

ASSESSING TEACHERS' KNOWLEDGE IN ICT USAGE FOR LESSON PREPARATION AND DELIVERY IN THE KASSENA- NANKANA MUNICIPALITY

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Abstract: Generally, it is agreed that information and communication technology (ICT) promotes easier planning and preparation of lessons; helps teachers to have access to up-to-date learners and school data anytime and anywhere. This is especially significant in this Covid era where hybrid education is being promoted. Therefore, this study investigated the knowledge of basic school teachers in the Kassena-Nankana Municipality in the use of ICT for lesson preparation and delivery. One hundred and two (102) out of five hundred and ten (510) basic school teachers were sampled using the simple random sampling technique for the study. A questionnaire and an observation checklist were used to collect data from the teachers. Data were coded into the IBM-SPSS version 21 to generate descriptive statistics (frequency counts and percentages) for the analyses. Findings from the study revealed that 92.2% of basic school teachers in the Kassena-Nankana Municipality agreed that ICT is a diverse set of technological tools and resources used to communicate and to create, disseminate, store and manage information. The basic school teachers were of the view that the use of ICT in lesson delivery comes with lots of benefits to their classroom instructional practices. The findings further revealed that basic school teachers in the municipality have basic knowledge in ICT use but do not use this knowledge in their lesson delivery due to factors such as constant changes in technology, cost of ICT tools, limited time allocation for ICT lessons in the schools, technical nature of ICT, lack of ICT laboratories, and network facilities in schools for teachers and students. The study recommended that more time should be allocated for the teaching of ICT in basic schools and also, basic school teachers should be given constant ICT training through workshops and refresher courses to boost their competencies in using ICT in their lesson preparation and classroom instructional practices.

Keywords: Teachers Knowledge, Information and Communication Technology, Lesson Preparation, Lesson Delivery.

I. INTRODUCTION

During the past fifteen years, the world has witnessed a phenomenal growth in communication technology, computer network, and information and communication technology (ICT). Mohanty (2011) defined ICT as a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. These technologies include computers, the internet, broadcasting technologies such as radio and television, and telephone. For this study ICT will mean all tools including computers, smartphones, radios, and televisions that support teaching and learning activities in education. The development of new broadband communication services and convergence of telecommunication with computers have created numerous possibilities to use a variety of new technology tools in the teaching and learning process.

The integration of ICT offers unprecedented opportunities to the education systems with its capacity to integrate; enhance and interact with each other over a wide geographic distance in a meaningful way to achieve learning objectives (Majumdar, 2006). Majumdar (2006) further explains that the growth of these communication and computer systems, their ease of use, the power and diversity of information transfer allow teachers and students to have access to a world beyond the classroom. It has the potential to transform the nature and process of the learning environment and envisions a new learning culture. Interactivity, flexibility, and convenience have become the order of the day in the ICT-supported environment. Information and communication technology opens up opportunities for learning because it enables learners to access, extend, transform and share ideas and information in multi-modal communication styles and formats. It helps the learner to share learning resources and spaces, promote learner-centered and collaborative learning principles and enhance critical thinking, creative thinking, and problem-solving skills (Mohanty, 2011).

Similarly, Maifi (2016) is of the view that ICT has recently gained a rise in interest. It is a significant research area for many scholars around the globe. Their nature has highly changed the face of education over the last few decades. The use of ICT-based instructional technologies in education has been widely discussed in light of the advancements in new technologies (Maharaj-Sharma, Sharma, & Sharma, 2017). Governments all over the world have drafted policies on ICT in education and have made enormous investments in initiatives aimed at integrating information and communication technologies in schools (Maharaj-Sharma, *et al*, 2017).

II. LITERATURE REVIEW

Information and Communication Technology (ICT)

According to Hennessy, Deaney, Ruthven, and Winterbottom (2007), ICT has several definitions depending on the nature of its use. Hennessy, *et al* (2007) describe ICT as an umbrella term that includes any communication device or application encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems, as well as the various services and applications associated with them, such as video-conferencing and distance learning. According to Thijs, Almekinders, Blijleven, Pelgrum, and Voogt, (2001), ICT consists of various tools and systems that can be exploited by capable and creative teachers to improve teaching and learning situations. Lim and Tay (2003) cited in Thijs *et al* (2001) classified ICT tools as:

Informative Tools: Informative tools are applications that provide large amounts of information in various formats such as text, graphics, sound, or video. Informative tools can be regarded as a passive repository of information (Thijs *et al*, 2001). Examples include tools and information resources of the existing multimedia encyclopedia of the Internet, Network Virtual Drive, Intranet systems, Homepage among others The Internet is a huge electronic database, and researchers consider the Internet as the most significant ICT tool in e-learning environments. Studies have shown that students rely on the internet to help them do their homework. In short, students consider the internet as a virtual textbook, reference library, virtual tutor, learn to study shortcuts, and virtual study groups (McNeely, 2005) cited in Thijs *et al* (2001).

Situation Tools: Situating tools is a system that places the students in an environment where it involves a context and the occurrence of a situation. Examples of such systems include simulation, virtual reality, and multi-user domain. Situation software tools such as CD-ROM offers hypermedia application which gives better opportunities for teachers to enhance the learning environment. Hypermedia application covers more than one of the following media such as text, audio, graphic images (still images), animation, and video clips. Hypermedia applications are well integrated into the learning environment to enhance student autonomy and thinking (Cheung & Lim, 2000 cited in Essays, 2013).

Constructive Tools: A constructive tool is a general-purpose tool that can be used to manipulate information, construct their knowledge or visualize students' understanding. Construction tools such as Microsoft Word or PowerPoint have a strong impact in the educational environment and are widely used in most organizations in the form of memos, reports, letters, presentations, record routine information, giving businesses the most (McMahon, 1997). Therefore, teachers can use the software to promote writing in the curriculum. PowerPoint is a presentation graphics programme packaged as part of Microsoft Office for Windows or Macintosh. Although generally used for developing business presentations, it is also very advantageous in the context of increased creativity among students. While word processing programme is the most common computer applications used, spreadsheet-like Excel is just as important in teaching and learning of English.

Students will be exposed to learning design and statistical data using the Excel programme that can be automated through the formula.

