IOSR Journal Of Humanities And Social Science (IOSR-JHSS)
Volume 20, Issue 2, Ver. II (Feb. 2015), PP 90-99
e-ISSN: 2279-0837, p-ISSN: 2279-0845.
www.iosrjournals.org

School's preparedness in information communication Technology integration in teaching and learning in public secondary schools.A case of Kieni East subcounty nyeri county kenya.

Sossion Wilson[1*], Ndirangu Lydiah[2] & Wambugu Pachomius[3]
[1,2&3]*(Department of Education and Social Sciences, Kenya Methodist University,Kenya)*

Abstract: *Education is in the process of a major change, where through innovations in technology and teaching methodology, academic institutions are being given an opportunity to work for the benefit of the student.Information and Communication Technology (ICT) can enhance universal access to education, equity,quality and efficiency in education. The use of the computer in curriculum delivery, in particular, promises better and improved methods of educational content delivery, methodology and pedagogical skills as well as expanding the availableteaching and learning knowledge base. Whereas technology cannot replace a teacher in the instructional process, it forms an important and additional resource for both the teacher and the learner to promote interactive and participatory learning. Information and Communication Technologies (ICTs) in teaching and learning are technological tools in form of hardware and software that help communicate, develop, disseminate, store and manage information. This study was conducted to establish schools' preparedness in information communication technology integration in teaching and learning in public secondary schools in Kieni East Sub County, Nyeri County-Kenya. The objectives of the study are to (i) establish E-learning preparedness in teaching and learning in public secondary schools (ii) explore school based efforts in ICT integration in teaching and learning and (iii) investigate challenges facing schools in the development of ICT in public secondary schools. Questionnaires were administered to 39 teachers in public secondary schools. Findings indicated that 77.8% of the male respondents disagreed that schools organized regular training on computers. Theresearchers found that 90.9% of the schools had no usage of the Wikipedia while 80% had the usage the Encarta. Further the study found that 77.7% of the schools had not benefited from the government grants toward E-Learning.Challenes facing the schools included among others lack of skilled personnel to repair and service computer. The study recommends that schools should organise compulsory ICT seminars for teachers especially during school holidays and make ICT literacy training compulsory for all practicing teachers.*

Keywords: *Curriculum Delivery, Education, Government Grants, E-Learning, Information Communication Technology*

I. Introduction

Information Communication Technology (ICT) integration refers to the use of ICT to enhance the teaching and learning process. It is used to engagelearners in meaningful learning that translates into improved student performance. Effective ICT integrationshould focus on pedagogy design which takes into account the fact that teachers need to learn abouttechnology in the context of their areas of specialization.Yilmaz, (2011) in assessing the technology integration processes in the Turkish education systemreported that in providing schools with hardware and internet connections, it is also crucial toprovide the schools with technical support with regard to repair and maintenance for the continuesuse of ICT in schools. The Becta (2004) report stated that "if there is a lack of technical support available in a school, thenit is likely that technical maintenance will not be carried out regularly, resulting in a higher risk oftechnical breakdowns". Many of the respondents to survey indicated that technical faults mightdiscourage them from using ICT in their teaching because of the fear of equipment breaking downduring a lesson. Therefore, lack of technical support is very stressful for the teacher, which mayaffect the teacher's willingness in the adoption of ICT (Tong & Trinidad, 2005).**S**tudies have shown that school leadership plays an increasingly important role in leading change,providing vision and objectives, as well as professional development initiatives in using ICT tobring about pedagogical changes (Schiller, 2003).When usedappropriately, ICT can help to strengthen the importance of education to increasingly networkedsociety, raising quality of education by making learning and teaching an active process connected toreal life (Zaman, Shamim and Clement, 2011). Technology can support pedagogical, curricular, andassessment reforms, which intend to support the process of knowledge creation (Kozma, 2005).In Kenya the Ministry of Education (2005: 105), the government appreciates and recognises that an ICT literate work force influences a country's economy.

