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Teachers' Preparedness in the Integration of Information Communication Technology in Public Secondary Schools: A Case of Kieni East District, Nyeri County - Kenya

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ABSTRACT: The use of Information and Communication Technology (ICT) in and for education is rapidly expanding in many countries and is now seen worldwide as both a necessity and an opportunity for improving and enhancing the education offered to citizens across the globe (UNESCO, 2006).This study was conducted to investigate teachers 'preparedness in the integration of Information Communication Technology in public secondary schools in Kieni East District Nyeri County-Kenya. The objectives of the study are to (i) establish E-learning sustainability (ii) explore attainment of computer skills and (iii) establish funding strategies in place. Questionnaires were administered to teachers and students. Findings indicated that 90% of the teachers felt that learning computers contributes to the development of the country and especially vision 2030. The study revealed that 68% of the students had no access to internet though 95% can browse the internet using the computers. The level of teachers' preparedness and awareness is low. These findings indicate that majority of the teachers have not yet integrated ICT in the teaching learning process in public secondary schools in Kieni-East District.The study recommends that teachers are taken through workshops that target use of ICT in the teaching learning process. Teachers should be encouraged to buy personal computers which they can use while in and out of school to increase teachers' perception on ICT.

KEYWORDS: Information and communication technology, Teachers' Preparedness, Teachers' perception of ICT

1 INTRODUCTION

There is enough evidence from existing literature that "teachers are slow to recognize the benefits of new technologies" (Edyburn, 2000 in Zahari, 2005). In limited occasions that technology is used and is still not being used effectively by teachers and therefore it does not impact on learners' performance (Polly et al, 2010). This is a serious concern especially for science subjects and mathematics where learners' performance is usually low. According to Sang et al (2009) and Zhao & Cziko (2001), teachers' educational beliefs impact on their use of ICT. This was the result of a quantitative survey conducted by Sang et al (2009) on 873 primary school teachers from 11 Chinese provinces and municipalities, and of a literature survey by Zhao & Cziko (2001). Kumar et al (2008) conducted a survey of Mathematics, Science and English (MSE) teachers from 65 Malaysian secondary schools. A multiple regression statistical procedure was then used to model socio-demographic factors against AUC and technology acceptance constructs. It was found that, in addition to the attitude and motivation factor already mentioned above, gender; age and computer training have an effect on the Actual Usage of Computers (AUC) by teachers.

The rapid growth in Information Communication and Technologies (ICT) has brought remarkable changes in the education sector in the twenty-first century and affected demands of the modern society. Therefore there is need for all the stakeholders in the field of education to be well equipped with ICT in order to bridge the existing technology gap in teaching and learning processes. To successfully initiate and implement educational technology in the schools depends strongly on the teachers' support and attitudes. Some researchers studied the relationship between teachers' perceptions of the use of ICT and their actual integration of ICT into teaching and learning processes. Eugene (2006) explored the effect of teachers' beliefs

and attitudes towards the use of ICT in classrooms. An observation method was used to collect data on teachers' beliefs and attitudes. The study revealed that there was inconsistency between teachers' beliefs and their actual use of technology in the classroom. Teachers' beliefs and teaching practices were found not to match. Similarly, Simonson (2004) used a quantitative study to explore the beliefs of primary school teachers on the use of ICT in teaching. The result revealed that teachers' beliefs and attitudes were related to their use of technology. Also, Drent and Meelissen (2008) conducted a study about factors which influence the innovative use of ICT by teacher educators in the Netherlands. Their study revealed that student–oriented pedagogical approach, positive attitude towards computers, computer experience, and personal entrepreneurship of the teacher educator have a direct positive influence on the innovative use of ICT by the teacher.