Communicative Tools: Communicative tools are systems that allow easy communication between teachers and students or between students outside the physical barrier classroom. It includes e-mail, electronic bulletin boards, chat, teleconference, and electronic whiteboard (Chen, Hsu & Hung, 2000 cited in Thijs *et al*, 2001). Synchronous communicative tools such as chat or video conference enable real-time communication while using the tools of communicative asynchronous (e.g. e-mail and electronic whiteboard), a system in which exchange of messages between people are not 'live' but somehow delayed. A communicative tool is most appropriate for activities requiring more time to think before responding. The utilization of electronic mail is increasing day by day. E-mail is the most commonly used on the internet. It is easy to use it as a primarily text-based system and simple communication tool for teachers and students that allow students to dominate class beyond physical barrier (Chen, *et al*, 2000 cited in Thijs *et al*, 2001).

Collaborative Tools: Collaboration tools of ICT is currently the focus of much interest and emerging as development of new tools that make online collaborative projects draw a realistic option for a distributed group work. The Internet can be used for many collaborative activities such as meetings, discussions, information dissemination, and other tasks. Interactive electronic whiteboard is not just used as a tool for meeting and development, but recently became the most popular tool among teachers. Whiteboard is an electronic device that interfaces with the computer where the computer image is displayed on the board that can be manipulated interactively (Weiser & Jay, 1996). This tool is increasingly popular with teachers when used in conjunction with a computer and a video projector that produces an interactive learning community. Instead of having to crowd around one or two computers, an interactive whiteboard not only displays the materials, but also respond to human interaction with computer commands and orders on a touch screen. In addition, Essays (2013) explained that these technologies provide impulsive information sharing, constructing knowledge, and stimulate personal growth.

Other collaborative tools, such as e-mail messaging, Wireless Application Protocol (WAP) and General Packet Radio Services (GPRS) embedded in micro-browser equipped mobile phones and link students in different geographic locations exceeding the boundaries of class. In addition, the development of mobile phones and Personal Digital Assistant (PDA) allows learners to exchange information in a short time simultaneously and asynchronously, and provides flexibility for one-one, one-to-many, and many-to-many communication, especially for the online discussion forum. Thijs *et al* (2001) believe that learning is no longer seen as a solitary activity but is described as taking place through social interaction with peers, mentors, and experts, hence, the learning environment must be interactive where collaborative tools are dominant.

Benefits of Integrating ICT in lesson Preparation and Delivery

Mohanty (2011) is of the view that generally, ICT brings a lot of benefits to education. He went further to explain that ICT promotes greater efficiency throughout the school, increases discussion groups and chat rooms through communication channels such as emails. Regular use of ICT across different curriculum subjects can have a beneficial motivational influence on students' learning.

Students can use ICT to find out information and to gain new knowledge in several ways. They may find information on the internet or by using an ICT-based encyclopedia such as Microsoft Encarta. They may find information by extracting it from a document prepared by the teacher and made available to them via ICT, such as a document created using Microsoft Word or a Microsoft PowerPoint slideshow. They may find out information by communicating with people elsewhere using email (Mohanty, 2011; Thijs *et al*, 2001).

Also, students can use ICT as part of a creative process where they have to consider more carefully the information which they have about a given subject. They may need to carry out calculations (e.g. by using Microsoft Excel), or to check grammar and spelling in a piece of writing (perhaps using Microsoft Word), or they may need to re-sequence a series of events (for example by re-ordering a series of Microsoft PowerPoint slides).

Students can use ICT to present their work in a highly professional format. They can create documents and slideshows to demonstrate what they have learned and then share this with other students, with their teacher, and even via email with people all around the world (Mohanty, 2011; Thijs *et al*, 2001).

According to Mohanty (2011), the use of ICT helps improve the quality of education in several ways: by increasing learner motivation and engagement by facilitating the acquisition of basic skills, and by enhancing teacher training. ICTs are also transformational tools that, when used appropriately, can promote the shift to a learner-centered environment.

Factors Impeding Teachers' use of ICT in Lesson Delivery

ICTs have strengthened the relevance of education in the increasingly digital workplace and raised educational quality among others by helping turn teaching and learning into an engaging, active process connected to real life. However, the effective integration and utilization of ICTs into the education system is a complex process involving various areas of the curriculum not only Information Technology (IT), but also pedagogy, institutional readiness, teacher competencies, and long-term financing, among others (Haddad, Wadi & Jurich, Sonia, 2002 cited in Thijs, *et al*, 2001). One of the major barriers for teachers not being interested in the approaches to the instructional use of computers is teachers' attitude (Essays, 2013; Mohanty, 2011). In theory, some people may have the opinion that the teachers who had not experienced ICT throughout their learning tend to have a negative attitude towards it, as they may lack the training in that area of the curriculum. Thijs, *et al* (2001) also believe that teachers' attitude is one of the factors impeding teachers' use/integration of ICTs in preparing and delivering lessons. They assert that, the main challenging factor affecting technology use in schools is associated with the teacher. They stated that teachers' attitude toward the technology and expertise is often identified as key factors associated with their use of technology (Smerdon, 2000; Zhao & Conway, 1999 cited Essays, 2013). Unless teachers have positive attitudes toward technology, it is unlikely that they will use it to prepare and teach (Zhao & Cziko, 2001 cited in Kennah, 2016). Another important drawback to using ICT in schools is the fact that computers are expensive (IT Learning Exchange, 2001).

Also, technology itself is also named as the source of a series of factors that influence its use by teachers. Firstly, there are conflicting ideas about the technology and the proposal is contrary to the teacher about how technology should be used in schools (Cuban, 2001). This causes the teachers to be confused about the values of technology education. Secondly, the nature of the constant changes in technology makes it difficult for teachers to stay alert to the latest technology. Every day new software and hardware are prepared. This makes it difficult and discouraging for teachers to keep chasing this elusive beast. Thirdly, the inherent nature of it could not be trusted to make technology attractive to most teachers (Cuban, 2001, Zhao *et al*, 2002).

According to Kennah (2016), one of the main shortcomings faced by teachers in integrating ICT in their classroom was the time allocated for the various lessons. Another impeding factor that always makes it difficult for teachers to provide timely support to students using ICT in the classroom is their limited ICT capacities (Kennewell, Parkinson & Tanner 2000; Chigona & Chigona, 2010; UNESCO, 2002; Zhao & Cziko, 2001) cited in Kennah (2016).

A study conducted by Ghavifekr, and Ramasamy (2014) found out that limited accessibility and network connection; schools with limited technical support; limited time, and lack of teachers' competency were the major factors impeding the integrating of ICTs in teaching and learning amongst most teachers.