Thuranira and Ndirangu, (2014) found that 68.3% of the students did not have access to the computers while 19.5% and 12.2% had 3-4 and 1-2exposure in schools. On the other hand 65.5% of the teachers had no access while 31% had between 1-3 hours .Theresearcherss wanted to know where the students and the teachers used the computers and the findings showed that 71%used the computer laboratory, 12.9% in the library and 16.1% in the classroom. In the case of teachers the researcherss foundthat 65.5% used computers in the computer laboratory ,3.4% in the library .Students stated that 72.1% had an encounterwith computers at home,18.6% at school and 9.3% in the primary school. The study further realized that 33.3% of theteachers did not have computers and 3.3% had personal computers. On the other hand 85.2% of schools had no usage of wikipedia while 14.8% had some usage .Further 75.9% of the teachers disagreed that the school organizes regular training on computers while 24.15 % agreed. This study was set to establish schools' preparedness in information communication technology integration in teaching and learning in public secondary schools in Kieni East Sub County.

1.1 Statement of the Problem

While studies have shown that Information and Communication Technology (ICT) enhances universal access to education, equity,quality and efficiency in education it is not clear what specific factors impend its efficient integration in public secondary schools. If the factors influencing ICT integration in public secondary are not identified and addressed accordingly, opportunities that would have otherwise been available for teachers and children will be lost. This will in the long run make it difficult to reduce regional disparities in as far as performance in Kenya is concerned. It is for this reason that the researchers were prompted to investigate schools' preparedness in information communication technology integration in teaching and learning in public secondary schools in Kieni East Sub County.

1.2 Purpose of the Study

The purpose of the study was to investigate schools' preparedness in information communication technology integration in teaching and learning in public secondary schools in Kieni East Sub County.

1.3 Objectives of the Study

The objectives of this study were to:

(i) Establish E-learning preparedness in teaching and learning in public secondary schools
(ii) Explore school based efforts in ICT integration in teaching and learning and
(iii) Investigate challenges facing schools in the development of ICT in public secondary schools.

1.4 Justification of the study

The key beneficiaries of the study are the teachers and learners in public secondary schools. Schools may be sensitized to implement ICT policies regardless of the challenges facing its implementation. The teachers may develop a positive attitude towards ICT in schools and in the long run apply it effectively in teaching and learning process. The students in the public schools will therefore then do well in schools and achieve quality grades in the national examinations. Other beneficiaries will include the researchers, schools, various ministries, the community and Kenya Government as whole .The findings of the study will assist other researchers in other universities as they further their research.

1.5 Scope of the Study

This study specifically focused teachers in Kieni-East Subcounty in public secondary schools. Form three teachers were involved because they have been with the students for a longer period of time.

II. Methodology

2.1 Research Design

The research design adopted in this study was descriptive survey. This method was relevant to the study because it involved frequency of answers to the same questions by different respondents. Both qualitative and quantitative techniques were used. By qualitative techniques, the researchers included open ended items where the respondents were given an opportunity to express their views .Quantitative techniques meant measuring numerical values. Measures of central tendency such as mode, mean, median, frequency and standard deviation were used. By use of this design the researchers intended to report the status of schools' preparedness in ICT integration in public secondary schools as it were in the schools studied.

2.2 Sample Size and Sampling Procedure

The researchers randomly picked three schools from each of the four educational zones which were then coded. This was used to ensure a good representation from every education zone in the District. Form three subject teachers were purposively selected because they have been in school for a longer period.

2.3 Research Instruments

The research study used triangulation methodology in data collection. Questionnaires, document analysis and observations were used. Observations were made where information recorded was researchers' own observations, without interviewing the respondents. The information was related to what was happening during the material day of the study and was not related to the past behaviours or future intentions. Questionnaires were administered to the form three subject teachers.

2.4 Piloting of Instruments

Piloting is done to ascertain the reliability and validity of the instrument to be used for collecting data (Mugenda&Mugenda, 2003). A pilot study was carried out in two schools a neighbouringKieni West Sub County. This exercise determined the time needed to carry out the study in one school.After the study, certain items that seemed unclear were altered or eliminated.

2.5Reliability of the Instrument

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials (Mugenda&Mugenda, 2003). Reliability is a synonym for consistency and replicability over time, over instruments and over groups of respondents (Cohen, Manion&Morrison, 2000). In this study, reliability of the questionnaire instruments was achieved through test-retest procedure. The researchers administered the instrument in one school and after some time administered it again. A reliability coefficient was computed using the Spearman's coefficient of the correlation formula. A reliability of 0.75 for teacher's questionnaire was realised, hence the researchers considered the instrument reliable and thus they were administered.

