,Khyber pakhtunkhwa (Pakistan) .It was to investigate the effects of ICT on students' academic achievement and retention in chemistry. Fifty students of 9th grade were selected randomly from Kohsar Public School and College Latamber Karak. The students were grouped into equivalent groups based on pretest score. Random sampling was used to obtain the sample; pre-test post-test equivalent group design was used. Mean standard deviation and independent pre-test .post-test equivalent groups design was used. Mean, Standard deviation and independent samples t-test were applied through SPSS for data analysis. The findings showed that ICT positively affects students' academic achievement and retention.

ICT was found more compelling, effective and valuable in teaching chemistry when contrasted with conventional techniques of teaching. They recommended that ICT should be used in the teaching of chemistry so as to enhance student academic achievement. The study also recommended that ICT and other teachers should be taken on board in all schools on priority basis and should be given special training. It is strongly recommended that the infrastructure of the schools should be designed in such a way that ICT could be used successfully.

Ikwuka and Adigwe (2017) carried out a study on the effects of ICT on secondary school students' academic performance in Christian Religious studies (CRE) in Oshimili North, local government area,Nigeria. A quasi-experimental pre-test, poet test control group design was adopted for the study using intact class. Two research questions were raised; Is there any difference in the academic performance of SS2 students who were taught CRS using ICT and those taught with conventional method? Is there any difference in the academic performance of SS2 male and female students taught CRS with ICT?, and two hypotheses tested at 0.05 level of significance. The population of the study comprised 1,483 students from 14 public secondary

schools in Oshimili North Local Government Area of Delta State. The sample comprised 73, SS2 students selected from two out of the 14 public secondary schools in Oshimili North Local Government Area, using intact class. Instruments used for data was Christian religious studies achievement test (CRSAT) and data were analyzed using mean for the research questions, and T-Test for the hypothesis.

Based on the findings of the study, it was concluded that students who were taught using information and communication technology (ICT) instructional package had better academic performance of CRS than the students taught without it and that gender has no significant effect in the academic performance of students who were taught CRS with ICT instructional package. Also, male and female students who were taught using ICT performed better in CRS. Hence, the use of Information and Communication Technology instructional package helped to enhance the academic performance of students in Christian Religious Studies, so Christians Religious studies teachers should use ICT for teaching CRS in secondary schools. The study recommended that the Government should be interested in providing funds to secondary schools to enable Christian Religious Studies' teachers provide Information and Communication Technology (ICT) tools for teaching CRS. Also, CRS teachers should try to use ICT materials in teaching and learning of Christian Religious Studies in secondary schools, in order to encourage male and female students to always participate fully in the learning of CRS

Olojede, Bolaji and Musa (2017), investigated the effects of ICT on senior secondary school students' performance and retention in geometry, one of the topics covered in mathematics. The study was carried out in Bauchi state in Nigeria. The findings showed that students who were taught using the ICT method of teaching recorded significant improvement in their performance than those who received instruction through the traditional lecture method. The study further revealed that student retention of geometry knowledge was higher for those that were taught using ICT as compared with those who were taught using the lecture method. This implied that ICT based method of teaching was effective in enhancing students' conceptual understanding as well as improving their retention which proved the effectiveness and uniqueness of the special features of ICT classroom teaching.

Emin, Ismail,and Gokhan (2016) conducted a study to investigate the impact of teaching social studies with the help of ICT on pupils' achievement and attitudes in social studies, in izmir, Turrks on the Silk Road. A history, geography and culture-oriented theme was selected from the social studies curriculum for the research, Turks on the Silk Road. A multimedia CD, documentaries, PowerPoint and so on were used to teach social studies to 6th graders. The research design used in the study was quasi experimental. The data was collected both at the beginning (pre-test) and the end (posttest) of the application from both experiment and control groups through these instruments. Data was subjected to mean, one way ANOVA and Regression analysis. Three different research tools were used to collect data: an academic achievement test, an attitude measurement scale on social studies education and an attitude measurement scale on ICT. When achievement post test scores were treated as dependent variable in blockwise regression analysis the followings are found: Pupils' attitudes towards the subject and ICT do not have an effect on their post-test achievement scores.

