Assessment of The Availability of ICT and Leaner's Academic Achievement In Geography In Nyamira County Kenya

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ABSTRACT

The study sought to look at the availability of ICT usage in teaching, & learning of leaner's academic achievement of geography and to evaluate the sufficiency of infrastructure of ICT usage in schools. The researcher used descriptive research design and ex-posto facto design in this research. The study employed mixed method in conducting this study. The target populations were available from 190 public secondary schools in Nyamira County. The researcher used four instruments in data collection that is questionnaire, interviewing schedules, checklists and, documentary analysis. Sampling techniques used was simple random, proportionate and purposive sampling where sample size consisted of 30% of the total population of the respondents. The sample size was guided by use of infinite formulae. The schools were categorized into five geographical educational regions that are Nyamira North, Nyamira South, Manga, Borabu and Masaba Sub-Counties. Data collected from the field was analyzed using statistical package for social sciences (SPSS) version 22.0, where descriptive and inferential statistics like frequencies and percentages were used, instrumentation was examined through piloting of instruments in the selected 14 schools in Kisii county was used because it is assumed they are at the same geographical region they are ranked to determine their reliability and validity to make sure that the instruments are valid where a score of 0.7 and above was considered to be reliable. ICT has several importance to our learning institutions as listed in the study it enables learning process to be easy getting relevant learning material resources through the internet ,it is used anywhere ,anytime ,by everybody in need regardless of age and it creates an effective teaching & learning process which transform learning from teacher centered to learner centered. Many scholars have done a study in geography in other parts of the world but much has not been done in Nyamira County it is not adequately addressed so I take this study to be addressed. The study gave the findings that can assist in improving the teaching and learning of geography by using ICT and gave its recommendations that will assist the stakeholders on the findings of the study, the use of ICT in teaching and learning is paramount if a country like Kenya wants to achieve its sustainable development goals (SDGS) and vision 2030 for our industrial and economic growth through technological advancement in education by use of ICT in teaching and learning of learners in geography.

Keywords*-assessment, availability, ICT, teaching, learning, learners, geography, academic and achievement.*

I. INTRODUCTION

According to Baylak, (2016) and Evans&Popora (2015) have given more information on ICT in Europe .USA , and Australia where they have given clear importance of integration. Globely it is believed that ICT can empower teachers and learners in order to bring change in instruction and foster the development of education in the 21century skills, these can assist in our economic advancement in technology, and data to support these beliefs are still limited.

Usually there is a wide spread belief that ICTS can and will empower teachers and learners in their teaching and learning process ,transforming teaching and learning process from being highly teacher dominated to student centered. ,Hence this transformation will result in increased learning gains for students , creating and allowing for opportunities for learners to develop their creativity ,problem solving abilities ,informational reasoning skills communication skills and other higher order thinking skills, there are some challenges which make the use of ICT limited in its usage as a media of instruction ,as it has been asserted by Ra (2016) in his book education and technology key issues and debates London continuum international publishing group.In

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west Africa Rouse(2017) and Mtebe& Raphael(2017) have given in –depth analysis on the usage of ICT in African countries then in Kenya Mbugua (2015) has expressed the need of integrating ICT with Education for better results

When ICT is used by learners it makes some automatically like learning activities that has been recommended for our secondary school curriculum in teaching and learning of geography of us to attain our vision 2030.

Research Methodology

Research design according to Creswell (2017) is defined as a plan and procedure for research that extent the decisions from broad expectations to detailed approaches of data collection and analysis ,the study adopted a descriptive survey design and ex-posto facto research design ,in addition Taylor &Packham (2016) pointed out that a descriptive survey design enables the researcher to describe the state of activities as they are and report to the study the necessary findings as indicated from the outcome accordingly without any bias .According to Kothari(2014) ,these design is very efficient as it is one of the best strategy of collecting descriptive data concerning the characteristics of the population to justify current conditions and practices needed for the study, moreover, descriptive survey allows for rapid collection of data from a large   sample Within the shortest time possible by use of questionnaires, interview schedules and documentary analysis.