2.6 Validity

Validity is the degree to which results obtained from the analysis of the data actually represent the phenomenon under study (Mugenda&Mugenda, 2003).It is concerned with establishing whether the questionnaire content is measuring what it is supposed to measure. It is concerned with how accurately the data obtained in the study represents the variables of the study. Content validity is a measure of the degree to which data collected using a particular instrument represents a specific domain of indicators or content of a particular concept (Mugenda&Mugenda, 2003). Prior to the pilot study, the researchers had availed the instruments to classmates and supervisors whose input assured validity through discussions. Administrative difficulties resulting from piloting, informed the decision to have the teacher remain with their questionnaires to a maximum of three days. This ensured that they had adequate time to study and understand the items thus increasing their validity. Further, it was discovered that some respondents gave more than one choice and instructions to tick were provided. Questions and words that were ambiguous were rephrased.

2.7 Data Analysis

Data analysis is the process of bringing order, structure and meaning to the mass of information collected (Mugenda&Mugenda, 2003). In this study qualitative data was derived from open-ended questions in the questionnaires. The researchers perused the collected data and identified information that was related to the research questions and objectives and came up with themes. Different cards were used to record different themes. Related topics to the research questions were categorized and a coding system developed based on collected data. The frequency with which an idea or description appeared was used to interpret the importance. To facilitate quantitative analysis, questionnaires wereprecoded. A code book was prepared to enable the data to be entered into the computer. For objective items data was first organized in terms of percentages according to the categories on the likert rating scale type responses. The data was tabulated on the basis of how many strongly agreed (5points), agreed (4points), neutral (3points), disagreed (2points) and strongly disagreed (1point) and presented as percentages of the total number of responses. These were further condensed into broad groups of agree for strongly agree and agree, disagree was for strongly disagree and disagree. The researchers allocated 1 to no and 2 to yes. Summated scales consisted of a number of statements which expressed either favourable or unfavourable attitude towards the given object to which the respondent was asked to react. Each statement was given a numerical score indicating its favourableness or unfavourableness. The scores were totaled to measure the respondent's attitude. The overall scores represented the respondent's position towards an issue. Missing data represented unanswered questions. The researchers also used statistical techniques which

included frequencies and percentages, cumulative frequency percentage and cumulative frequency, means and standard deviation and modal responses. The findings were graphically represented in pie charts, bar graphs and frequency polygons.

III. Results And Discussions

3.1 E-learning Preparedness in teaching and learning in public secondary schools

3.1.1 Male Teachers Responses

Teachers were asked to indicate asked if their schools organized regular training on computers (Fig.1).The responses were that 77.8% disagreed while 22.2% agreed.Responses regarding attendance of E-learning forums organized for teachers. The findings of the study indicated that 77.8% disagreed while 22.2% agreed. The researchersargue that the teachers are not adequately prepared in the usage of the computers.

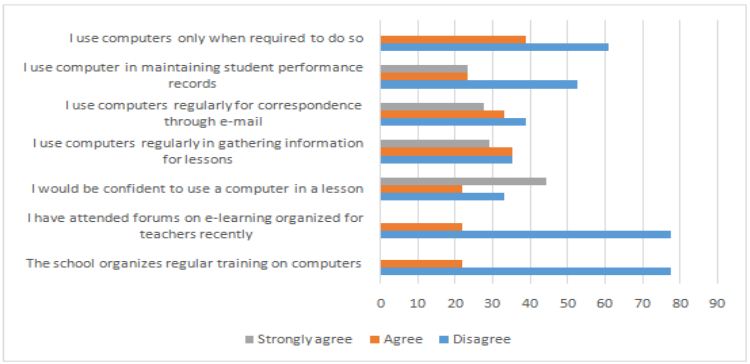

Figure 1: MaleRespondents Responses Regarding E-Learning Preparedness (DATA 2014)

3.1.2 Female Teachers' Responses

The researchers wanted to know if the schools organized regular training on computers (Fig.2).The study realized that 72.7% did not organize while 27.3% did. These responses are similar to the male teachers' response which calls for immediate action as far as training all the teachers is concerned.

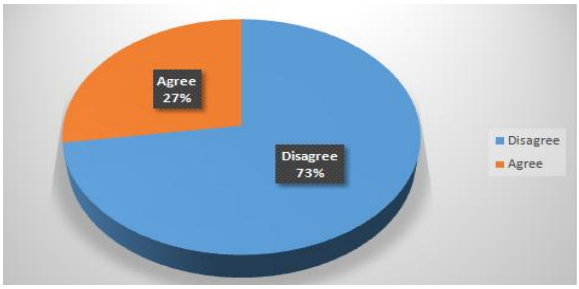

Figure2: Organisationof Regular Computer Training (DATA 2014)

In establishing the availability of workstations used by staff and that are connected to the internet (Fig.3), the study found that 54.5% had none. On the other hand 27.3% had very few while 18.2% had just a few. The responses may be as a result of the administration use where the students' as well as staff records are stored. This indicates that internet use regarding teaching and learning is wanting in these learning institutions.

