

**INTERNATIONAL JOURNAL OF
INNOVATIVE RESEARCH AND KNOWLEDGE**

ISSN-2213-1356

www.ijirk.com

**TEACHERS' COMPETENCES IN ADOPTION OF ICT
FOR TEACHING AND LEARNING IN PUBLIC PRIMARY
SCHOOLS IN ABOTHUGUCHI WEST DIVISION****Nkirote Samuel, Dr. Eric Mwenda & Dr. John M. Kamoyo**
Chuka University. P.O. BOX 109-60400**ABSTRACT**

Adoption of computers in schools has been recognized as a way of making the education process more efficient, richer and relevant. The Kenyan Ministry of Education, Science and Technology is committed in the adoption of ICT in learning and teaching. The implementation process of the project has been slow and has been attributed to lack of preparedness. This slow pace has been blamed on level of school preparedness in adoption of laptop in learning and teaching process. However, no empirical study has been conducted to explain this. The study sought to ascertain the competencies of teachers in the teaching and learning in Public Primary Schools in Abothuguchi West Division. The study employed descriptive survey study design with a target population of the study was 1495 subjects from 17 Public Primary Schools in Abothuguchi West Division. The sample size for the study was 312 respondents consisting of six headteachers sampled purposively, 42 teachers sampled using random sampling and 264 pupils sampled using stratified random sampling. The study used questionnaire for headteachers and teachers. The findings reviewed that the overall mean for the teachers' competencies in adoption of laptops for teaching and learning was 2.45. This implies that majority of the Public Primary School teachers disagreed that their schools were prepared in terms of teachers' competency in adoption of laptop for teaching and learning.

Key Words: Preparedness, Adoption, Teaching and Learning.

1.0 Introduction

Information Communication and Technology (ICT) adoption has been known in schools as a way of making richer, relevant and more effective the education process (Maruti, 2010). Different countries around the world have often instigated programs that are focused in embracing information and communication technology (ICT) use by teachers in their daily training activities and learning processes in school. Jimoyiannis and Komis (2007) found out that countries such as China, Singapore, UK, Australia and European Union (EU) have initiated courses enhancing teachers' ICT skills. These programs are important in adjusting and using information communication and technology in education processes activities. Integrating and planning efficient ICT teachers' groundwork programs is very significant measure for a wide-ranging and successful school improvements (Khan, Shamim & Clement, 2012).

DES (2008) reported that those schools which made keen computer facilities accessible to teachers registered more high-quality and creative teaching resources in classrooms and technological knowhow among students. The DES (2008) also indicated that many teachers apply some of ICT in class groundwork and planning. This is a pointer to better adoption and implementation of ICT in education processes of teachers. DES (2008) survey also reported that the provision of ICT facilities and hardware maintenance in schools and professional development opportunities is strategically important for the development of ICT in schools.

A review by Bingimlas (2009) on obstacles to the efficacious integration of IT in learning and teaching environment reported that teachers in Australia had a resilient longing to incorporate their ICT skills in schools learning processes. However, Bingimlas (2009) indicated that teachers encounter barriers such as lack of self-confidence, shortage of capability and absence of information communication and technology resources access. The review further indicated that confidence, proficiency and access to resources are the serious mechanisms of technology incorporation in schools. Thus, Bingimlas (2009) argued that as part of preparation for integration of ICT in schools, resources of ICT including hardware and software, effectiveness of professional development, technical support and sufficient time need to be made available to teachers. Thus, all these components need to be in place to increase the leeway to excellent amalgamation of ICT in learning and teaching occasions.

Turksapa, Mioduser and Leitner (2000) stated that personal detail information for instance gender, age, instructors' ICT involvement and rank of academic of teachers significantly artificialize the rate at which ICT was regarded and executed at Greece (Mioduser *et al.*, 2000). On the other hand, Albugami and Ahmed (2015) reported that in Saudi secondary schools' ICT adoption was alleged as an imperative aspect in moving fast the presentation, learning experience, collaboration, and ICT learning results. Most teachers in East Africa have not adopted the use of ICT programs in their training. This ought to be, as a result of many interconnected features, for example non-manipulative and manipulative and teacher aspects (Tedla, 2012). Manipulative aspects comprise of: expertise, teachers' assurance and opinions, ICT, information and accessibility of ICT means, while non-manipulative aspects are: gender, age, educational experience, faith, computer skill, national procedures and exterior provisions.