Research has shown that teachers' attitudes towards technology influence their acceptance of the usefulness of technology and its integration into teaching (Huang & Liaw, 2005). In EU Schoolnet (2010) survey on teachers' use of Acer netbooks involving six European Union countries, a large However, evidence suggests that small number of teachers believe that the benefits of ICT are not clearly seen. The empirical survey revealed that one fifth of European teachers believed that the use of ICT in teaching did not benefit their students' learning (Korte & Husing, 2007). A survey of UK teachers also revealed that teachers' positivity about the possible contributions of ICT was moderated as they became 'rather more ambivalent and sometimes doubtful' about 'specific, current advantages' (Becta, 2008, p.45). Teachers' computer experience relates positively to their computer attitudes. The more experience teachers have with computers, the more likely that they will show positive attitudes towards computers (Rozell & Gardner, 1999). Positive computer attitudes are expected to foster computer integration in the classroom (van Braak, Tondeur, & Valcke, 2004). However, while there are a number of studies on teachers' perceptions, skills and practices of ICT in secondary schools in developed countries, there is lack of study on teachers' preparedness in the integration of Information Communication Technology in public secondary schools in Kieni EastDistrict,Nyeri County- Kenya

1.1 PROBLEM STATEMENT

Evidence suggests that teachers' attitudes and beliefs influence successful integration of ICT into teaching (Hew & Brush, 2007; Keengwe & Onchwari, 2008). If teachers' attitudes are positive toward the use of educational technology, then they can easily provide useful insight about the adoption and integration of ICT into teaching and learning processes. While it is shown that teachers' computer experience has a positive impact on the performance of students it is not clear the extent to which teachers' preparedness influences learners' performance. It is for this reason therefore that the researchers were prompted to investigate teachers' preparedness in ICT in public secondary schools in Kieni-East District Nyeri County-Kenya.

1.2 OBJECTIVES

The objectives of the study were to:

1) establish E-learning sustainability
2) explore attainment of computer skills and
3) establish funding strategies in place

2 METHODOLOGY

The study was conducted in public secondary schools in Kieni EastDistrict,Nyeri County- Kenya. Twenty seven teachers who had attended science congress and had accompanied students to the district venue. The sample size was made up of 16 males and 11 females. The study also engaged forty three students which included 29 male and 14 female students who participated in the science congress. Among the students 7% were in form one,4.7% in form two,32.6% in form three and the majority in form four(55.8%). The research design adopted in this study was descriptive survey design. Both qualitative and quantitative techniques were used. By qualitative techniques, the researcher included open ended items where the respondents were given an opportunity to express their views. The researcher established teachers' preparedness in the integration of information communication technology. Measures of central tendency such as mode, mean, median, frequency and standard deviation were used. Stratified random sampling technique was used in this study where there were two groups namely the science and mathematics teachers and students .The research study used triangulation methodology in data collection. Questionnaires, document analysis and researcher's own observation were used. One questionnaire was administered to the science teachers and the other one to students. The questionnaire allowed the researcher to reach a large sample in a short time and at a low cost as well as enabling the researcher to gather a wide range of information. The questionnaires had three sections namely, biographical data, closed ended statements on educational issues that respondents reacted to by ticking in the spaces provided, while open ended questions on the respondents' opinion about the

issues were included. Questions had a scale where SA stands for Strongly Agree, A means Agrees, stands for Neutral means Disagree and SD for Strongly Disagree. The key factors covered were on establishing E-learning sustainability ,exploring attainment of computer skills and establishing funding strategies in place. Three documents were analysed during the study at school level. They were the mark books for the opener and midterm examinations which were obtained from the class teachers. KCSE file from the academic dean provided national exam results for the sampled schools for two years and school registers for an update on the enrolment of form three students during the time of study. The DEO'S office provided a current list of registered secondary schools both private and public which included their enrolment. Data was analyzed using descriptive statistics. The researcher used descriptive statistical technique to calculate the frequencies, means and standard deviations of the collected data.

3 RESULTS

3.1 E-LEARNING SUSTAINABILITY

Regarding the contribution of learning computers to the development and attainment of vision 2030 ,97.6 % of the students(Figure 1) and 90% of the teachers agreed .