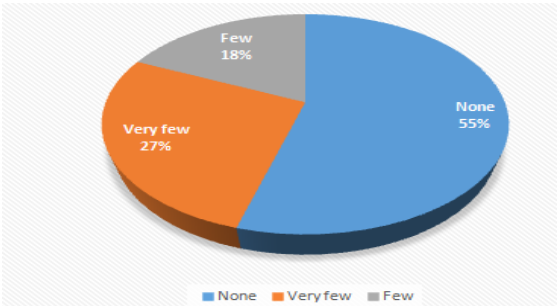

Figure 3: Availabilityof Internet Connections (DATA 2014)

The researchers wanted to know the availability of printers in the schools (Figure).The response was that 45.5% of the schools had very few, 27.3% had adequate, 18.2% had none while 9.1% had very few (Fig. 4). This was very positive bearing in mind that some printing has to be done in administering of the school and in the evaluation process. The study notes that the teachers should be well trained in printing so that they are able to type examinations or prepare class notes and later on print on their own. Skills in ICT will be enhanced greatly.

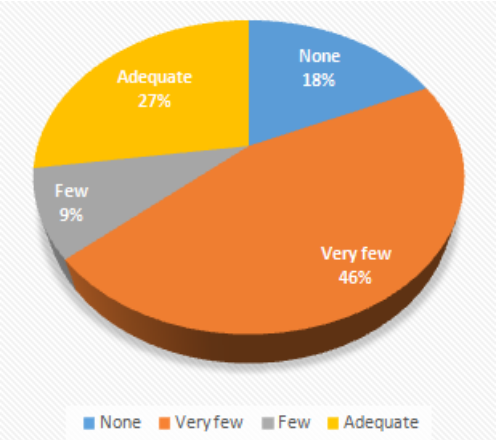

Figure4: Availabilityof Printers in Schools (DATA 2014)

Figure 5 indicates that 90.9% of the schools studied had no usage of Wikipedia.Regarding Encarta the findings indicated that 80% had no usage of the Encarta while 20% had some usage (Fig. 6).This concludes that there is a great need to train the teachers who will further make use of the Wikipedia and Encarta and be more knowledgable.This will see to it that the students are not more literate than the teachers as far as ICT skills are concerned.

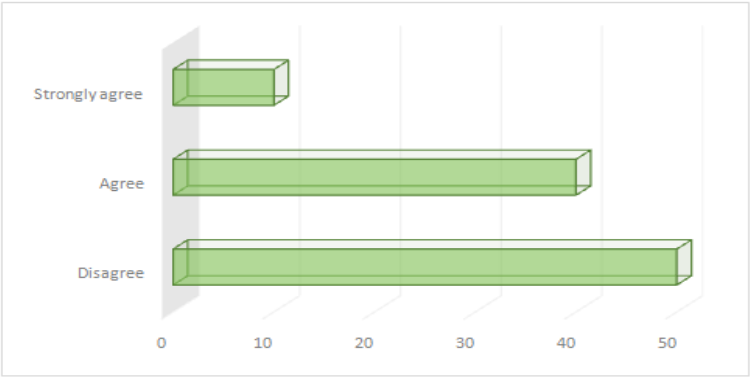

Figure 5: Usage of Wikipedia(DATA 2014)

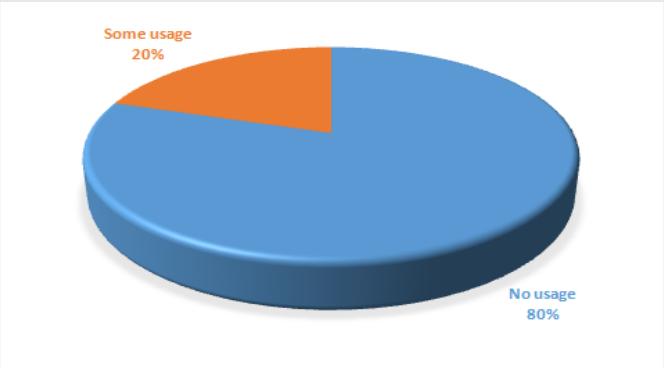

Figure6: EncartaUsage (DATA 2014)

The researchers wanted to if there were teachers who acted as resource persons in e-learning. Figure 7 below shows that 70% agreed while 30% disagreed.