A harmonization curriculum team was established by the principal clerk of the Ministry of Education Science and technology to look into: content format, identifying teachers for training, structures for teacher management, harmonization of curriculum, wholesome retooling of the teacher, gap analysis, and sponsorship for capacity development and incentives (Okinda, 2014). It remains unclear whether the public primary schools in Abothuguchi West Division are well prepared in terms of infrastructure, teacher competency, technical support and teachers' and pupils' attitude.

1.2 Objective of the Study

To ascertain teachers' competences in adoption of ICT for teaching and learning in public primary schools in Abothuguchi West Division.

1.3 Significance of the Study

This research finding will add value to policy makers in the Ministry of Education Science and Technology (MOEST), teachers and pupils. The policy makers in MOEST may benefit from this study by using the findings to come up with policies that may help in improving school preparedness for ICT project execution in terms of infrastructure, teacher competency, technical support and teachers and pupils' attitude towards the project. The study may benefit the teachers by enlightening them on best skills to integrate ICT in improving the KCPE performance in public primary schools. To the pupils, it is anticipated that the outcomes of this study will facilitate resolution of school based challenges that might hinder implementation of the project and hence hasten the process of embracing of ICT in education and learning processes.

2.0 Research Methodology

2.1 Research Design

This study opted for descriptive survey research design. This is a category of study design that designates a population, condition, or occurrence that is being deliberated on. It emphasizes on responding to the "how", "what", "when", and "where" inquiries in a research delinquent, rather than the "why". *It is very suitable when carrying out a research whose objective is to ascertain features, trends, frequencies, categories, and correlations.* This research methodology handles difficulty with slight to no significant evidence and provide it a suitable explanation by means of quantitative and qualitative research methods. Descriptive research targets to exactly define a study problem. Descriptive-survey research employs surveys to collect information on variable subjects. This data purposes to know the degree to which different circumstances can be achieved among the subjects. Descriptive survey is used for collecting information on people's approach, habits, attitudes or some of the diversity of learning or societal issues (Gall, Gall & Borg, 2003). The descriptive survey design was suitable for this study because it permitted the researcher to designate the groundwork schools put in place for espousal of laptop in teaching and learning. The design was also proper in allowing the researcher to elucidate the extent to which schools were ready in terms of infrastructure, teacher competency, ICT support and teachers' and pupils' attitude to utilize laptops for teaching and learning.

2.2 The Study Location

This research was done in public primary schools in Abothuguchi West Division. Abothuguchi West Division is found in Meru Central Sub-County, Meru County. There are three educational zones in the division: Kithirune, Githongo and Katheri. The division has an area of 61.4km². The division has 17 public primary schools. Kithirune Zone has six public primary schools, Githongo has three while Katheri has eight public primary schools. Abothuguchi West Division was an appropriate location for the study because it had public schools which had received tablets from the government but were not ready to adopt them for education procedures hence the need to find out their preparedness in adopting laptops in teaching and learning.

2.3 Target Population of the Study

This study targeted a population comprising of complete group of entities intended for which the investigation information was to be applied to create inferences. Therefore, the population targeted has defined those components for which the results of the study are intended to simplify. Forming study purposes is the forward-most step in planning a survey. Describing the target population have to be the second step. Target populations ought to be precisely clear, as the classification defines whether tested cases are suitable or are disqualified for the study. The geographical and chronological features of the target population should be outlined, as well as categories of units being encompassed. In some occurrences, the target population is limited to eliminate population members that are challenging or difficult to interview. The target population of the study was 1,495 subjects which consisted of 17 head teachers, 196 teachers and 1,282 pupils in lower primary in the 17 Abothuguchi West Division's public primary schools in (Office of County Director of Education, 2018).

2.4 Research Sampling Procedures and Sample Size

Conferring to Kathuri and Pals (1993), sample size is of 306 from a population of 1,495 was sufficient for the study. The study however, selected 312 respondents to take care of attrition. The respondents consist of 6 head teachers, 42 teachers and 264 pupils. The sampling procedure adopted systematic sampling which involved sampling of schools followed by sampling of the respondents. Sampling for schools adopted stratified random sampling where the stratum was the three educational zones. A total of 6 schools stayed a selection of proportionately, based on each zone total schools number. Thus, two schools were certain from Kithirune, one from Githongo and three from Katheri zone. The head teachers were sampled purposively from the selected schools. The study adopted simple random sampling to sample 7 instructors from each of the selected learning institutions. The pupils were sampled using stratified random sampling. The strata in this case was the year of study. 44 pupils were sampled from each of the school selected. Ten pupils were drawn from class one, ten from class two and 24 from class three. Table 1 provides a sample matrix that was used in this study.