Availability of ICT Gadgets in Schools for Teaching

The major aim of this study was to establish the availability of ICT gadgets in our schools for teaching of geography in relation to learners' academic achievement in public secondary schools in Nyamira County – Kenya.

The availability of ICT gadgets in the usage of ICT in learners academic achievement in geography is key for meeting the objectives of education as being recommended by KICD in curriculum development ,these process of instruction is very instrumental in the progress made in, educational technology in Kenya as guided by our ministry of education ICT policy of 2005 ,2006 ,2012 and 2021.These is also being asserted by , the responses will assist us in realizing our educational goals as it is being analyzed in figure4.7 below

Table 4.1 Availability of ICT Gadgets in Schools for Teaching

Indicator	SD		D		UD		A		SD	
	f	%	f	%	f	%	f	%	f	%
Does implementation of ICT in your school face any challenges?	7	12.28	6	10.53	4	7.02	30	52.63	10	17.54
Do your teachers readily accept the usage of ITC in teaching?	15	26.32	25	43.86	3	5.26	8	14.03	6	10.53
Do you have enough ICT gadgets in your ICT center?	30	52.63	10	17.54	7	12.28	5	8.77	5	8.77
Do your teachers have prior ICT training on its usage during teaching?	18	31.58	22	38.60	6	10.53	5	8.77	7	12.28
Do you have trained ITC personnel in your school?	14	24.60	26	45.61	5	8.77	6	10.53	6	10.53
Do you have recent ICT gadgets in your school?	15	26.32	20	35.20	10	17.54	7	12.28	10	17.54
How many teachers to you have in your school who can handle ICT in class when teaching?	12	21.05	30	52.63	3	5.26	6	10.53	6	10.53
Does your teachers prepare adequately when using ICT for teaching?	11	19.30	21	36.84	10	17.54	6	10.53	7	12.28
Do you think ICT usage can enhance enrolment in geography bin your school?	10	17.54	9	15.79	10	17.54	20	35.20	8	14.03

Source; Field Data 2023

The findings from the first statement shows that 7(12.28%) of the respondents indicates that they strongly disagreed on the implementation of ICT in the schools face challenges ,6(10.54%) of respondents on the statement they disagreed that the implementation of ICT in schools have challenges,4(7.02%) of the Respondents were neutral,30(52.63%) ,of the respondents shows that they strongly agreed that the implementation as challenges while 10(17.54%) of respondents agreed that the ICT implementation in our schools have several challenges. According to the responses majority of respondents at 52.63% strongly supported the statement that the implementation of ICT in our schools have challenges while the minority at 7.02% who were neutral on the implementation of ICT challenges (Hephisibah, 2017).

The second statement on the study showed the following findings on the question on teachers readily accept the usage of ICT in teaching were the following responses were indicated 15(26.32%) of the respondents strongly disagreed that the teachers readily accept ICT usage in teaching ,25(43.86%) of the respondents disagreed that teachers accept the usage of ICT in teaching readily without any problem 3(5.26%) ,of the respondents were neutral or undecided on the readiness of teachers in teaching of geography by usage of ICT, 8(14.03%) strongly agreed that teachers were readily in use of ICT in class while 6(10.53%) of respondents agreed that the teachers are ready as indicated by the statements. These indicates that majority of respondents were at 43.86% that teachers are not readily accepting use of ICT in teaching while5.36% of the respondents were not sure whether the usage of ICT in instruction is carried out or not (Imon, 2017).

The third item of the statement which indicated that does the school have enough ICT gadgets ,the following findings were shown below 30(52.63%) of the respondents strongly disagreed with the

statement,10(17.54%) ,of the respondents also disagreed that the ICT centers in the schools have enough ICT gadgets that can be used for instruction of geography ,7(12.28%) of the respondents were neutral to the statement they neither opposed or supported the statement ,5(8.77%) of the respondents they strongly agreed with the statement that the schools visited during data collection had enough ICT gadgets that are used for instruction of geography while 5(8.77%)of our respondents also agreed with the statement that the schools have enough ICT gadgets that is used for geography instruction in our schools. These indicates that majority of respondents at52.63% disagreed with the statement that there are enough ICT gadgets for teaching of geography in our schools while the minority was at 8.77% who agreed with the statement that our schools have enough ICT gadgets in the instruction of geography using ICT (Rudy &Casandra, 2016).