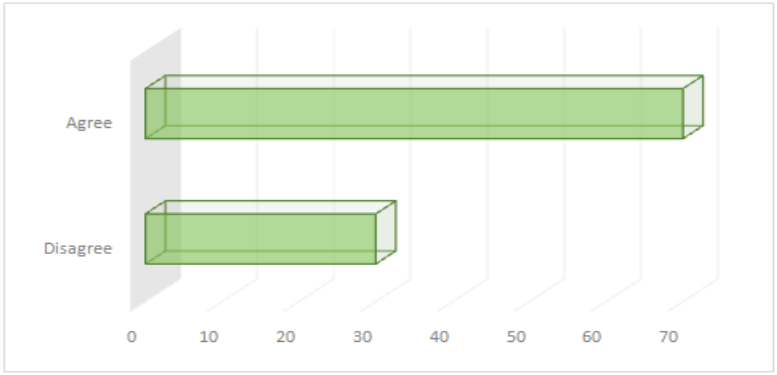

Figure7: Teachers Acting as Resource Persons (DATA 2014)

3.2 Explore school based efforts in ICT integration in teaching and learning

3.2.1 Male Teachers Responses

The study further investigated the extent to which the schools had benefited from any government grants towards E-learning (Fig. 8).Results indicated that 22.2% of the schools had benefited while 77.7%% had not. These responses indicate that the government has not fully supported the public schools in implementing ICT policy in teaching and learning. This creates a gap between the performance of secondary schools and day schools.

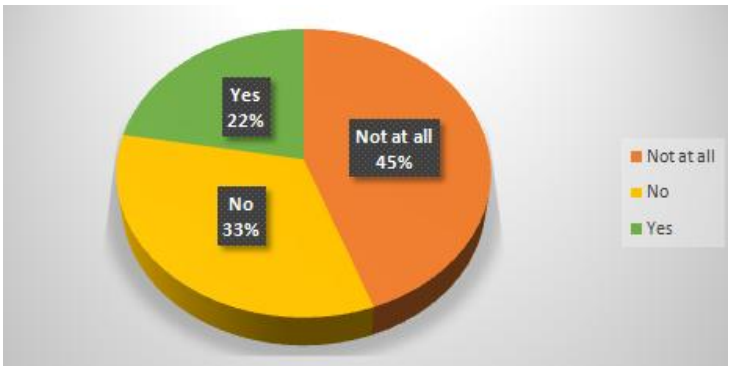

Figure 8: GovernmentGrants towardsE-Learning (DATA 2014)

The researchers further investigated the extent to which those who had benefited had (Fig. 9).According to the study 75% had benefited once while 25% had oftenlybenefited. Theresearchers argue that there is need to increase the frequency in offering government grants.

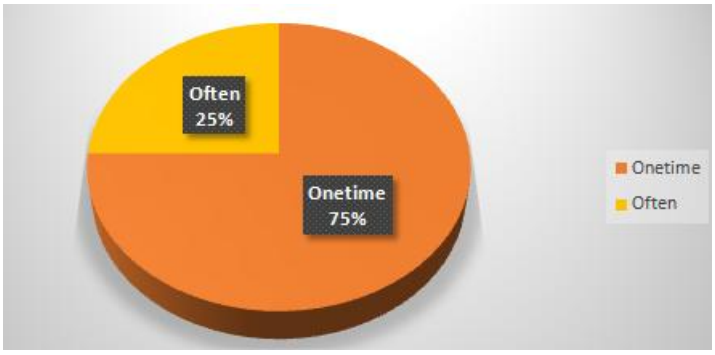

Figure9: Frequency of Schools Benefiting (DATA 2014)

Further research wanted to know teachers' opinion regarding schools charging a levy on the students' fees towards the development of E-learning(Fig. 10).Data revealed that 61.1% supported,22.2% supported while 16.7% felt that it was a burden to the parents. These responses clearly show that the schools rely on the parents for financial support as a result of the government failing to release funds for ICT in schools. In the researchers view the teachers are very positive about the parents and in this way the schools are in a position to move an extra mile at all times.