Table 1: Sampling Table

Category	Total Population	Procedure	Sample size
Head teachers	17	Purposive	6
Teachers	196	Simple random	42
Pupils	1,282	stratified random	264
Total	1,495		312

2.5 Research Instruments

The study adopted focus group discussion and questionnaire to gather information. According to Cohen (2013), questionnaire is majorly adopted in gathering the primary data. 'Primary data' by addition is information that would not otherwise be available if it were not for the study procedure and is collected by equally questionnaires and interviews administration (O'Leary, 2014). The pupils were sampled using stratified random sampling. Questionnaires have several usages, most remarkably to determine what the multitudes are discerning. These include: political balloting, market studies, evaluations, consumer service reaction, social science research and opinion polls, (O'Leary, 2014). O'Leary (2014) recommend some apparent strengths for this research technique, as administering a questionnaire permits the researcher to produce precise information to their particular study and offers intuitions that might otherwise be unreachable. In citing the extra advantages of questionnaires, O'Leary (2014) recommends that they can: stretch to a big number of respondents; signify an even higher population; permit for assessments; produce standardized, computable, experiential data; create qualitative information through the use of open-ended questions; and be private and even unidentified. The questionnaire was employed to gather information from head teacher and teachers. However, questionnaires are time wasting, costly, and make sampling difficult. O'Leary (2014) points out that questionnaires are 'notoriously hard to get right' and they frequently do not offer deliberated achievement. To try and overcome some of the shortcomings of the questionnaire, the data from pupils were collected using focus group discussion.

A focus group discussion (FGD) is a decent means to gather respondents from comparable circumstances or proficiencies to debate definite subject of attention. The group of respondents is directed by an arbitrator (or group facilitator) who presents subject matters for argument and aids the group to contribute in a dynamic and normal debate amongst themselves. The power of FGD depends on permitting the participants to decide or differ from each other so that it delivers a perception into how a group thinks about a subject matter, about the diversity of view and notions, and the contradictions and disparity that occurs in a particular public in terms of beliefs and their practices and experience. FGDs can be used to discover the senses of study findings that cannot be clarified statistically, the range of views/opinions on a topic of attentiveness and to gather a wide information of local expressions. In linking research and policy, FGD can be useful in providing an understanding into

diverse views among different parties involved in the process change, thus allowing the process to be accomplished more efficiently. It is also a good technique to engage prior to scheming questionnaires.

3.5.1 Head teachers' and Teachers' Questionnaire

The questionnaire for the head teachers and teachers included five sections. Section A gathered background data of the head teachers and teachers. Section B gathered data on availability of infrastructure to adopt laptops for learning and teaching. Section C collected data on teacher competence to adopt laptops for learning and teaching. Section D gathered data on availability of technical support to adopt laptops for learning and teaching. Section E gathered data on teachers and pupils' attitude towards adoption of laptops for learning and teaching.

3.5.2 Pupils' Focused Group Discussion

Focus Group Discussion (FGD) is a distinctive category of group interviews in reference to its objective, scope, structure and measures (Orodho, 2004). In this study, there were four FGD per school. Thus, one FGD was conducted with class one pupils, one with class two pupils and two with class three pupils from the selected schools. The pupils were required to discuss issues related to public primary school preparedness in adoption of laptops for teaching and learning.

2.6 Piloting

Piloting according to Mugenda and Mugenda (2003), is defined as the conduct of preliminary study, previous to the central study. It makes available a designed opportunity for well-versed image on, and alteration of, the study design, the study instruments, timing, researcher security and costings. The researcher conducted piloting of the instruments prior to the administration of research instruments in two public primary schools in Abothuguchi Central Division because it neighbors and has similar school characteristics to Abothuguchi West Division. The piloting of instruments enabled to refine the data gathering instruments to the researcher. From respectively of the 2 schools, 5 pupils were sampled from class one, 5 from class two and 5 from class three. The piloting also sampled the 2 school heads and from each of the two schools three teachers were selected. Thus 38 respondents in total were sampled to take part in the instruments piloting. Mugenda and Mugenda (2003) states that the number of respondents for piloting of 10%, of the size sampled is deliberated as satisfactory for descriptively conducted study. In this study the 38 respondents represented 12.2% of the sample size which was more than the recommended 10% and hence is adequate. The piloting of the instruments helped the study to examine and regulate uncertain items in the information collection tool.