In the fourth statement which wanted to inquire on weather teachers have prior ICT training ,the following findings were indicated as shown below ,18(31.58%) of the respondents strongly did not agree with the statement,22(38.60%) of respondents also disagreed with the statement on prior training of ICT ,6(10.53%) of the respondents were undecided on the training of ICT before teachers start using ICT gadgets in classes,5(8.77%) of the respondents strongly agreed with the statement that there was a prior training before teaching by use of ICT while 7(12.28%) of the respondents were in agreement with the statement on training. In conclusion the findings shows that the majority of respondents at 38.60% disagreed with the statement that teachers do not have prior training before they are needed to use ICT in class during instructions while the minority was at 8.77% who agreed that there was prior training. In essence no teacher who is trained to use ICT in class when teaching geography (Ra, 2016).

In the fifth statement weather there are trained personnel on ICT in schools the following findings were shown 14(24.60%) of the respondents strongly disagreed with the statement that there are trained ICT personnel in our schools ,26(45.61%) of respondents also disagreed with the teachers that there was no trained IC T personnel used by teachers for instruction,5(8.77%) of the respondents were neutral to the statement they are undecided either to agree or disagree ,6(10.54%) of the respondents strongly agreed that teachers are trained or their personnel before handling ICT gadgets in class while 6(10.54%) of the respondents agreed with the statement that the ICT personnel in our schools are trained .In conclusion   the majority of the respondents at 45.61% disagreed with the statement that there are enough trained ICT personnel in our schools while 8.77% of the respondents were undecided on the number of trained personnel in schools. This indicates that most schools do not have enough trained ICT personnel in our schools in Nyamira County (Rouse, 2017).

The sixth statement which wanted to inquire on the recent ICT gadgets in schools, the findings were 15(26.32%) of the respondents strongly disagreed with the statement ,20(35.20%) of the respondents disagreed with the statement that the schools have recent or modern gadgets in our schools,10(17.54%) of the respondents were neutral by not supporting any side of the likert scale,7(12.28%) of the respondents strongly agreed that our schools have recent ICT gadgets that is used in teaching of geography ,while 10(17.54%) ,of the respondents agreed that the recent gadgets of ICT are used in our schools to give instructions in geography .These indicates that the majority of respondents at35.20% disagreed with the statement that our schools have and use recent ICT gadgets in teaching of geography while the minority at 12.28% of the respondents were undecided on the statement ,in conclusion our schools do not have enough and recent ICT gadgets that can be used for instruction of geography in our schools (Rashid, Aniru, Aretin& Bahaman, (2018).

The seventh statement which wanted to inquire on the ability of teachers to handle an ICT class with usage gadgets ,the following findings were indicated as below 12(21.05%) of respondents strongly disagreed with the statement,30(52.63%) of the respondents also disagreed with the statement that teachers who teach geography can be able to teach in class by use of ICT gadgets ,3(5.26%) respondents were neutral on the statement ,6(10.53%) of the respondents strongly agreed with the statement on handling a lesson in class by using ICT while 6(10.53%) of the respondents agreed with the statement that teachers had enough ability to use ICT gadgets in class. These indicated that 52.63% of the respondents were the majority while the minority was at 5.25% of the respondents who never decided on the statement (Chaulan& Malik, 2016).