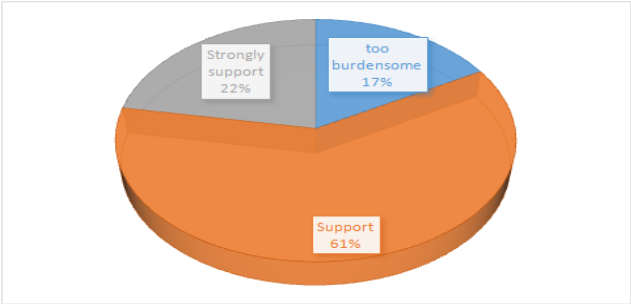

Figure10: ChargingParents a Levy on the Students' Fees for E-Learning (DATA 2014)

3.2.2 Female Teachers' Responses

Figure 11below indicates that majority of the teachers, (81.8%) disagreed that they had attended forums on E-learning and 9.1% strongly agreed. Failure to attend these forums could be as a result of lack of funds in the school or lack of support from the principal of the school.

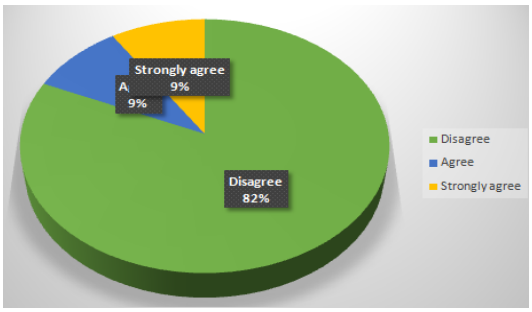

Figure 11: Attendanceof E-Learning Forums (DATA 2014)

Regarding schools benefiting from government grant towards E-learning (Fig. 12), data indicated that 10% had benefited while 60% had not. These results are similar to those that resulted from the male teachers. There is need for the government grant all the time.

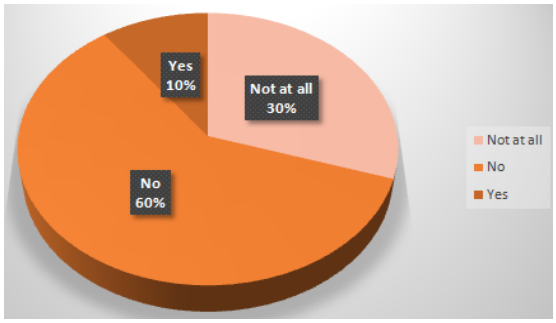

Figure 12: Government Grants towardsE-Learning (DATA 2014)

The researchers further wanted to know the extent to which the schools had benefited (Fig.13).According to the study 50% had benefited one time while 50% oftenly benefited.

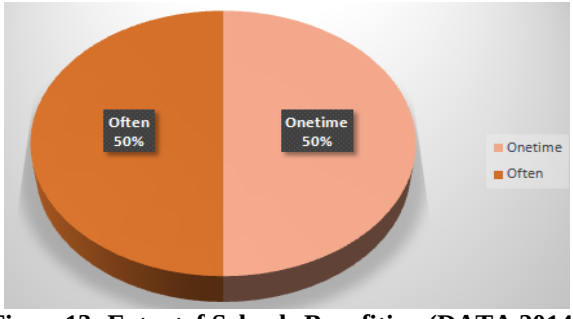

Figure13: Extentof Schools Benefiting (DATA 2014)

Teachers were asked of their opinion towards charging parents towards the development of E-learning (Fig.14).Results indicated that majority (90%) felt that parents' support was necessary while 10% felt that it was a burden. Similarly the male teachers felt the same. Theresearchersconclude that the parents have a good will for the parents as well as the teachers regarding ICT in school.

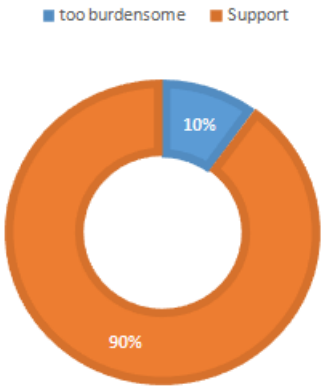

Figure 14: Opinion towards Charging Parents (DATA 2014)

3.3 Investigate challenges facing schools in the development of ICT in public secondary schools.

3.3.1 Male Teachers' Respondents

The study sought to investigate from the teachers if the schools had received donations towards E-learning from various sources(Fig. 15).The findings of the study indicated that40% had been received from the corporate,10% from Non-Governmental Organizations while 40% had received from other organizations.