2.6.1 Reliability

Mugenda and Mugenda (2003) describe reliability as a portion of the level an investigation tool produces dependable outcomes or statistics once recurrent trial. Reliability denotes to how unswervingly a technique measures something. If the similar outcome can regularly be achieved by using the similar technique under the same situations, the measurement is deliberated reliable. It is measured by examination of the uniformity of outcomes through time, through diverse observers, and through portions of the test itself. A reliable size is not constantly valid: the results might be reproducible, but they're not necessarily accurate thus the need for validation. Previous to the definite information gathering process, the researcher piloted a trial study in two schools with the characteristics as the study area. The test study assisted the investigator to acquaint herself with the instruments running and to evaluate the transparency of the questionnaire objects. The data obtained was exposed to dependability analysis. Spearman Brown prophesy technique of split half was adopted to figure out the reliability factor. According to Kasomo (2006) a minimum at least 0.7 correlation coefficient is suggested as representative that a tool is consistent. The study obtained a reliability coefficient of 0.78 for head teachers and teacher questionnaire which was greater than 0.7 signifying that the questionnaire was dependable.

2.6.2 Validity

Validity is distinctly put forward as the exactness and significance of interpretations centered on the research (Mugenda & Mugenda, 2003). Validity is the level to which the outcomes actually quantify what they are intended to measure. It is evaluated by inspecting how well the outcomes resemble to the reputable theories and additional measures of the similar notion. An accepted measurement is commonly reliable: if an assessment produces precise outcomes, they ought to be reproducible. The questionnaire which was piloted was inspected to detect items that seem uncertain or ambiguous to the study targeted population and was adjusted efficiently therefore refining face validity. According to Gall, Gall and Borg, (2003) face validity is the probability that an inquiry was misunderstood or misconstrued. Gall *et al.* (2003), states that content validity discusses whether a research tool offers adequate analysis of a subject. Content validity of a tool is enhanced through skilled judgement. As such, support was acquired from research supervisors and additional professionals from the Department of Education, Chuka University, in order to help advance content validity of the data collection instruments.

2.7 Data Collection Procedures

Before collecting data, the researcher obtained an institution recognition memo from Chuka University after getting clearance from Chuka University Ethics and Integrity Committee. This enabled the researcher to secure a research license from the National Commission for Science Technology and Innovation (NACOSTI) to be permitted to gather information. Permission was similarly pursued by the researcher from the head teacher to allow data gathering. The investigator ran the research tools to the respondents. The respondents were guaranteed of privacy and asked not to inscribe their identities or the identity of their schools on the research tool.

2.8 Ethical Considerations

Concealment of the respondents' identity was observed through requesting the respondents to by all mean not indicate their name on data collection instruments and by use of codes to identify the respondents. Precaution was engaged to safeguard that running of the research instruments do not correspond with examination period or supplementary vital school programs in schools. The researcher perceived and observed all the ethical ethics and subjects with respect to pursuing permission from the participants, charitable condition of involvement and the power to quit by specific participant from the procedure. The researcher ensured concealment in that there was no defiance of privacy as information provided was intentionally meant for only academic study. Information and data gathered was solely used for the research purposes. The researcher stored hard files in a safe place (lockable) after data analysis. Soft copy data was stored in flash disks and DVDs.

2.9 Data Analysis

The collected data was first cleaned. This involved identification of incomplete responses and making corrections where possible. This was done to remove outliers and incomplete instruments to avoid drawing wrong conclusions after data analysis. After cleaning of data, the data was coded. During data coding dissimilar data groups were assigned modest figures to help in data analysis. This allowed decrease of large amounts of data into a procedure that could be ran more simply especially during data record into an SPSS programme. Data entry entailed transcription of coded data and information into a computer programme (SPSS) to facilitate computerized analysis. Analysis of quantitative data was aided by Statistical Package for Social Sciences (SPSS) Version 22. Quantitative data was analyzed using the adopted descriptive statistics and presented in frequency counts and percentages.