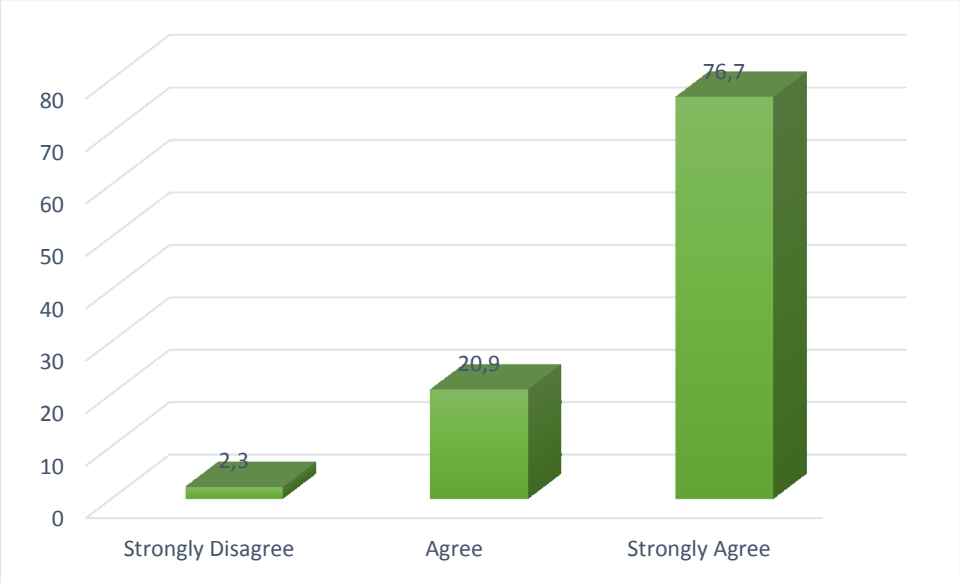

Figure 1:Contribution of Computers to Development and Vision 2030

The study found that 68.3% of the students did not have access to the computers while 19.5% and 12.2% had 3-4 and 1-2 exposure in schools.on the other hand 65.5% of the teachers had no access while 31% had between 1-3 hours .The researchers 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 researchers found that 65.5% used computers in the computer laboratory ,3.4% in the library .Students stated that 72.1% had an encounter with computers at home,18.6% at school and 9.3% in the primary school.The study further realized that 33.3% of the teachers did not have computers and 3.3 had personal computers(Figure 2).

The study realized that 17.2% of the schools did not have printers while 44.8 had very few Printers.Regarding internet connections in work stations data indicated that 27.6% had adequate while 51.7% had none, 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.The findings indicated that 24.1% of the teachers agreed that they had attended forums on e-learning organized for teachers recently while 75.9% had not.the study found that 32.1% of the teachers disagreed that there are teacher(s) who act as resource persons in e-learning while 67.8% agreed .Regarding confidence in using computers in lessons the response was that 55.1% teachers agreed while 44.8% disagreed,further 46.4% of the teachers used computers regularly in Regarding internet browsing the study showed that 92.6% of the students were good at it.Further 68.3% of the students were good at e-mailing while 55.2% of the teachers use computers regularly for correspondence through e-mail.The researchers found that 46.4% of the teachers agreed that they use computer in maintaining student performance records while 53.6% do not.Data indicated that 50% of the teachers agreed that getting skilled personnel to repair and service a computer is not a problem while 50% disagreed. Teachers(42.9%) agreed that they use computers only when required to do so gathering information for lessons while 53.6% did not.