ICT usage in Ghana Schools

Information and Communication Technology (ICT) is now being applied in every facet and discipline of human endeavor. It has contributed to the organization, storage, retrieval, access, effective and efficient production, and use of information. Throughout the world, there is awareness of the fundamental role of new Information and Communication Technologies (ICTs) especially in the field of education (Ofosu-Appiah, 2017).

In the last decade, the Government of Ghana has championed the use of ICT in education for improved educational outcomes. The Education Strategic Plan (2003-2015) and (2010-2020) of the Ghana Education Service identified the need for ICT in education to help achieve the objectives of the Education Strategic Plan, which are carved into *Access, Quality, Gender, and Inclusiveness, and Education Management*. Consequently, the government of Ghana developed the ICT for Accelerated Development (ICT4AD) Policy (2003), which explicitly outlined the plans and strategies in a framework of how ICTs can be used to facilitate the national goal of "transforming Ghana into an information and knowledge-driven ICT literate nation" (Government of Ghana 2008, p.10). The ICT4AD policy has 14 cardinal pillars of which promoting ICT in education is the 2nd pillar, which emphasizes "the deployment and exploitation of ICTs in education". The use of ICT for teaching and learning is important since it guarantees unrestricted access to relevant information and development

in subject areas as well as the provision of efficient and effective tools to take care of students' individual differences including people with special needs (Bede, Termit, & Fong 2015; Kwache 2007).

The use of computers in education is insufficient to make significant strides to achieve the education for all goals. The provision of computers along with other infrastructure including local area network (LAN), open educational resources (OER), computer-assisted-instructions (CAI), television-assisted-instruction (TAI), internet, power, et cetera will help in effective teaching and learning. The reason is that instructors and learners will have varieties of choices to make in the selection of ICT tools that can best help them to gain knowledge. However, many schools in developing countries including Ghana have limited access to these types of infrastructure due to inadequate investment in ICT by governments. It is generally agreed that access to ICT infrastructure and programmes will support and promote teaching and learning (Tondeur, Valcke, & van Braak, 2008).

The Integration of ICT in Education Project started in 2012 as a way of addressing the low quality of education in the Northern and Volta Regions. The idea was to introduce teachers and school administrators to ICT tools that will facilitate their management of school data and teaching and learning in classrooms. It was expected that this shift from the conventional way of teaching to a technological approach using ICT tools will translate into better performance of students (Savana Signatures, 2010; The Ghana ICT for Accelerated Development (ICT4AD) Policy, 2003). Since 2011, teachers and administrators from schools in the Northern and Volta Regions have been trained to use ICT tools in their work. These teachers continuously receive support to ensure that they apply the new technologies in their teaching and learning activities. The project has trained 170 teachers in basic ICT and ICT Pedagogy. As a result of the training, the teachers are now able to use ICT tools like Microsoft Office, computers, and projectors to prepare and deliver lessons. Despite these interventions by government and stakeholders to equip basic school teachers' knowledge and competence in using ICT, there is no evidence to suggest teachers in the Kassena/Nankana Municipality use ICT in lesson preparation and delivery. These investments and interventions by GoG in ICT infrastructure in the basic education level seems not to be achieving the desired outcomes because according to the then Upper East Regional Minister, Mr. James Zoogah Tiigah, several teachers do not have access to ICT tools or even owe one for themselves to facilitate teaching and learning (Starfm, 2014). It is against this backdrop that this study sought to assess the knowledge base of basic school teachers in the Kassena-Nankana Municipality in the use of ICT for lesson preparation and delivery. The following research questions guided the study;

1. To what extent do basic school teachers use ICT in their lesson delivery at basic schools in the Kassena-Nankana Municipality?
2. What are the benefits of using ICT in lesson preparation and delivery at basic schools in the Kassena-Nankana Municipality?
3. What factors impede teachers' use of ICT in lesson preparation and delivery at basic schools in the Kassena-Nankana Municipality?

III. METHODOLOGY

Research design provides the glue that holds the research project together (Trochim, 2006). From the above definition, it can be described as the overall plan for collecting data in order to answer the research questions. The researchers adopted a survey design for this study. According to Creswell (2009), a survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population, and from the results obtained from the sampled population, the researchers generalize or makes claims about the population. The specific survey used was the cross-sectional survey. Cross-sectional survey design involves observation of variables without any manipulation or control of the variables. The researchers, therefore, observe the behaviour of one or more of the variables at different slots of time all at once. The results of the observation are then described as they occur (Creswell, 2009). The researchers chose this design for this study because it is feasible, relatively economical, and easy to manage. Also, it gives the researchers an opportunity to have different notions about the population of the study (Atindanbila, 2013). The weakness of this design is that it does not take care of changes over time (Atindanbila, 2013; Creswell, 2007; Creswell & Plano-Clark, 2007).

Data was collected from 510 basic school teachers (including headteachers) in the Navrongo central circuit for the 2017/2018 academic year according to the statistical data obtained from the municipal education directorate (GES, KNM,

2018). Asamoah-Gyimah and Duodu (2007) suggested that, for most quantitative studies, a sample of 10% to 30% to the universe size is desirable. To this end, a total of 102 teachers representing 20% of the accessible population were randomly selected for the study. With the simple random sampling method, every member of the population has an equal and independent chance of being selected for the study (Atindanbila, 2013). Out of the 102 teachers, 10 teachers were randomly selected for the observation.

Data were gathered through a questionnaire and an observation checklist. According to Dampson and Mensah (2014) in order to gather information about respondents' (teachers) opinions on how far they agree or disagree on a statement given, the questionnaire is the ideal instrument. For these reasons, a structured questionnaire was used to gather background information of teachers and whether they integrate ICTs in lesson preparation and delivery. Additionally, observation checklists are instruments that are best for collecting facts about people's places of work and to gain insight into an event (Dampson & Mensah, 2014). Hence, an observation checklist was used to gather data on teachers' classroom practices as far as integration of ICT to prepare and deliver lesson was concerned. The questionnaire contained 25 items on a 5-point Likert scale that elicited demographic information of the teachers, teachers' understanding of ICTs and ICT tools, benefits of integrating ICTs in lesson delivery, and factors impeding teachers' integration of ICTs in lesson preparation and lesson delivery. The observation focused on respondents' lesson notes, teaching and learning materials and lesson delivery using a five-point scale item.