Thematic data examination was employed to analyze qualitative data. Thematic analyses emphasize on documentation and explanation of mutually implicit and explicit concepts inside the information provided, that is, themes (Dey, 1993). Thematic analysis procedure encompassed data acquaintance in this study, coding,

identification of patterns, categorization, and explanation of the designs. The designs recognized in the data were used to improve themes that reflected on the purposes of the research. The information was initially assembled in harmony to study tool according to the recognized themes, followed by an assessment of the themes emergent from several data gathering tools. In conclusion, data discouraging comparable subjects was combined as of several information gathering tools. This guaranteed that the research results were reliable and exemplified the overall representation real situation.

3.0 Results and Discussion

The results obtained are represented as follows:

3.1 Response Rate

The study sampled six head teachers, 42 teachers and 264 pupils. However, a total of 5 head teachers and 33 teachers responded to the questionnaires. The response rates for teachers was 82.5 while for the head teachers was 83.3% and that of the pupils was 100%. The overall response rate was 96.8% which implies that the response rate was sufficient based on Babbie (2015)

3.3 Head Teachers and Teachers Demographic Characteristics

The instructors were invited to include their gender. The graphical presentation of results is shown in Figure 2.

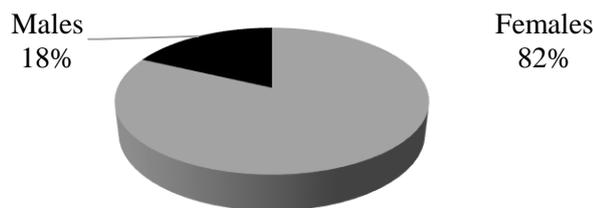


Figure 1: Gender of the Teachers

The results revealed that majority of the teachers at 82% were females while 18% of them were males. The study also collected information on the highest educational prerequisite of trainers. The results are revealed in Table 3.

Table 2: Highest Educational Qualification

Educational qualification	Frequency	Percent
Certificate	15	39.5
Diploma	16	42.1
Bachelor's degree	5	13.2
Masters	2	5.3

Table 3: Duration at Current School

Duration at current school	Frequency	Percent
Bellow 3 years	6	15.8
3 - 6 years	8	21.1
7 - 9 years	7	18.4
10 and above years	17	44.7

The research also required the teachers to state the position they held in their respective schools. The results are summarized in Figure 3.

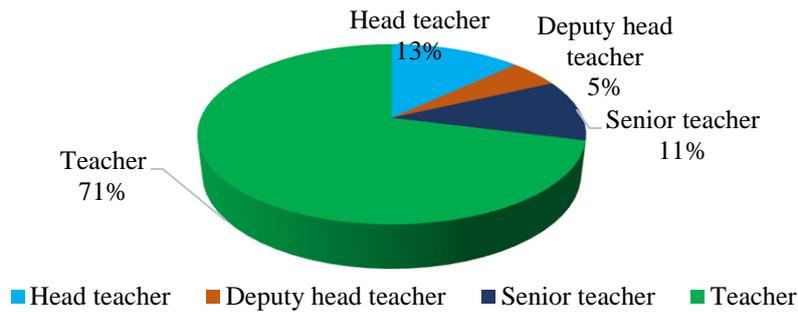


Figure 2: Position held in School

3.4 Teachers’ Competences in Adoption of ICT for Teaching and Learning

The study further investigated teachers’ competences for learning and teaching in adoption of laptops in public primary schools in Abothuguchi West Division. The outcomes are summarized in Table 4.

Table 4: Teachers’ Competences in Adoption of ICT for Teaching and Learning

Statement	SD		D		U		A		SA	
	F	%	F	%	F	%	F	%	F	%
I have attended a course in computer applications	6	15.8	6	15.8	1	2.6	21	55.3	4	10.5
I have basic knowledge in computer use and applications	3	7.9	4	10.5	3	7.9	27	71.1	1	2.6
I can competently use a computer to prepare scheme of work	11	28.9	17	44.7	3	7.9	7	18.4	0	0
I can competently use a computer to prepare teaching materials	9	23.7	20	52.6	3	7.9	6	15.8	0	0
I can competently use a computer to teach with aid of a projector	9	23.7	17	44.7	3	7.9	9	23.7	0	0
I can competently use a printer to print teaching materials from a computer	12	31.6	15	39.5	4	10.5	7	18.4	0	0
I can effectively connect a computer and power it on	2	5.3	11	28.9	1	2.6	19	50.0	5	13.2
I can effectively and efficiently use a computer to serve the internet for teaching materials	10	26.3	10	26.3	2	5.3	15	39.5	1	2.6
I can connect a computer to a printer	9	23.7	16	42.1	1	2.6	11	28.9	1	2.6
I can prepare my lesson notes using a computer	13	34.2	14	36.8	3	7.9	8	21.1	0	0
I can effectively install new software on a computer	14	36.8	13	34.2	4	10.5	7	18.4	0	0
I can competently operate Microsoft word program on a computer	12	31.6	15	39.5	3	7.9	8	21.1	0	0
I can competently control a workbook (e.g excel) program on a computer	12	31.6	17	44.7	3	7.9	6	15.8	0	0
I can competently work on a data base program (eg access) on a computer	15	39.5	15	39.5	3	7.9	5	13.2	0	0
I can use world wide web to access information	11	28.9	13	34.2	3	7.9	10	26.3	1	2.6
I can use computers for pupils’ grade record keeping	10	26.3	15	39.5	3	7.9	10	26.3	0	0