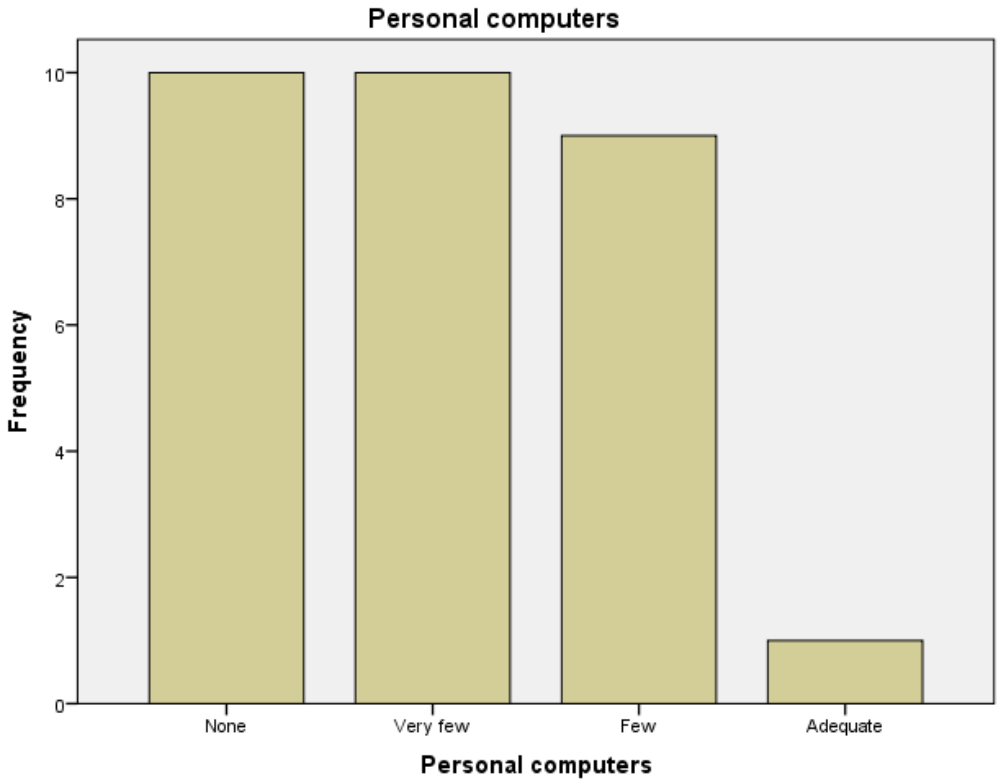

Figure 2: Teachers Personal Computers

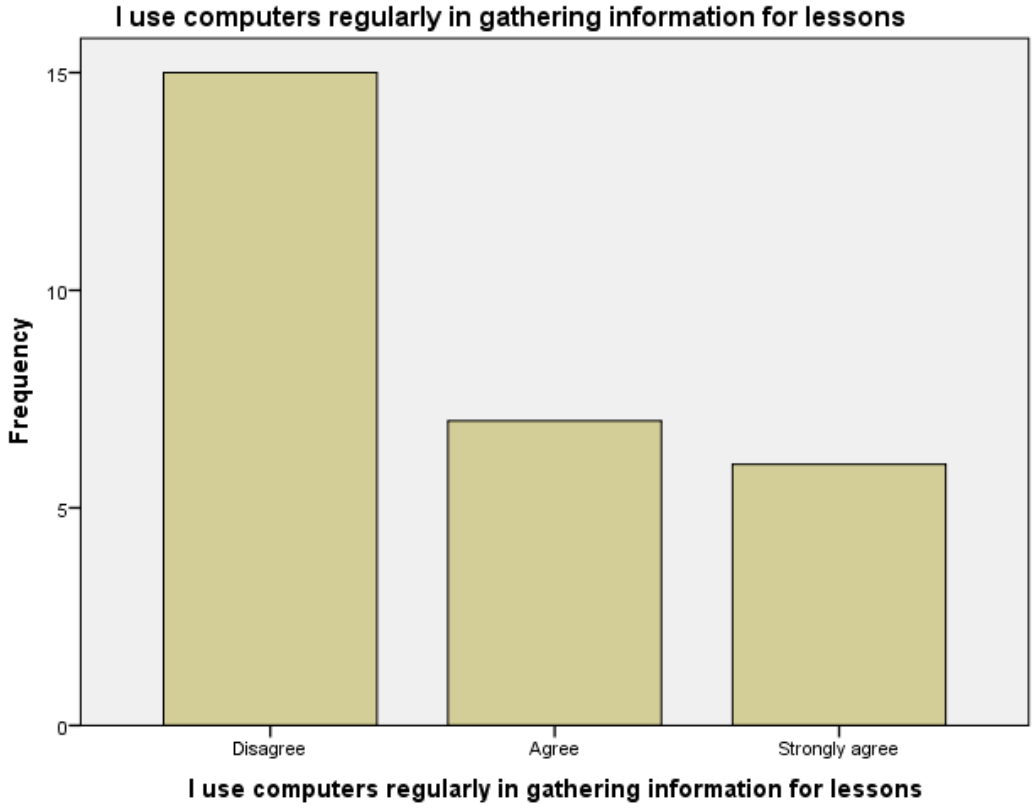

Figure 3: Use of Computer in Gathering Information

3.2 ATTAINMENT OF COMPUTER SKILLS

The study realized that majority (97.7%) of the students can open and shut the computers(Figure 4) while 93.1% of the teachers can freely open while 3.4% cannot. Data indicated that 93% of the students can create a document and save in the computer while 2.3% cannot.As far as teachers are concerned 79.3% of the teachers can create a document and save in the computer.The study indicated that 97.7% of the students agreed that they had the knowledge on the use of the computer keyboard while 82.7% of the teachers knew how to use the computer keyboard. Data revealed that 83% of the students can print and scan documents from the computer while 4.9% cannot.Further it was realized that 58.6% of the teachers could not print or scan a document from the computer and 72.4% of the teachers had some usage on exam past papers while 27.6% did not have any usage.

The research found that 44.2 % of the students had access to the computers and related technology usage for over four years while 55.8% had it in less than three years.The study indicated that 55.6% 0f the teachers had basic computer skills,25.9% had the certificate and 11.1% had diploma .The researchers found that 82.9% of the students were good at word processing while 2.4% were very poor.On the other hand 44.8% of the teachers were good at Word processing while the rest had no ability.Regarding the spread sheets (MS excel) 66.6% of the students were good while 26.9% of the teachers had the ability to use Spread sheets but 61.6% had no ability.Results on power point presentation showed that 75.6% were good at it while 28.6% of the teachers were good at power point while 57.1% had little or no ability.