Reliability and Validity

According to Atindanbila (2013), reliability and validity are means to ensuring that the researcher produces the right information for a particular study. Reliability and validity also help the researcher to construct research instruments that would elicit the needed responses from respondents (Atindanbila, 2013; Creswell, 2009). In this study, Cronbach's alpha coefficient for the questionnaire was 0.9, indicating that the internal consistency and reliability of the survey instrument were very good. According to Leech, Barrette, and Morgan (2005), an alpha value of 0.70 and above indicates a reasonable internal consistency. To check for the face and content validity of the instruments, the researchers gave copies of the instruments to senior lecturers for scrutiny. Their feedback and comments were considered in constructing a final version of the questionnaire and observation checklist.

IV. RESULTS AND DISCUSSION

Participants were asked to respond to some demographic questions. The result is presented in Table 1.

Table 1: Respondents Age, Gender, Academic Qualification, and Professional Status

Age	Gender	Academic Qualification	Professional status	Professional status		Total (%)
				Trained (%)	Untrained (%)	
20 –29 years	Male	Highest academic qualification	SSSCE/WASSCE	0 (0.0)	2 (2.0)	2 (2.0)
			Dip. in basic education	16 (15.7)	0 (0.0)	16 (15.7)
			First degree	0 (0.0)	1 (0.9)	1 (0.9)
		Total		16 (15.7)	3 (1.9)	19 (18.6)
	Female	Highest academic Qualification	SSSCE/WASSCE	0 (0.0)	1 (0.9)	1 (0.9)
			Dip. in basic education	19 (18.6)	0 (0.0)	19 (18.6)
		First degree	2 (2.0)	0 (0.0)	2 (2.0)	
		Others	0 (0.0)	1 (0.9)	1 (0.9)	
	Total		21 (20.6)	2 (1.8)	23 (22.4)	
30 –39 years	Male	Highest academic Qualification	Cert. 'A' 3 years	2 (2.0)	0 (0.0)	2 (2.0)
			Dip. in basic education	4 (3.9)	0 (0.0)	4 (3.9)
			First degree	4 (3.9)	1 (0.9)	5 (4.8)
			Masters degree	2 (2.0)	0 (0.0)	2 (2.0)

		Total	12 (11.8)	1 (0.9)	13 (12.7)		
40 –49 years	Female	Highest academic Qualification	Cert. ‘A’ 3 years 2 (2.0)	0 (0.0)	2 (2.0)		
			Dip. in basic education 6 (5.9)	0 (0.0)	6 (5.9)		
			First degree 4 (3.9)	0 (0.0)	4 (3.9)		
		Total	12 (11.8)	0 (0.0)	12 (11.8)		
40 –49 years	Male	Highest academic Qualification	Cert. ‘A’ 4 years 2 (2.0)	0 (0.0)	2 (2.0)		
			Dip. in basic education 2 (2.0)	0 (0.0)	2 (2.0)		
			First degree 4 (3.9)	0 (0.0)	4 (3.9)		
			Others 0 (0.0)	2 (2.0)	2 (2.0)		
		Total	8 (7.8)	2 (2.0)	10 (9.8)		
50 –59 years	Female	Highest academic Qualification	Cert. ‘A’ 4 years 3 (2.9)	0 (0.0)	3 (2.9)		
			Cert. ‘A’ 3 years 2 (2.0)	0 (0.0)	2 (2.0)		
			Dip. In basic education 3 (2.9)	0 (0.0)	3 (2.9)		
			First degree 4 (3.9)	0 (0.0)	4 (3.9)		
		Total	12 (11.8)	0 (0.0)	12 (11.8)		
50 –59 years	Male	Highest academic Qualification	‘O’ and ‘A’ level 0 (0.0)	1 (0.9)	1 (0.9)		
			Cert. ‘A’ 3 years 2 (2.0)	0 (0.0)	2 (2.0)		
			Masters degree 2 (2.0)	0 (0.0)	2 (2.0)		
			Total	4 (3.9)	1 (0.9)	5 (4.9)	
50 –59 years	Female	Highest academic Qualification	Dip. in education 2 (2.0)	0 (0.0)	2 (2.0)		
			First degree 4 (3.9)	0 (0.0)	4 (3.9)		
			Others (HND) 0 (0.0)	2 (2.0)	2 (2.0)		
			Total	6 (5.9)	2 (2.0)	8 (7.9)	
Total	Male	Highest academic Qualification	‘O’ and ‘A’ level 0 (0.0)	1 (0.9)	1 (0.9)		
			SSSCE/WASSCE 0 (0.0)	2 (2.0)	2 (2.0)		
			Cert. ‘A’ 4 years 2 (2.0)	0 (0.0)	2 (2.0)		
			Cert. ‘A’ 3 years 4 (3.9)	0 (0.0)	4 (3.9)		
			Dip. in basic education 21 (21.6)	0 (0.0)	22 (21.6)		
			First degree 8 (7.9)	2 (2.0)	10 (9.8)		
			Masters degree 4 (3.9)	0 (0.0)	4 (3.9)		
			Others (HND) 0 (0.0)	2 (2.0)	2 (2.0)		
				Total	40 (39.2)	7 (6.9)	47 (46.1)
			Female	Highest academic Qualification	SSSCE/WASSCE 0 (0.0)	1 (0.9)	1 (0.9)
Cert. ‘A’ 4 years 3 (2.9)	0 (0.0)	3 (2.9)					
Cert. ‘A’ 3 years 4 (3.9)	0 (0.0)	4 (3.9)					
Dip. in basic education 30 (29.4)	0 (0.0)	30 (29.4)					
First degree 14 (13.7)	0 (0.0)	14 (14.7)					
Others (HND) 0 (0.0)	3 (2.9)	3 (3.9)					
	Total	51 (50.0)	4 (3.9)	55 (53.9)			
Total			91 (89.2)	11 (10.8)	102 (100)		

Source: Field data, 2018

From Table 1, majority of the participants are professionally trained teachers with a handful, that is 10.8% (n = 11) being untrained teachers. The information further indicates that majority of the teachers in the municipality are in their youthful stages with majority of them being trained professionals with varying academic qualifications with diploma in basic

education and first degrees topping the list. This implies the information collected from the participants regarding ICTs integration in lesson preparation and delivery of same and other related issues such as frequency of attending ICT workshops as raised in this study suggest that the opinions and ideas shared by the participants represent that of professionals and carry a lot of credence.

Teachers' Basic Knowledge in ICT Use

In table 2, the results of participants basic knowledge in ICT use is presented.