The eighth statement which was dealing with weather teachers prepare adequately when using ICT for teaching ,the findings were indicated as shown below,11(19.30%) of the respondents they strongly disagreed with the statement,21(36.84%) of the respondents also disagreed with the statement that teachers are adequately prepared to teach geography by usage of ICT , 10(17.54%) of the respondents were neutral on the usage of ICT weather teachers of geography are adequately prepared before giving instructions in class,6(10.53%) of the respondents strongly agreed with the statement that teachers are wee and adequately trained then prepared to teach geography by using ICT gadgets while7(12.28%) of respondents agreed with the statement that the teachers have adequate skills and knowledge on how to use ICT in teaching. The findings of the study indicated that the majority of respondents was at 36.84% who disagreed with the statement that teachers are adequately prepared on usage of ICT while using it in classroom instruction while 10.53% of the respondents are the minority who supported that teachers are adequately trained to handle a lesson in class when using ICT to give instruction .In conclusion   most teachers are not facilitated to attend in −service courses and seminars or

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workshops for ICT capacity building so the teachers in most schools do not have enough skills and knowledge that can enable them use ICT in class, most teachers are assisted by a few technical personnel in our schools which have ICT centers (Al-Harbi, 2014).

The last statement was inquiring on the usage of ICT to improve enrolment of geography in our schools, the study had the following findings 10(17.54%) of the respondents strongly disagreed with the statement ,9(15.79%) of the respondents also disagreed with the statement,10(17.54%) ,of the respondents were neutral of the statement they neither opposed nor supported it ,20(35.20%) of the respondents strongly agreed with the statement that when ICT is well used the subject enrolment highly increases and the number of students drastically grows while 8(14.04%) of the respondents agreed with the statement. In these statement the conclusion is that35.20% agreed that ICT can improve performance of geography and as a result the enrolment of the subject can be increased, these as been witnessed in some schools who have integrated ICT in the teaching of geography and now students can be able to see the subject to be learner centered because they can be involved in arranging and preparing Lessons .In conclusion the statement in the table has given more information that is concern with the availability of ICT gadgets in teaching and learning of geography in our schools (Aradu, 2015).

Table 4.2 how can ICT improve the teaching strategies

Indicator	SD		D		UD		A		SA	
	f	%	f	%	f	%	f	%	f	%
Can IC T improve the teaching strategies?	5	8.77	9	15.79	3	5.26	15	26.32	30	52.63
How do you coordinate teaching in your school?	8	14.03	7	12.28	2	3.50	25	43.86	20	35.10
Do you allow usage of ICT teaching in all subjects?	22	38.60	12	21..05	4	7.02	9	15.79	10	17.54
Do you have enough ICT gadgets in your school?	30	52.63	10	17.54	2	3.50	8	14.03	7	12.28
Are all your teachers trained in teaching using ICT in instruction?	9	15.79	31	54.39	3	5.26	7	12.28	7	12.28
How many years have you used ICT in your school for teaching?	10	17.54	21	36.84	4	7.02	10	17.54	12	21.05
What are your plans for ICT usage in your school?	7	12.28	7	12.28	3	5.26	21	36.84	19	33.33
What is the future of ICT in your school?	7	12.28	6	10.53	4	7.02	30	52.62	10	17.54

Source; Field Data 2023

From the statement the following findings were shown regards on how can ICT improve the teaching strategies ,the findings were as follows ,5(8.77%) of the respondents strongly disagreed with the statement can ICT improve teaching strategies,9(15.79%) of the respondents disagreed with the statement 3(5.26%) of the respondents were neutral of the statement they never indicated to either sides,15(26.32%) of the respondents strongly agreed that the statement was correct that ICT can improve the teaching strategies while 30(52.63%) of the respondents agreed with the statement that when ICT is used in teaching it improves the strategies and make the process become more student centered when the gadgets are used to give instructions in geography. These indicate that the majority of respondents at 52.63% show that they agreed with the statement while 5.26% of the respondents disagreed with the statement. In conclusion more teachers agree that with ICT usage more and improved teaching strategies can be achieved (Catlings, 2015).