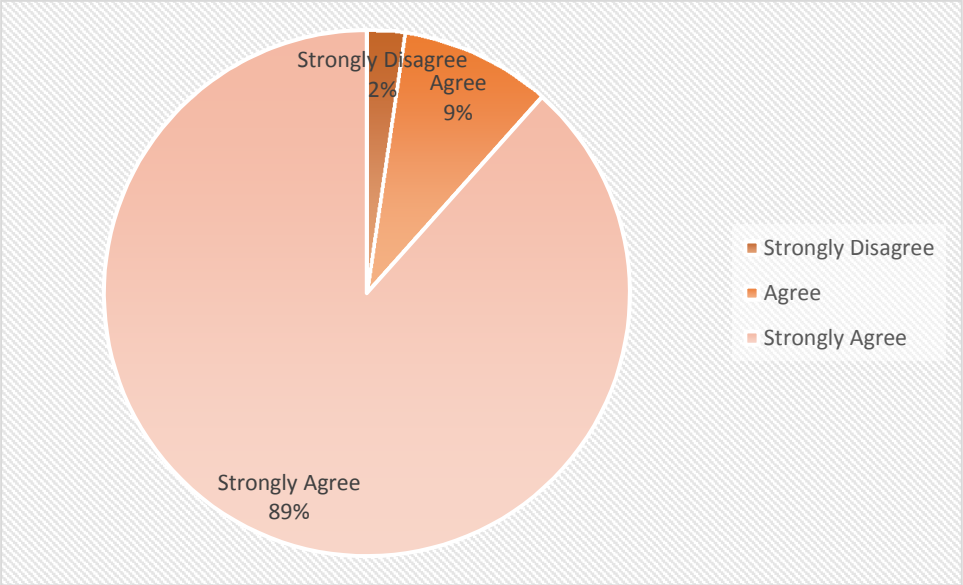

Figure 4:Opening and Shutting the Computer

Regarding the use email frequently 33.3% of the students used it very much, 38.1%used it much while 28.6% never used it at all. Regarding the social network 97.4% of the students were on the face book and 2.6% on the twitter**.** The study showed that 95.3% of the students browse the internet using the computer while 53.6% of the teachers were good at Internet browsing.The researchers wanted to know if the students could download photos using the computer and the responses were that 95.2% could and that 92.9% of the students agreed that they could chart with friends using the computer.Findings showed that 48.1% of the teachers agreed that they have within the school people who can create digital content from the curriculum while 51.9% disagreed.The usage of DVDs ,DCs,computers as well as power point was as follows,62.5%(Figure 6) ,76% CDs,71.5% and 16% respectively. Further the researchers found that 76% of the teachers had no usage on Radio ,55% had the usage on TV,66.7% had the usage in sciences and 70.4% had the usage in Languages.