Table 2: Basic Knowledge in ICT use

Do you have basic knowledge in the use of ICTs?	Gender	Professional Status		Total (%)
		Trained (%)	Untrained (%)	
Yes	Male	38 (37.2)	6 (5.9)	44 (43.1)
	Female	44 (43.1)	3 (2.9)	47 (46.0)
	Total	82 (80.3)	9 (8.8)	91 (89.2)
No	Male	2 (2.0)	1 (0.9)	3 (2.9)
	Female	7 (6.9)	1 (0.9)	8 (7.8)
	Total	9 (8.8)	2 (2.0)	11 (10.8)

Source: Field data, 2018

Table 2 shows that teachers who participated in this study had a basic knowledge of ICT usage. This came to light when the majority of the trained teachers 80.3% (n = 82) affirmed that they have basic knowledge in ICT use. Only 8.8% representing 9 of trained teachers said they do not have any basic knowledge regarding ICT usage. Also, 8.8% (n = 9) of the untrained teachers said they have basic knowledge in ICT use while 2.0% (n = 2) of the untrained teachers indicated they had no idea on ICT usage. This suggests that the Ghana Education Service (GES) need to step up their efforts to ensure that all teachers acquire basic knowledge in ICT use especially the 10.8% who do not have basic knowledge in ICT use.

Table 3: Attendance of ICT Workshop after Training College

	Professional Status	Have you attended any training in ICT after completing training college?		Total (%)
		Yes (%)	No (%)	
	Trained	38 (37.3)	53 (51.9)	91 (89.2)
	Untrained	0 (0.0)	11 (10.8)	11 (10.8)
Total		38 (37.3)	64 (62.7)	102 (100)

Source: Field data, 2018

Table 3 shows that out of the 91 trained teachers in the municipality, the majority, thus 51.9% representing 53 teachers who participated in this study in the Kassena-Nankana Municipality said they have never attended any training workshop in ICT after completing their training college education. 37.3% (n = 38) of the trained teachers indicated that they have attended some training workshop in ICT after completing training college. The responses of the participants imply that aside from the basic knowledge teachers acquired during their training college education days, authorities (GES) in the Kassena-Nankana Municipality have done very little to improve teachers' ICT competencies and skills which reflected in teachers' negative response to receiving training after their completion of training college.

Table 4: Frequency of Attending ICT Training Workshop

	How often do you attend ICT training workshops after completing training college?	Have you attended any training in ICT after completing training college?	
		Yes (%)	Total (%)
	Rarely	13 (34.2)	13 (34.2)
	Occasionally	17 (44.7)	17 (44.7)
	Often	2 (5.3)	2 (5.3)
	Most of the times	6 (15.8)	6 (15.8)
Total		38 (100)	38 (100)

Source: Field data, 2018

Table 4 indicates that out of the 38 teachers who affirmed that they attended ICT training workshops after their training college education do not attend these training workshops frequently. For instance, 13 out of 38 teachers representing 34.2% indicated that they rarely attend ICT training workshop. As many as 17 out of 38 teachers representing 44.7% said they attend ICT training workshops occasionally. Only 6 out of 38 teachers representing 15.8% said they attend ICT training workshops most of the time and finally, 2 out of 38 teachers representing 5.3% said they attend ICT training workshops oftentimes. This shows that more needs to be done to boost teachers' competencies in the area of ICT knowledge and skills in the municipality.

Using ICT in Lesson Preparation and Delivery

Table 5 shows the extent to which basic school teachers use ICT in their lesson delivery.

Table 5: Using ICT in Lesson Preparation and Delivery

	No. of Respondents	Percentage (%)
Do you use ICT in your lesson preparation and delivery?	Yes	17
	No	85
	Total	102
		Percentage (%)
		16.7
		83.3
		100.0

Source: Field data, 2018

The information available in Table 2 and Table 5 show a clear disparity in teachers' responses. Teachers' responses in Table 5 indicate that 89.2% (n = 91) out of 102 teachers have basic knowledge in the use of ICTs and only 10.8% (n = 11) of the teachers indicated that they have no basic knowledge in ICTs. However, information in Table 5 shows that 83.3% (n = 85) of the teachers said they do not use ICT in their lesson preparation and delivery while a handful of 16.7% (n = 17) said they use ICT in their lesson preparation and delivery. This implies that even though teachers in the Kassena-Nankana municipality have basic knowledge in ICT use, they do not apply this knowledge to their lesson preparation and delivery. This also means that both teachers and students would not derive the maximum benefits of using ICT in teaching and learning as asserted by Mohanty (2011) that ICT promotes greater efficiency throughout the school and regular use of ICT across different curriculum subjects have a beneficial motivational influence on students.

Meaning of Information and Communication Technology (ICT)

The study also sought to find out the extent to which teachers understand the concept of ICT. The results in Table 6 show the responses of the participants who took part in the survey.

Table 6: Teachers' views on the Meaning of ICT and ICT Tools

Item	Strongly agree No. (%)	Agree No. (%)	Uncertain No. (%)	Disagree No. (%)	Strongly disagree No. (%)
ICT refers to a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information	36 (35.3)	58 (56.9)	8 (7.8)	0 (0.0)	0 (0.0)
ICT is an umbrella term that includes any communication device or application	35 (34.3)	50 (49.0)	9 (8.8)	8 (7.8)	0 (0.0)
ICT consists of various tools and systems that can be exploited by capable and creative teachers to improve teaching and learning situations	46 (45.1)	40 (39.2)	11 (10.8)	5 (4.9)	0 (0.0)
ICT tools are tools used to support teaching and learning	42 (41.2)	40 (39.2)	12 (11.8)	6 (5.9)	2 (2.0)
ICT tools can be used by teachers to prepare and deliver lessons	42 (41.2)	41 (40.2)	11 (10.8)	5 (4.9)	3 (2.9)
Tools such as Informative Tools; Situation Tools; Constructive Tools; Communicative Tools and Collaborative tools can be used by both the teacher and student to promote learning	46 (45.1)	48 (47.1)	5 (4.9)	2 (2.0)	1 (1.0)

Source: Field data, 2018

The results in Table 6 suggest that the participants (teachers) who responded to this questionnaire item understand Information and Communication Technology (ICT) to be a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. These responses resulted in 35.3% (n = 36) strongly agreeing and 56.9% (n = 58) agreeing to that particular statement on the questionnaire. Cumulatively, the percentage and frequency for the two positive responses is 92.2% (n= 94). Eight (8) respondents representing a percentage of 7.8 said they were not certain as to what ICT is all about. None of them either disagreed or strongly disagreed.