The outcomes in in Table 4 specified that 53.3% of the teachers agreed and 10.5% of them strongly agreed that they had attended a course in computer applications. This shows that in public primary schools most teachers had a basic computer training and hence they had basic competency to utilize laptops in teaching and learning.

This differs from Andiemba (2015) study findings pointed out that teaching grade in the usage of computers in public primary schools by teachers was inadequate in the North Rift Region, Kenya. However, the pupils seemed to be unaware whether the teachers were competent enough to use computers to teach them since they do not use them in class.

The results also indicated that 71.1% of the teachers agreed and 2.6% of them strongly agreed that they had basic knowledge in computer use and applications. This indicates that a high number of teachers were in a position to basically use laptops. Findings from the pupils could not ascertain this because most of them indicated that they were unaware whether their teachers had basic knowledge in computer use and applications. However, majority 44.7%) of teachers disagreed and 28.9 strongly disagreed with the assertion that they could competently use a computer to prepare scheme of work. This supports Ilomäki (2008) who argued that majority of teachers have adequate abilities for daily and unchanging operational activities, nevertheless many of them still have difficulties in discovering an expressive pedagogical technology use. This denotes that most instructors are not competently equipped to embrace laptops in teaching and learning.

The study result besides showed that 52.6% of the teachers differed and 23.7% strongly differed that they could competently use a computer to prepare teaching materials. This implies that a number of teachers were not in a position to competently use a computer to prepare teaching materials which is one of essential requirements for competency preparedness in adoption of laptops in teaching and learning. The pupils could not tell the level of their teachers' competency to use computers to prepare teaching materials.

The study also established that only 23.7% of teachers could competently use a computer to teach with aid of a projector while 44.7% of the teachers strongly disagreed and 23.7% disagreed with the assertion that they could competently use a computer to teach with aid of a projector. The study further indicated that 39.5% of teachers disagreed and 31.6% disagreed with the assertion that they could competently use a printer to print teaching materials from a computer. Their school had inadequate printers. Focused group discussion with the pupils also indicated that the most schools lacked whiteboards and printers. This inability to use the projector and printers implies that teachers in public primary schools are ill prepared for implementation of laptops in teaching and learning in terms of competency. However, the findings showed that majority (50%) of the teachers agreed and 13.2% of them agreed with the assertion that they could effectively connect a computer and power it on. This corroborates the finding that basic training in computer applications was popular among the teachers.

The study further indicated that only 39.5% of teachers agreed with the statement that they could effectively and efficiently use a computer to serve the internet for teaching materials. On the other hand, 26.3% of teachers strongly disagreed and 23.6% of them disagreed with the statement that they could effectively and efficiently use a computer to serve the internet for teaching materials. This suggests that, majority of trainers are not skillful in the use of internet to access teaching materials. This is in tandem with Mutuku and Ogutu (2018) argument that teacher competency is invaluable in embracing of ICT in learning and teaching.

The study similarly established that only 28.9% of the teachers agreed that they could connect a computer to a printer. This further corroborates the finding that majority of teachers are not able to use printers. The study additionally specified that 34.2% of teachers strongly disagreed and 36.8% disagreed with the assertion that they could prepare lesson notes using a computer. This finding further consolidates the finding that teachers are ill prepared competency wise in adopting laptops for teaching and learning. The study further indicated that only 18.4% of teachers agreed that they could effectively install new software on a computer while 34.2% of teachers disagreed and 36.8% strongly disagreed with the assertion that they could effectively install new software on a computer. This is against Lawrence and Tar (2018) assertion that teacher competency is one of the factors that impact incorporation of ICT in education processes. Thus, lack of teacher competency could be one of the reasons why laptop project implementation is slow paced.