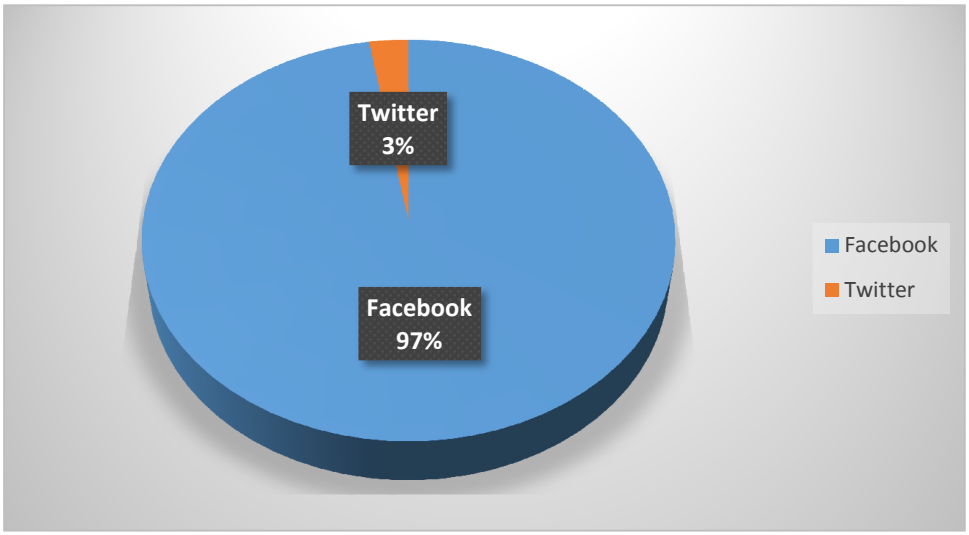

Figure 5:Social Network

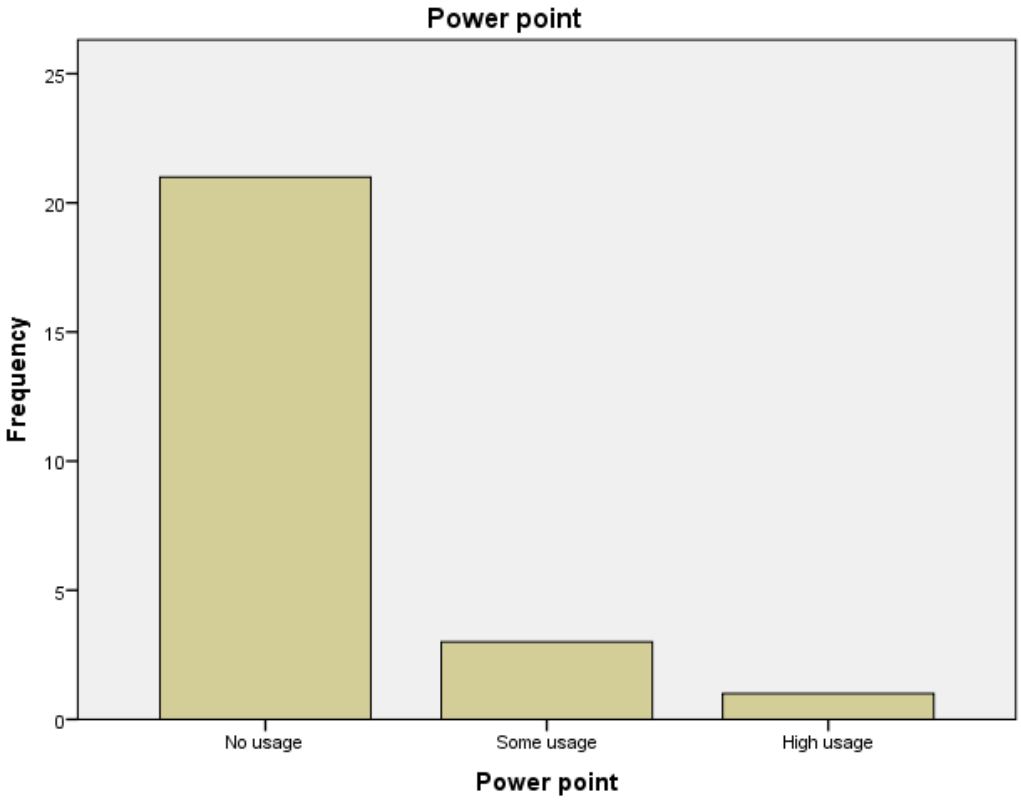

Figure 6:Power Point

3.3 FUNDING STRATEGIES IN PLACE

When students were asked about their opinion on parents' contribution to the funds for equipping the computer laboratory,7.2% disagreed,69.7% agreed while 81.2% of the teachers agreed and 10.5% disagreed.The researchers found that 17.9% of the teachers agreed that their school had benefited from government grant towards e-learning and 78.6% had not in that 12.5% of the teachers stated it was provided one time and 6.3% stated often. Further 82.1% of the teachers supported that the school should charge a levy on the students fees towards the development of e-learning. Regarding sources of funding the study found that 18.2% had received from government, 27.3% from corporate, and 9.1% from NGOs.

4 SUMMARY, CONCLUSION AND RECOMMENDATIONS

4.1 SUMMARY

There is lack of technical support and maintenance to the development of ICT in public secondary schools. Computer rooms are generally a feature of the larger schools. However, access by students to computers was found to be more than in the case of teachers. Schools were found to use a limited range of ICT peripherals, mainly printers and scanners., and digital cameras. Majority of teachers are not in a position to prepare lessons using the computers. Majority of the students had an encounter with computers at home as compared to teachers.Further the study realized that 58.6% of the teachers could not print or scan a document from the computer which are essential in the teaching learning process.Both students and teachers felt that parents' contribution to the funds for equipping the computer laboratory would be of great importance to schools.

4.2 CONCLUSION

Teachers in public secondary schools in kieni East district are not adequately equipped in ICT.This has an effect on the integration of E-learning in public secondary school.In the long run the academic performance of the public secondary schools may be affected where by a big difference may occur between schools that implement the E-learning and those which do not.Internet access is an issue in most schools.

4.3 RECOMMENDATIONS

- Schools and teachers should capitalize on regularly reviewing the use of ICT in their work particularly they should strive to ensure greater integration of ICT within teaching and learning activities in classrooms and other settings.
- Principals should encourage and facilitate suitable ICT training for teachers.
- Schools should provide all their teachers and students with an appropriate and equitable level of
- Experience of ICT.
- Schools should plan for the maintenance and upgrading of their ICT systems.
- Computer rooms, where they exist, should be used to maximum effect.
- Staff members and students should have adequate access to the internet.
- All the teachers should be encouraged to cultivate a positive attitude towards ICT.

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