In the second which was inquiring whether teaching is coordinated in our schools ,the study found the following findings ,8(14.02%) of the respondents strongly disagreed with the statement,7(12.28%) of the respondents also disagreed with the statement that there is coordination in the schools when teaching of geography is being done ,2(3.50%) of the respondents were neutral of the statement by not taking sides ,25((43.86%) of the respondents strongly agreed with the statement while 20(35.10%) of the statement was agreed with the respondents that when ICT is used in schools while teaching it is coordinated by subject teachers ,technicians and administrators before a lesson is taken .In the findings the indicators showed that the majority of respondents at 43.86% agreed that coordination is done in schools were ICT is used for instruction while the minority of 3.50% strongly disagreed that coordination takes place while teaching in the schools when ICT is used for instruction in geography (Hephisibah, 2017).

The findings in the third statement is that it was inquiring weather is ICT used in teaching other subjects in schools when giving instructions ,the following indicators were shown,22(38.60%) of the respondents strongly disagreed with the statement ,12(21.05%) of the respondents disagreed with the statement ,4(7.02%) of the respondents never supported any side by becoming neutral to the statement ,9(15.79%) of the respondents strongly agreed with the statement that all subjects use ICT during learning and teaching process while 10(17.54%) of the respondents agreed that teaching geography and other subject is done in our schools . In conclusion the findings showed that the majority of teachers do not use ICT in teaching all subjects at 38.60% while the minority was at 7.02% of the respondents were neutral to the statement .In conclusion the usage of ICT is only concentrated in some subjects were teachers just want to assist learners in improving their performance nationally at KCSE (Imon, 2017).

The fourth statement which was inquiring   whether the school has enough ICT gadgets, the following findings showed that 30(52.62%) of the respondents strongly disagreed with the statement, 10 (17.54%) of the

respondents   disagreed   with   the   statement,   2 (3.50%) of the respondents were neutral on the statement, 8(14.03) of the teachers agreed that they had enough ICT gadgets in their schools that can be used for instruction while 7(12.28%) of the respondents strongly agreed that the usage of ICT in their schools should be encouraged because their schools have enough ICT gadgets that can be used for instructions. In conclusion the majority of respondents were at 52.63% who disagreed with the statement while 3.50% of the respondents were the minority who were neutral to the statement, these indicates that most schools where the study was carried out had no ICT gadgets or some had a few gadgets that cannot be used effectively in giving instruction to students (Rudy &Casandra, 2016).

In the fifth statement were teachers were required to show weather teachers in these schools were able to handle a class using ICT have they been trained, the following findings were indicated as below by respondents 9(15.79%) of the respondents strongly disagreed with the statement,31(54.39%) of respondents also disagreed with the statement ,3(5.26%) of the teachers who gave their responses were neutral they never agreed nor disagreed with the statement ,7(12.28%) of the respondents agreed that all teachers in the visited schools can be able to teach in class of geography using ICT gadgets while 7(12.28%) of the respondents strongly agreed that the teachers can teach and handle ICT gadgets .In conclusion the majority at 54.39% of the respondents disagreed with the statement while 5.26% of the teachers were the minority who supported the statement (Ra, 2016).

The sixth statement shows the following findings ,the statement wanted to know the number of years teachers have used ICT in teaching ,the following are the indications 10(17.54%) of the respondents strongly disagreed with the statement ,21(36.84%) of the respondents disagreed with the statement ,4(7.02) of the respondents were neutral on the statement ,10(17.54%) of the respondents agreed that they have used ICT for many years when teaching geography while 12(21.05%) of the respondents strongly agreed that they have used ICT for teaching geography for a long time .In conclusion the findings showed that the majority of respondents were at 36.84% which indicated that teachers who used ICT in teaching and giving instruction for a long time while 7.02% of teachers were neutral on the statement (Rouse, 2017).

The seventh statement inquired on what are the future plans of using ICT in teaching of geography in their schools the findings are as follows7(12.28%) of the respondents strongly disagreed with the statement that there are plans for future use of ICT in their schools , 7(12.28%) of respondents also disagreed with the statement weather there are any future plans on ICT usage in the schools ,3(5.26%) of the respondents were neutral on the statement ,21(36.84%) of the respondents agreed with the statement that most schools have the future plans for ICT to be embraced by asking well-wishers to construct for them ICT centers while 19(33.33%) of the respondents strongly agreed that there are future plans on ICT usage in instructions of geography. In conclusions the study showed that majority of respondents were at 36.84% who agreed that there are future plans on ICT usage in their schools by requesting well-wishers to assist in the construction of ICT centers in their schools while 5.26% of the respondents who were teachers they disagreed with the statement with the future plans on ICT usage in their schools (Rashid, 2018).