The study further indicated that only 21.1% of teachers agreed with the statement that they could competently operate word processing program on a computer. On the other hand, 31.6% of teachers strongly disagreed and 39.5% of them disagreed with the statement that they could competently operate word processing program on a computer. In addition, the study established that only 15.8% of teachers settled with the statement that they could competently operate a spread sheet (e.g. excel) program on a computer. The study further indicated that only 13.2 percent of trainers settled by the declaration that they could competently operate a data base program (e.g. access) on a computer. This implies that very few teachers can use computer applications such as word processing, spreadsheets and data base programs. This further, consolidates the assertion that teachers are ill prepared competency wise in adopting laptops for teaching and learning. This supports Wenli, Xiaolu, Tan and Wong (2007) study finding that deficiency of consistency in respect to ICT know-hows, improvement and competencies were some of the factors that hinder ICT use in education.

The research findings additionally directed that 28.9% of teachers strongly disagreed and 34.2% of them disagreed with the statement that they could use World Wide Web to access information with only 26.3% of them agreeing with the assertion. In addition, only 26.3% of teachers agreed with the assertion that they could use computers for pupils' grade record keeping. This implies that teachers in public primary institutions are not competent in using computer to access World Wide Web and to keep records. This differs from Wenli, Xiaolu, Tan and Wong (2007) study which found out that many pre-service trainers were established to be effective in using the major software, among others; chatting, using google to search for online information, email, they frequently use technology applications for entertainment, communication, and using efficiency gears, and for socialization than for learning purposes.

The overall mean for the teachers' competences in adoption of laptops for learning activities was 2.45 percent. This implies that popular number of public primary school instructors disagreed that their schools were prepared in terms of teachers' competency in adoption of laptop during education process. This supports Tar and Lawrence (2018) finding that teacher competency is one of the elements that impact integration of ICT in teaching practices and learning processes.

The teachers were also requested to highlight training needs for teachers that can enhance adoption of laptops in learning and teaching. They indicated that required adequate computer training, incorporation of computer training in teacher's colleges curriculum, introduction of ICT training programs in schools, provision of induction computer courses, integration ICT teaching and learning in the school curriculum keenly by providing necessary materials and equipment and attendance of seminars and workshops on use and application of ICT in education.

3.5 Teachers' and Pupils' Attitude towards Adoption of ICT in Education

The fourth objective of this study established the teachers' and pupils' insolence towards adoption of ICT for teaching and learning in public primary schools in Abothuguchi West Division. The findings are summarized in Table 5.

Table 5: Teachers' and Pupils' Attitude towards Adoption of ICT for Teaching and Learning

Statement	SD		D		U		A		SA	
	F	%	F	%	F	%	F	%	F	%
Computers are time saving.	0	0	1	2.6	5	13.2	22	57.9	10	26.3
Computers inspire learners to do additional work	2	5.3	0	0	4	10.5	20	52.6	12	31.6
I desire to do things by hands.	11	28.9	13	34.2	6	15.8	8	21.1	0	0
Computer technology skills can upgrade the level of teaching/learning in learning institutions	2	5.3	0	0	5	13.2	23	60.5	8	21.1

Adoption of computers with hypermedia and illustrations supplements teaching and enhance interactive learning	2	5.3	0	0	5	13.2	22	57.9	9	23.7
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The results in in Table 5 showed that 57.9 percent of the teachers agreed and 26.3% of them strongly settled that computers save time and efforts. The results also showed that 52.6% of the teachers agreed and 31.6% of them strongly settled that computers motivate pupils to do more work. Conclusions from the pupils also pointed out that the pupils felt that usage of laptops could ease their studies and motivate them to do more work. The outcomes similarly specified that teachers at 28.9% strongly disagreed and 34.2 disagreed with the statement that they prefer to do things by hands than with computers. This implies that teachers would prefer to use computers to do things rather than using hands. This supports Lau and Sim (2008) who established that teachers were eager to adopt ICT in schools. In addition, 60.5% of teachers agreed and 21.1% of teachers strongly established with the account that computer technology skills can progress the superiority of teaching/learning in learning institutions. The research further indicated that 57.9% of teachers agreed and 23.7% of them strongly agreed that the usage of computers with multimedia and graphics enriches teaching and enhance interactive learning. These findings imply that teachers' and pupils' had an optimistic approach to adoption of laptops in teaching and learning. This supports Haron, Hanafi, Ahmad, Zainal, Mamat and Yusof (2018) study finding that teachers generally had positive attitudes towards computer adoption in teaching and learning. However, this differs from Mahajan (2016) study findings that some teachers had unfavorable attitude towards adoption of computers in teaching and learning. The overall mean for the teachers' and pupils' attitude towards adoption of laptops in education was 3.66. This implies that public primary school most teachers, agreed that teachers' and pupils' attitude was positive towards adoption of laptops for teaching and learning.