The next item on the questionnaire sought teachers' views on the scope of ICT. The results revealed that most of the teachers agreed with Hennessy, *et al* (2007) that ICT information and communication technology is an umbrella term that includes any communication device or application. This belief by the teachers manifested in their response to this item. For instance, 83.3% (n = 85) of the respondents either agreed or strongly agreed. Those who did not share in this belief responded in the negative. Eight teachers representing 7.8% disagreed while 8.8% (n = 9) of the teachers said they were uncertain.

Teachers were asked to respond by expressing the extent to which they agreed or disagreed with the statement made by Thijs, *et al*. (2001) that 'ICT consists of various tools and systems that can be exploited by capable and creative teachers to improve teaching and learning situations. The results in Table 6, row 3 showed that the majority of the teachers responded positively thereby agreeing with Thijs, *et al* (2001) assertion. This resulted in 39.2% (n = 40) and 45.1% (n = 45) of the respondents agreed and strongly agreed respectively. A few of the respondents, 4.9% (n = 5) disagreed with the assertion expressed by Thijs, *et al*. (2001) while the remaining 10.8% (n = 11) were however not certain on the statement.

The next items on the questionnaire sought to find out the uses of ICT tools by teachers with respect to teaching and learning. With respect to item 12, teachers expressed varied opinions. However, the majority of the teachers responded in the affirmative that ICT tools are tools used to support teaching and learning, hence a cumulative percentage of 80.4% (n = 42) of the respondents either agreed or strongly agreed to this assertion. An appreciable number of the teachers, 11.8% (n = 12) said they neither agreed nor disagreed to this statement, they were uncertain. The remaining 7.9% (n = 8) either disagreed or strongly disagreed that ICT tools are tools used to support teaching and learning.

Responding to item 13 on the questionnaire, the majority of the teachers, 81.4% (n = 83) either agreed or strongly agreed that ICT tools can be used by teachers to prepare and deliver lessons. Eleven (11) teachers representing 10.8% were uncertain while 7.8% (n = 8) of the respondents either disagreed or strongly disagreed that ICT tools can be used by teachers to prepare and deliver lessons. One can perhaps say that those respondents who disagreed with the assertion that ICT tools can be used to prepare and deliver lessons were part of the respondents who indicated that they have no basic knowledge in ICT as indicated in Table 2 above.

Item 14 sought to find out from teachers whether they agree that tools such as informative tools; situation tools; constructive tools; communicative tools and collaborative tools can be used by both the teacher and student to promote learning. The response in Table 6 showed that a cumulative percentage and frequency of 92.2% (n = 94) of the respondents agreed that ICT tools can be used by both the teacher and student to promote learning. The remaining eight teachers representing 7.9% were either not certain or disagreed that ICT tools can be used by both the teacher and student to promote learning in schools.

Based on the results presented in Table 6, it can be concluded that that 92.2% (n= 94) of the teachers in the Kassena-Nankana Municipality understand ICT to be a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. The results in Table 6 also show that teachers comprehend other relating issues regarding ICTs. For instance, 83.3% (n =85) of the teachers concurred with earlier scholars (Hennessy, *et al*, 2007) that ICT is an umbrella term that includes any communication device or application. Again, 84.3% (n = 85) of the respondents agree that ICT consists of various tools and systems that can be exploited by capable and creative teachers to improve teaching and learning situations. This response of teachers is in line with Thijs, *et al* (2001) assertion that ICT consists of tools and systems that can be exploited by capable teachers to improve teaching and learning. Also, 80.4% (n = 42) of the teachers agreed that ICT tools are tools used to support teaching and learning and 81.4% (n = 83) also agreed that ICT tools can be used by teachers to prepare and deliver lessons. Finally, 92.2% (n = 94) of the respondents agreed that ICT tools can be used by both the teacher and student to promote learning. These opinions expressed by teachers corroborate what earlier scholars such as Philips (2004); Thijs *et al* (2001) and Bhavsar (2015) that ICT tools can be used

by both teachers and students to promote learning in schools. Teachers' views on the meaning of information and communication technology confirm exiting knowledge of ICT in literature.

Benefits of Using ICT in Lesson Delivery

Table 7 shows the results on teachers' views on the benefit of using ICT in lesson delivery.

Table 7: Teachers' views on Benefits of Using ICT in Lesson delivery

Item	Strongly agree No. (%)	Agree No. (%)	Uncertain No. (%)	Disagree No. (%)	Strongly disagree No. (%)
ICT promotes greater efficiency throughout the school; increases discussion groups and chat rooms through communication channels such as emails	43 (42.2)	44 (43.1)	7 (6.9)	7 (6.9)	1 (1.0)
Regular use of ICT across different curriculum subjects influence students' learning	47 (46.1)	37 (36.3)	15 (14.7)	2 (2.0)	1 (1.0)
ICT such as videos and multimedia computer software provide challenging and authentic content that will engage the student in the learning process	26 (25.5)	51 (50.0)	12 (11.8)	11 (10.8)	2 (2.0)
Computer use during lessons motivates students to continue learning outside school	46 (45.1)	40 (39.2)	11 (10.8)	5 (4.9)	0 (0.0)
ICT facilitates sharing of resources, expertise, and advice and also enhances teacher's professional image projected to colleagues	29 (28.4)	49 (48.0)	13 (12.7)	9 (8.8)	2 (2.0)
ICT tools facilitate easier planning and preparation of lessons and designing materials and also enable the teacher to have access to up-to-date pupil and school data, anytime and anywhere	58 (56.9)	37 (36.3)	4 (3.9)	2 (2.0)	1 (1.0)

Source: Field data, 2018

The results on Table 7 show that 85.3 representing a corresponding frequency of 87 respondents affirmed that ICT promotes greater efficiency throughout the school; increases discussion groups and chat rooms through communication channels such emails. However, not all the teachers are in support of this believe, hence a cumulative number of 7.9% (n = 8) either disagreed or strongly disagreed. Seven respondents representing a valid percentage of 6.9 were not certain.

The results on Table 7 again reveal that as many as 82.4% (n = 84) of the respondents agreed that regular use of ICT across different curriculum subjects influence students' learning. Fifteen (15) teachers representing 14.7% were not certain while the remaining 3 teachers representing 3% disagreed to that assertion.