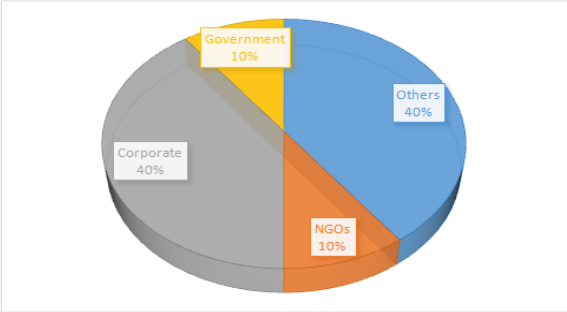

Figure 15: MaleRespondents Responses Regarding Challenges Facing Schools (DATA 2014)

Results indicates that 55.6% of the teachers disagreed with the statement that getting skilled personnel to repair and service computers was not a problem(Fig. 16).The study further revealed that 33.3% agreed while 11.1% strong agreed. Teachers were asked to respond to their views regarding ability of people within the school that can create digital content from the curriculum. Results indicated that 58.8% disagreed, 35.3% agreed while 5.9% strongly agreed. According to the study majority (50%) of the teachers agreed, 38.9% disagreed while 11.1% strongly agreed. The study notes that skilled personnel is wanting which can assist in the teaching and learning process as a whole.

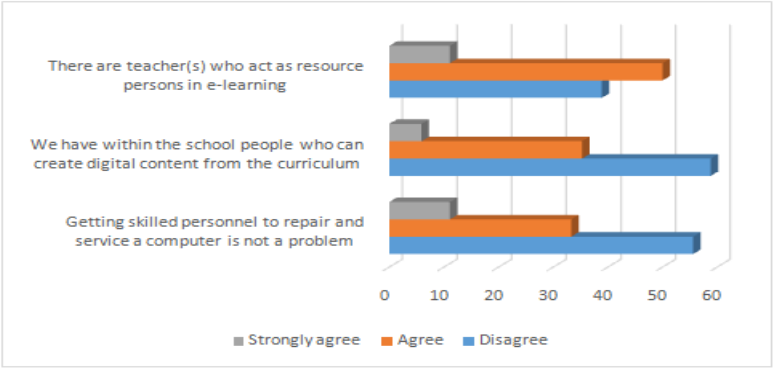

Figure 16: FemaleRespondents Response Regarding Challenges Facing Schools (DATA 2014)

3.3.2 Female Teachers' Responses

The researchers further wanted to know if schools received donations towards E-learning from different sources (Fig.17).Results indicated that 50% was from the government while 50% was from other sources.

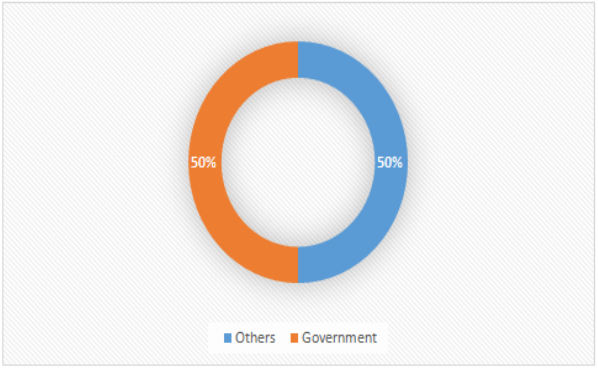

Figure 17: Donations Towards E-learning (DATA 2014)

In establishing availability of skilled personnel to repair and service computers (Fig. 18) the results were as discussed below. Majority (50%) disagreed, 30% agreed while 20% strongly agreed. Theresearchers argue that the fact that the teachers are not adequately trained means that they too may be lacking the skills to guide the learners. If the teachers were well skilled the academic performance of the school would rise in a great way.

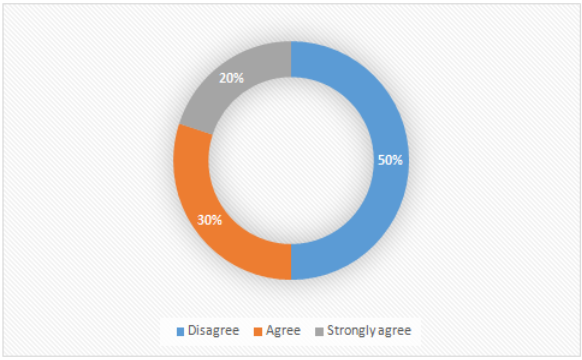

Figure 18: Availability of Skilled Personnel (DATA 2014)

The researchers felt the need to establish if there were people within the school who could create digital content from the schools .Data revealed that 50% disagreed, 40% agreed while 10% strongly agreed. According to these responses there is a great need for teachers in public secondary schools to be fully computer literate.