However, their prior knowledge on the subject and the treatment i.e. teaching social studies with ICT has a positive effect on their achievement. Teaching social studies with ICT do

not have any statistically significant effect on pupils' attitudes toward social studies lesson. Teaching social studies with ICT do not have any statistically significant effect on pupils' attitudes towards social studies lesson. They recommended that teachers and policy makers should find ways to formulate effective ICT integration in social studies. The study shows that ICT integration into the classroom has a slightly positive effect on pupils' achievement. However, the study designed to measure ICT's effect on pupils' achievement did not yield any fruitful result to better their attitudes towards the subject. Therefore, it could be suggested that a study could be designed to measure attitudes of pupils towards ICT both qualitative and quantitatively

Benson Onyango Ochieng and Florence Abuyeka Miima (2019) carried out a study aimed at assessing Kiswahili teachers' perceptions towards integration of ICT in the teaching and learning of Kiswahili among secondary school Kiswahili language teachers in Kasipul sub county, Homabay County, Kenya. The objectives of the study were; to investigate teachers' perceptions towards the use of ICTs in teaching and learning of Kiswahili language; to establish the levels of ICT usage among teachers during the teaching and learning of Kiswahili language and to explore the challenges encountered by teachers and learners in integration of ICT in teaching and learning of Kiswahili language. The study targeted 52 Kiswahili teachers, 24 principals of secondary schools and 2140 learners. The study was guided by constructivism theory and adopted a descriptive survey design. Stratified proportional sampling was used in selection of schools while purposive sampling was used to select teachers and principals in these schools. Learners on the other hand were randomly selected. Data collection instruments included questionnaires for the teachers, interview schedules for principals and observation schedules. Reliability of the instruments was tested through piloting in one school in a neighbouring Sub County.

Data was analyzed through descriptive statistics including frequencies and percentages and presented inform of tables and figures. To analyze the data, Statistical package for social sciences (SPSS) was used. The study found out that Kiswahili language teachers had positive perception towards ICT usage in teaching and learning of Kiswahili language. The study also found out that to some extent integration of ICT in teaching and learning was influenced by factors such as age, gender and competency levels. Based on these findings, this study recommended that schools be equipped with adequate ICT facilities and resources. Kiswahili language teachers and student teachers should be trained on how to integrate ICTs in their teaching and learning activities.

Different researchers employed different designs in establishing effects of ICT integration in education for instance; Miima,DR Samson Ondiki and Rose Mavisi (2013), conducted a study and employed survey design; Opira Geoffry (2010) conducted a study Cross sectional survey design; Tom Cheruiyot (2017) The researcher used descriptive research design; and Benson Onyango Ochieng and Florence Abuyeka Miima (2019) adopted a descriptive survey design thus the reason why the current study employed ex-post facto research design. However according to literature reviewed, different scholars did their studies in different localities far away from Kenya where the current study is being done and different counties and sub counties in Kenya and non has been conducted in Nandi south sub county. It is against this

background that the research study sought to establish the effects of ICT integration on students' academic achievement in Nandi south Sub County, Kenya.

Research Design and Methodology
Causal comparative design (Ex-post facto design) was employed for the study. The target population comprised of all the public secondary schools in the sub-county. Stratified random sampling and systematic sampling techniques were used to obtain a sample of 260 respondents; 10 principals, 50 teachers and 200 students. Research instruments that were used included questionnaires and document analysis schedule. Data was analyzed using both descriptive and inferential statistics with the help of SPSS. Descriptive statistics involved use of frequencies, percentages, means   and standard deviation while inferential statistics involved use of t-test and Chi-square. The hypotheses were tested using t-test, Chi-square, correlation and ANOVA at 0.05 level of confidence. Data was presented using tables.

Data Analysis, Presentation and Discussion of the Findings
The study sampled 260 respondents comprising 10 principals, 50 teachers and 200 students, to respond to the items in the questionnaire, of which 107(53.5%) of the leaners were male while 93(46.5%) were female, while 31(62%) of the Kiswahili teachers were male and 19(38%) were female. Regarding the ages of the teachers, 26(52%) of the teachers were of age between 30-39 years, 14(28%) were between 40-49 years, 8(16%) were between 20-29 years and 2(4%) were between 50-59 years. The results showed that majority of teachers of Kiswahili language teachers in schools with ICT equipment were youthful, for those aged below 40 years had 67.5% against those above 40 years who were 32.5%. This implies that the teaching force in schools under study comprise of many teachers who have been trained in ICT era and possess skills of integrating ICT in teaching of Kiswahili language. The caliber of teachers in schools or school system forms an important variable which can have tremendous impact on school outcomes.

On a rating scale of a maximum of five points, responses from the teachers showed very low scores on use of audio facilities (Mean = 1.62); this means that teachers don't make benefit of this technology as necessary. Use of e-library (Mean = 1.42); use of online classes for Kiswahili (Mean = 1.76); teachers typing their own Kiswahili examinations every term (Mean = 2.04); some teachers responded that they type their work using the ICT resources. Naumi Chepkemoi (2019) explained that successful integration of ICT in the teaching- learning process, among other things, is dependent on the preparation of teachers.