Again, a good number of the teachers assented that ICT such as videos and multimedia computer software provide challenging and authentic content that will engage the student in the learning process as indicated in Table 7 row 3. This resulted in a total of 75.5% (n = 76) either strongly agreeing or agreeing. The remaining 25 respondents comprise [(uncertain, 11.8% (12); disagree, 10.8% (11) and strongly disagree, 2.0% (2)].

On the assertion that, 'computer use during lessons motivates students to continue learning outside school'. Majority of the teachers were in support of this assertion and this support reflected in their response to item 18 on the questionnaire. For instance, a cumulative percentage of 84.2 representing a frequency of 86 respondents agreed or strongly agreed that computer use during lessons motivates students to continue learning outside school. Five (5) teachers representing 4.9% disagreed while the remaining 11 teachers representing 10.8% said they were no certain as to whether computer use during lessons motivates students to continue learning outside school.

The results in Table 7 again revealed that an appreciable number of teachers in the Kassena-Nankana Municipality believe that ICT facilitates sharing of resources, expertise and advice and also enhances teacher's professional image projected to colleagues, hence, 48.0% (n = 49) of the respondents agreed while 28.4% (n = 29) of them strongly agreed to this

assertion. Eleven respondents representing 10.8% disagreed that ICT facilitates sharing of resources, expertise and advice and also enhances teacher's professional image projected to colleagues while 12.7% (n = 13) of the respondents were not certain.

An overwhelming 93.2% (n = 95) of the teachers in the municipal agreed or strongly agreed that ICT tools facilitates easier planning and preparation of lessons and designing materials and also enable the teacher have access to up-to-date pupil and school data, anytime and anywhere. A handful, that is 6.9% (n = 7) of the teachers either disagreed or were not certain on item 20 on the questionnaire.

The results presented in Table 7 show that teachers and students derive a lot of benefits from using ICT to prepare and deliver lessons. These benefits include promoting greater efficiency throughout the school; influencing students' learning; providing authentic content for students' learning process, facilitating sharing of resources and expertise, facilitating easier planning and preparation of lessons, and providing the teacher access to up-to-date information and data anywhere and anytime. These results confirm what other studies (Mohanty, 2011; Thijs, *et al*, 2001 and Bhavsar, 2015) outlined as some of the benefits of using ICT in preparing and delivering lessons in schools and classrooms. For instance, Mohanty, (2011) asserts that ICT promotes greater efficiency throughout the school. Similarly, Thijs, *et al*, (2001) believe ICT influence students' learning and provides authentic content for students' learning process and Bhavsar (2015) affirm that ICT facilitates sharing of resources and expertise, facilitates easier planning and preparation of lessons, and provides the teacher access to up-to-date information and data anywhere and anytime.

Factors Impeding Teachers' use of ICT in Lesson Delivery

Table 8 shows the factors impeding teachers' use of ICT in lesson delivery.

Table 8: Teachers' views on Factors impeding Teachers' use of ICT in Lesson Delivery

Item	Strongly agree No. (%)	Agree No. (%)	Uncertain No. (%)	Disagree No. (%)	Strongly disagree No. (%)
Constant changes in technology make it difficult for teachers to stay alert to the latest technology.	34 (33.3)	50 (49.0)	4 (3.9)	11 (10.8)	3 (2.9)
ICTs such as laptops, computers, and smartphones are expensive, this makes them difficult to acquire and use.	60 (58.8)	25 (24.5)	10 (9.8)	2 (2.0)	5 (4.9)
Time allocation for ICT lessons in the school is limited	48 (47.1)	34 (33.3)	6 (5.9)	9 (8.8)	5 (4.9)
Teachers failed to use ICTs in their lesson preparation and delivery due to their limited ICT capabilities.	42 (41.2)	40 (39.2)	10 (9.8)	7 (6.9)	3 (2.9)
Teachers see ICT as a technical subject, and difficult to manipulate.	25 (24.5)	42 (41.2)	14 (13.7)	15 (14.7)	6 (5.9)
Most schools do not have ICT laboratories and networks to facilitate ICT integration and use by teachers and students.	55 (53.9)	33 (32.4)	9 (8.8)	0 (0.0)	5 (4.9)

Source: Field data, 2018

The results presented in Table 8 show that several factors account for teachers' not using ICT in their lesson delivery. For instance, as many as 82.3% representing 84 respondents said constant changes in technology makes it difficult for them (teachers) to stay alert with the latest technology, hence they find it difficult to use ICT in preparing and delivering lessons. However, 13.7% (n = 14) of the teachers think otherwise while 3.9% (n = 4) were not certain.

Also, 83.3% (n = 85) of the teachers in the Kassena-Nankana Municipality said they are not using ICT to deliver lessons as a result of the expensive nature of ICTs tools such as laptops, computers, and smartphones which make them difficult to acquire and use. The remaining 17 teachers representing 16.7% were either not certain, disagreed, or strongly disagreed with this assertion.

The results in Table 8 again showed that as many as 80.4% (n = 82) of the respondents said the time allocation for ICT lessons in the school is limited hence their inability to use ICT in preparing and delivering lessons. Some other teachers 13.7% (n = 14) think time constraint is not an impediment to their usage of ICT in lesson planning and delivery.

Another factor impeding teachers' use of ICT in lesson preparation was their limited capabilities in ICT. This assertion was confirmed by 80.4% (n = 82) of the teachers in the Kassena-Nankana Municipality. The remaining twenty (20) respondents representing 19.6% were either not certain or disagreed with this. Teachers expressed varied views regarding the technicalities of ICT. For instance, 20.6% (n = 21) of the teachers strongly disagreed that ICT is technical and difficult to manipulate as a subject. Fourteen (14) teachers representing 13.7% were not sure as to whether or not ICT is technical and difficult to manipulate as a subject. That notwithstanding, the majority of the teachers, that is 65.7% (n = 67) of the teachers see ICT as a technical and difficult to manipulate subject, hence a limiting factor in their quest to use ICT in lesson preparation and delivery.

Another impeding factor to teachers' use of ICT in lesson preparation and delivery was the lack of ICT laboratories and networks for use by teachers and students. This assertion was confirmed by 86.3% (n = 88) of the teachers in the municipality. Nine teachers representing 8.8% were not certain while the remaining 5 teachers representing 4.9% strongly disagreed.

Observation Results

The observation was done to corroborate teachers' responses on the questionnaire regarding the use of ICT in preparing and delivering their lessons in schools and classrooms. The results of the observation are presented in Tables 9 and 10.