In the last statement on the table above on whether there is an ICT center in their schools ,the following were the findings ,7(12.28%) ,of the respondents strongly disagreed with the statement ,6(10.53%) of the respondents disagreed also with the statement ,4(7.02%) of the respondents were neutral ,30(52.62%) of the respondents agreed that the ICT centers are in their schools while 10(17.54%) of the respondents strongly agreed with the statement .The findings indicated that the majority of respondents was at 52.62% who agreed with the statement that the schools have ICT centers while 7.02% of respondents were the minority who said that their schools do not have ICT centers (Chaulan& Malik, 2016).

The following are the recommendations   received by the respondents on the likert scale concerning the availability of ICT gadgets in our public secondary schools in Nyamira county The Teachers to be taken for an in service courses during the holidays and be facilitated to attend the ICT workshops and ICT capacity building seminars   during the school days when they are offered by ICT experts in the sub- county and county level or regional and then National ICT workshops

All ICT personnel in the schools to trained on how to prepare and arrange lessons for geography class using ICT gadgets and even be trained on how to improve and do some repair on the gadgets which are in their schools that are used for instructions or in administration and accounts offices, departments and other areas where ICT is applied (Al-Harbi, 2014).

The schools in the county to be assisted by well-wishers and the ministry of education with budgeted free secondary funds so that the ICT centers can be constructed to enhance teaching pedagogies in our schools for better results in geography and other subjects. The ministry of education to allocate more funds that can assist in improving all infrastructures on ICT in all areas of learning in our schools, these funds can also be funded by NGOS and the Kenyan government if they want us to improve in educational development as it is the corner stone of our industrial and economic development (Aradu, 2015).

The ICT policy in Kenya of 2005, 2006, 2018 and 2021 will be fulfilled when more funds can be channeled to our learning institutions in order for us to achieve vision 2030 as stipulated by our economic development flagship projections. ICT gadgets and other ICT items needs ready supply of electricity so that it can be easily used in our schools to facilitate instructions in class, so the Kenyan government in conjunction with the ministry of education in all public schools in our county to be supplied with electricity and have a stand by solar panels to assist in case of power blackout due to any eventualities that may occur (Catlings, 2015).

The school managers through the ministry of education, science and technology plus all other stakeholders should be sensitized on the usage of ICT in teaching and learning process ,so that they can know the importance of ICT ,skills and knowledge of learners are acquired when the pedagogies process is learner centered, this makes learning easier because learners are involved in the learning process (Hephisibah, 2017).

The ministry of education through KICD should inform teachers the importance f the usage of ICT to the learners and that ICT is a teaching machine and it's not going to replace them during the teaching process. in essence teachers should not fear for losing their job when they are using ICT in teaching .The responses proposes to KICD to prepare learning materials using ICT while teaching that is they give slides machines projectors and all software and hardware to our schools for easy facilitation .Finally the ministry of education to prepare a curriculum for our schools by allocating enough time for using ICT for teaching and learning .A time table to be prepared by KICD for time allocation so that the lesson cannot interfere with other lessons (Imon, 2017)

Conclusions of the Study

The availability of ICT gadgets in schools has appositive and statistically significant effect on the usage of ICT in teaching and learning of geography in our public secondary schools in Nyamira county, results indicated that not all schools which have ICT gadgets of any type and ICT rooms or center were the ICT gadgets can be kept for any further use .Some schools which have very few rooms are almost 5% of the total schools in our county. The purchase of ICT gadgets is often done and the KICD has not given a clear guideline to the ministry of education the importance and the goodness of using ICT gadgets for pedagogical instructions in our schools. In conclusion most schools to be assisted to construct ICT centers or rooms if we want our schools to embrace ICT in teaching and learning of geography that can make learning easy and learner centered.

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