IV. Summary Of The Findings

The results indicated that public secondary schools are not yet well prepared in ICT integration in teaching and learning regular training for teachers in computer is very crucial. The study found that there is little or no usage of internet, Wikipedia as well as Encarta. Regarding efforts in the ICT integration the findings indicate that the government grants do not reach the schools. Teachers felt that the schools should charge the parents a fee towards the development of E-learning. Theresearchers identified some challenges which include, unskilled personnel, lack of government grants and ability to create content from the curriculum wanting.

V. Conclusion

The study was set to investigate schools' preparedness in information communication technology integration in teaching and learning in public secondary schools in Kieni East Subcounty, Nyeri County, Kenya. From the findings the researchers argue that there is need to regularly train the teachers and encourage them to attend E-learning forums at regional and national levels. Given these responses the government needsto sponsor public secondary schools in equipping the schools with the basic items required in ICT. The study realized that even though parents need to finance the teachers should move an extra mile and take it among themselves to update with the current trends in ICT and its integration in schools.

VI. Recommendations

Following the findings of this study, the researchers recommend the following aimed at preparing public secondary schools ICT integration in teaching and learning process. They included the following:

- University training should offer relevant ICT courses for 'integration of ICT in schools.
- Organise compulsory ICT seminars for teachers especially during school holidays.
- Make ICT literacy training compulsory for all practicing teachers.
- The Teachers Service Commission should employ qualified ICT teachers in schools to encourage ICT use.
- The government should make it a requirement for all principals to have a working computer in their offices.
- ICT literate teachers should be motivated through promotion and quantifiable incentives.
- Professional bodies like the Kenya Secondary Schools Heads Association should use part of its funds to train teachers in ICT skills.

Acknowledgements

In the course of writing this paper, we have received assistance from several people. We would like to appreciate the untiring contributions of certain persons for their support; encouragement and motivation which helped us bring this paper into a reality. This paper would not be complete without the help and invaluable support of the Almighty God for giving us good health. Sincere thanks goes to the principals and teachers of public secondary schools in Kieni-East Sub County ,Nyeri County for their participation in this study.

References

[1]. Becta.(2004). A review of the research literature on barriers to the uptake of ICT by teachers. Retrieved June 10, 2010, fromhttp://partners.becta.org.uk/page_documents/research/barriers.pdf.
[2]. Cohen, M., L. & Morrison, K. (2000).Research methods in education.(5th Ed.). London: Routledgerfalmer.
[3]. Kozma, R. (2005). National policies that connect ICT-based education reform to economic and social development. Human Technology, 1(2)
[4]. Ministry of Education Science and Technology, (2005).Session Paper No. 1 of 2005 on a policy framework for education, training and research meeting the challenges of education, training and research in Kenya in the 21st century. Nairobi, Gov Printer.
[5]. Mugenda, O.M &Mugenda, A.G. (2003): Research Methods:Quantitative and Qualitative Approaches.Nairobi:Acts press.
[6]. Schiller, J. (2003).Working with ICT Perceptions of Australian Principals.Journal of Educational Administration, 41(2), 171-185.
[7]. Thuranira,S. and Ndirangu,L.(2014) Teachers' Preparedness in the Integration of Information Communication Technology in Public Secondary Schools. International Journal of Innovation and Scientific Research Vol. 12 No. 1, pp. 107-114
[8]. Tong, K.P., and Triniada, S.G. (2005). Conditions and constraints of sustainable innovative pedagogical practices using technology. Journal of International Electronic for leadership in learning, vol. 9, no.3, pp. 1-27.
[9]. Yilmaz, N.P. (2011). Evaluation of the Technology Integration Process in the Turkish Education System.Contemporary Educational Technology, vol.2, no.1, pp. 37-54.
[10]. Zaman, M, Shamim, R, & Clement K (2011) Trends and issues to integrate ICT in teaching learning for the futureworld of education, International Journal of Engineering & Technology 11(3) 114-119.