The teachers were requested to state ways through which teachers' and pupils' attitude towards adoption of laptops in learning and teaching can be improved. They asserted that this could be enhanced through provision of adequate laptops, training teachers and creating more time for attending computer lessons. They also stated this could be attained through sensitization and teaching the importance of learning and teaching using computers. This could improve teachers' attitude towards use of computer in teaching which Mahajan (2016) argued to be the most prominent factor amongst the factors that influence the fruitful adoptions and implementation of computers in the teaching space.

3.5 Overall Mean Ratings

The overall mean ratings were computed as shown in Table 6.

Table 6: Overall Mean Rating

Factor	Rating
Adequacy of infrastructure	2.01
Teachers' competences	2.45
Adequacy of technical support	2.61
Teachers' and pupils' attitude	4.17
Mean of the three factors	2.81

According to the teachers, teachers' and pupils' attitude had the highest (4.17) rating on the preparedness of schools on embracing of laptop in teaching and learning. This was followed by adequacy of technical support (2.61). Teachers' competency had the second lowest rating (2.45) while adequacy of infrastructure had the lowest influence (2.01) on the preparedness of schools on adoption of laptop in the education process. This implies that instructors and pupils are prepared in terms of their attitude to adopt laptop in teaching and learning. This supports Haron, Hanafi, Ahmad, Zainal, Mamat and Yusof (2018) study which found that teachers

generally had encouraging attitudes towards implementation of computers in learning processes. However, the results do not reach agreement with Mahajan (2016) study which found out that 25% of the teachers had only favorable attitude towards use of technology in teaching. However, in overall terms public primary schools are largely unprepared to adopt laptop in teaching and learning.

4.0 Summary

The objective of the study was to investigate teachers' competences in adoption of ICT for learning processes in public primary schools in Abothuguchi West Division. The study recognized that majority of teachers in public primary schools had a basic training in computer and basic knowledge in computer use and its applications. The results also indicated that teachers could not competently use computers to prepare schemes of work, teaching materials and could not competently use a computer to teach with aid of a projector. The study further established that majority of teachers were not competent in the use of internet to access teaching materials. It was also established that only a few teachers could install a printer and new software to a computer. The study further established that majority of the teachers lacked competency in operating word processing program, data base program and spread sheet programs and using World Wide Web to access information. The overall results indicated that public primary schools were largely unprepared in terms of teachers' competency in adoption of laptop for teaching and learning.

4.1 Conclusions

The study therefore concluded that:

- i Public primary schools in Abothuguchi West Division were largely unprepared in terms of adequacy of infrastructure in adoption of ICT in education processes.
- ii Public primary schools in Abothuguchi West Division were largely unprepared in terms of teachers' competency in adoption of technology for learning and teaching.
- iii Abothuguchi West Division Public primary schools were largely unprepared in terms of adequacy of technical support in implementation of ICT for learning and teaching.
- iv Teachers and pupils in public primary school in Abothuguchi West Division had a positive approach to adoption of ICT for learning and teaching.

4.2 Recommendations

Based on the study results the following recommendations were made:

- i The Ministry of Education should escalate funding of the laptop project to ensure adequate provision of infrastructure to enable usage of laptops in learning and teaching
- ii The Ministry of Education should organize for in-service training and compulsory computer training in teachers training college to improve competency of teachers in the use of computers in teaching and learning
- iii The public primary school managements should hire a computer technician to provide technical support to teachers
- iv Pupils and teachers should continue being sensitized on the usefulness of ICT in teaching and learning

4.3 Suggestions for Further Studies

- i. A parallel research should be done throughout the country to understand school preparedness for adoption of laptops in education.
- ii. A study on impact of ICT curriculum used in Teachers Training Colleges on adoption of Computer should be carried out.

5.0 References

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