Key to Table 9 and 10

MO = Most often (5), O = Often (4), ST = (Sometimes (3), L = Little (2), N = No (1), WM = Weighted Mean, St. D = Standard Deviation and I = Interpretation

Interpretation of Weighted Means for Table 9 and 10

5 = Most often; 4-4.9 = Often; 3-3.9 = Sometimes; 2-2.9 = Little and 1-1.9 = No

Table 9: Observation of Teachers' Planning and Preparedness

Item	MO	O	ST	L	N	WM	St. D	I
The teacher plans and prepares lessons with specific, measurable, achievable, realistic, and time-bound (SMART) objectives.	3	7	0	0	0	4.30	0.48	O
Teacher prepares lessons using ICT tools such as laptops, computers or smart phones for presentation.	0	0	0	2	8	1.00	0.00	N
Teacher uses ICT tools such as projectors and laptops/computers or smart phones as teaching and learning materials for his/her lessons.	0	0	0	0	10	1.00	0.00	N
Teacher selects appropriate teaching contents that support standards, topic and age of students.	1	8	1	0	0	4.00	0.47	O
Teacher's instructional strategies are in line with the lesson objectives.	2	7	1	0	0	4.10	0.57	O

Mean of Means = 2.88

Standard Deviation = 0.30

Sources: Field data, 2018

The results presented in Table 9 show that, teacher plans and prepares lessons with specific, measurable, achievable, realistic, and time-bound (SMART) objectives often (mean score = 4.30, standard deviation = 0.48). Also, the results indicated that teacher's instructional strategies are oftentimes in line with their lesson objectives (mean score = 4.10, standard deviation = 0.57). Again, the results brought to light that teacher often select appropriate teaching contents that support standards, topic and age of students (mean score = 4.00, standard deviation = 0.47). However, there was no evidence to show that teachers prepare lessons using ICT tools such as laptops, computers, or smartphones for presentation; and also, there was no evidence to suggest that teachers use ICT tools such as projectors and laptops/computers or smartphones as teaching and learning materials for their lessons. These recorded a mean score of

1.00 and a standard deviation of 0.00. But generally, the results in Table 9 recorded a mean of means of 2.88 and a standard deviation of 0.30 implying that teachers showed little evidence of using ICT in planning and preparing for lessons.

Table 10: Observation of Teachers' classroom Instructional Skills

Item	MO	O	ST	L	N	WM	St. D	I
Teacher promotes discussions about subject matter, team work and sharing of ideas among my students using ICT tools.	0	0	0	0	10	1.00	0.00	N
Teacher uses ICT tools such projectors and laptops/computers as TLMs for delivering his/her lessons.	0	0	0	0	10	1.00	0.00	N
Teacher presents appropriate opportunities for students to learn through manipulating ICT tools during lessons.	0	0	0	0	10	1.00	0.00	N
Teacher uses variety of instructional strategies to meet the diverse learning needs of students through ICT tools.	0	0	0	0	10	1.00	0.00	N
Teacher uses appropriate questioning techniques to involve students in lessons and also to monitor students' progress in his/her lessons.	1	2	7	0	0	3.40	0.70	S

Mean of Means = 1.48 Standard Deviation = 0.14

Source: Field data, 2018

Similarly, the results presented in Table 10 revealed that apart from teachers sometimes using appropriate questioning techniques to involve students in lessons and also to monitor students' progress in their lessons (mean score = 3.40, standard deviation = 0.70), there was no evidence to show that;

- Teachers promote discussions about the subject matter, teamwork and sharing of ideas among students using ICT tools (mean score = 1.00, standard deviation = 0.00).
- Teacher uses ICT tools such projectors and laptops/computers as TLMs for delivering his/her lessons (mean score = 1.00, standard deviation = 0.00).
- Teacher presents appropriate opportunities for students to learn through manipulating ICT tools during lessons (mean score = 1.00, standard deviation = 0.00).
- Teacher uses a variety of instructional strategies to meet the diverse learning needs of students through ICT tools (mean score = 1.00, standard deviation = 0.00).

This translated into a general mean of means score of 1.48 and a standard deviation of 0.14 indicating that teachers showed no evidence of using ICT in their classroom teaching. The purpose of this study was to assess teachers' knowledge in the use of ICT in lesson preparation and delivery in the Kassena/Nankana Municipality. The results from the study revealed that majority of the teachers in the municipality have basic knowledge in ICT use (see Table 2) but to a large extent, do not apply this knowledge to their lesson preparation and classroom instructional practices (see Tables 5). This information was corroborated by the observation results in Table 10. It is also imperative to state that this shortfall by teachers in the Kassena/Nankana Municipality could be due to the factors mentioned in Table 8.

V. CONCLUSION AND EDUCATIONAL IMPLICATIONS

Based on the findings of the study, it can be concluded that 92.2% of the teachers in the Kassena-Nankana Municipality have appreciable understanding of what ICT is. It can also be concluded that teachers in the municipal agreed that there are lots of benefits in using ICT in the teaching and learning processes. It provides authentic content for students' learning process, facilitate sharing of resources and expertise, facilitate easier planning and preparation of lessons, and provide the teacher access to up-to-date information and data anywhere and anytime.

Again, based on the findings of the study, the researchers wish to conclude that teachers in the municipal have basic knowledge in ICT use but do not to use this knowledge in their lesson preparation and delivery due to diverse factors such as lack of ICT laboratories and network.

The following recommendations are made based on the findings to improve teaching and learning using ICT in the Kassena-Nankana Municipality;

1. Constant ICT training workshops should be organized for teachers in the municipal to boost their competences in using ICT in their lesson preparation and classroom instructional practices.
2. More time should be allocated for the teaching of ICT.
3. The government of Ghana should liaise with the stakeholders in education to provide ICT laboratories for schools to promote use of ICT in schools by teachers and students to improve teaching and learning.
4. The government of Ghana should reintroduce the ICT project dubbed “Teacher’s Laptop Project” into the system. This will go a long way in building teachers’ capacity in ICT and ICT use in lesson preparation and delivery.

VI. LIMITATIONS AND SUGGESTIONS FOR FURTHER STUDY

This study used a questionnaire and an observation checklist to gather data for the study, the researchers wish to suggest that future researchers should include an interview in the research instruments. Also, it is suggested that future researchers should replicate similar studies using other forms of research approaches to see if similar findings could be arrived at.

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