The respondents registered high scores in preparation of schemes of work using computers (Mean = 3.54); Successful integration of ICT in teaching and learning process is highly dependent on the preparation of teachers, Termit and Samli (2014),maintaining records of work in soft copy (Mean = 3.70) and keeping learners' progress records in electronic form (Mean = 3.84). The results showed that ICT integration was only done well in maintenance of professional documents such as schemes of work, records of work and leaners' progress records, but the level of ICT integration during lesson delivery was poor among the schools of Nandi South Sub County. Generally, ICT integration among the learners was also poor in the secondary schools. This is in agreement with the findings of Korte and Husing (2007), who established that resources such as internet connectivity and relevant educational software were not available in

many schools, making it difficult for teachers to effectively prepare for their lessons using ICT facilities.

Table 1 Relationship between Teachers' Attitude and Level of ICT Integration

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	639.872[a]	4	.027
Likelihood Ratio	398.003	4	0.912
Linear-by-Linear Association	.191	1	.662
N of Valid Cases	250		

Source: Field Data 2021

From Table 1, the calculated P-value is 0.027, which is less that 0.05; this implies that there is a significant relationship between teachers' attitude and ICT integration in the teaching and learning of Kiswahili in secondary schools. This means that when the attitude of teachers towards ICT integration improve positively, there is likely to be improvement in the teaching and learning of Kiswahili in secondary schools.

From the findings, the level of ICT integration in teaching and learning of Kiswahili is affected by the attitudes of teachers. Another meaning of the findings is that, the attitude of teachers determines the level of integration of ICT in teaching and learning of Kiswahili language. This is supported by Ertmer (2005) who revealed that a major factor in individual domain is individuals' belief about the usefulness of ICT. Teachers and students should believe the technology is useful for their purposes. If they believe ICT is useful for them, the logical conclusion is that they bear positive attitudes towards ICT. Research studies have demonstrated that the effective utilization of ICT depends largely on the attitudes of teachers who ultimately decide the way in which it is integrated in the classroom, Beggs (2000). The findings of this study also confirm the findings of Eugene (2006) that there is inconsistency between teachers' beliefs or perception and their actual use of technology in the classroom.

Table 2 Relationship between ICT Integration and Academic Achievement in Kiswahili

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	39.619	4	4.402	51.910	.012
Within Groups	3.392	255	.085		
Total	43.011	259			

Source: Field Data 2021

Table 2 showed that the p-value was 0.012, which is less than the 0.05; this means that there is significant relationship between the levels of ICT integration in learning of Kiswahili and the students' academic achievement in Kiswahili. The teachers who had low score in ICT integration in their teaching were likely to produce low grades in Kiswahili in their schools.

Ertmer (2005) demonstrated that a major factor in individual domain is individuals' belief about the usefulness of ICT. Teachers and pupils should believe the technology is useful for their purposes. If they believe ICT is useful for them, the logical conclusion is that they bear positive attitudes towards ICT. One might expect, then, positive attitudes will lead to more intensive use of it in educational settings.

Conclusion

From the findings, computer technology integration in Kiswahili integration is commonly applied in preparation of professional documents. Majority of Kiswahili language teachers use computers to make, keep and manage Kiswahili records such as preparing scheme of work, records of work and lesson plans. The computers are being underutilized in most public secondary schools in Nandi south sub county, especially in their integration with the actual teaching and learning process.

Since the teachers attitude towards ICT integration in teaching of Kiswahili language greatly influence the performance of teachers in class, the administration needs to provide more ICT resources and support to motivate the teachers on the application of ICT in teaching. The teachers could also be trained in ICT skills and the importance of integrating ICT in their classroom teaching.

The results showed that there is significant relationship between the levels of ICT integration in learning of Kiswahili and the students' academic achievement in Kiswahili. This implied that ICT based method of teaching was effective in enhancing students' conceptual understanding of Kiswahili language as well as improving their retention, which proved the effectiveness and uniqueness of the special features of ICT classroom teaching.

Recommendations

Based on the findings, the study recommends that the Ministry of Education should enhance training of Kiswahili language teachers in secondary schools in all the ICT skills and on how to integrate ICT in their teaching and learning; the Board of Management of various schools should improve on provision of internet facilities and ICT resources to aid teaching and learning of Kiswahili language.

The study also recommends that the parents should ensure that he learners are inducted in accessing e-resources and be trained in ICT skills. Constant appraisal should be done to teachers by the teachers' Service Commission on ICT integration in teaching and learning, and areas of improvement identified and addressed.

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