

# Status of implementation of the ICT Curriculum in Ghanaian Basic Schools

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## ABSTRACT

*The focus of the study was to ascertain the extent to which the ICT curriculum is effectively being implemented in basic schools. The aim was to find out teachers' perception about the introduction of ICT at the basic school level; the availability of facilities for teaching the subject; teachers' acquired content knowledge as well as their preferred in-service training methods. The study adopted a simple cross sectional survey design which employed descriptive statistics for data analysis. A questionnaire was the main survey instrument. A representative sample of 63 public primary schools in the Cape Coast Metropolis was randomly selected, and all ICT teachers (84) in the selected schools were involved in the study. It was revealed that teachers had a positive perception about the teaching of ICT in primary schools. ICT facilities were woefully inadequate for the teaching of the subject in basic schools; the majority of teachers appeared to be knowledgeable in the use of computers and other peripheral devices; and, most of the teachers preferred workshops as a means of acquiring more knowledge and skills in the teaching of ICT.*

**Keywords:** Curriculum Change, Curriculum Implementation, Information Communication Technology, Teacher Perception, Teaching and Learning Resources, Training Methods, Content Knowledge

## 1. Introduction

Education has been and is still perceived as an important vehicle that drives the economic development and human welfare of most nations. A very pertinent tool in realising the educational needs of every nation is the curriculum. The concept "curriculum" is a very broad one which means different things in different contexts depending on who is employing the term. For the purpose of this paper, the term curriculum is taken to mean "a written plan outlining what students will be taught (a course of study). It refers to all the courses offered at a given school in a particular area of study" (Brandt, 1997, cited in Glatthorn, Boschee & Whitehead, 2006, p.5). Thus the curriculum is perceived here as the specific courses of studies that are offered by schools in order to attain general aims of education. It is important to note however that the changing educational environment, the diverse educational needs of students, the high expectations from the public, and periodic policy reports demand educational change not only at the education system level but also at the school-based level in local and international contexts (Cheng, 1994). Such requirements for change also mean a resultant modification or complete overhaul in the entire school curriculum.

It has been recognized that "curriculum obsolescence occurs at a rapid rate as educational programmes face new demands for intellectual quality amid startling expansions in knowledge" (Oliver, 1965, p.1). Such tremendous expansion in knowledge is gradually taking place across all fields of study, and significantly, in the area of information communication technology (ICT). On account of this, there is a need for systemic renewal in education as we are faced with new ways of thinking about teaching and learning (Schmoker, 2004) and also of finding lasting solutions to the myriad of both old and emerging challenges that plague mankind. A classic example of such a change in the educational sector in Ghana is the 2007 educational reform which has resulted in the systematic infusion of ICT that permeates all levels of education, even at the basic school level. This move towards ICT education, even at the grass root level has been spurred on directly by a number of factors, one of which is the Ghana Government's ICT policy. The Government of Ghana has placed a strong emphasis on the role of ICT in contributing to the country's economy (Mangesi, 2007). The country's medium-term development plan captured in the Ghana Poverty Reduction Strategy Paper (GPRS I&II) and the Education Strategic Plan 2003-2015 all suggest the use of ICT as a means of reaching out to the poor in the country. Consequently, the government came up with an ICT in education policy which has the following specific objectives:

1. Facilitate the establishment of the necessary infrastructure needed for the installation of relevant ICT within the Education Sector
2. Facilitate equitable access to ICT for all students and community
3. Integrate ICT'S into the curriculum
4. Develop Appropriate Content for Open, Distance and e-Learning
5. Provide appropriate ICT training to all teachers
6. Acquire and implement various easily integrated Information Management System
7. Develop institutional capacity in the use of computer-based management tools to enhance administration and management
8. Ensure effective support and maintenance of ICT infrastructure
9. Institute monitoring and evaluation policies and procedures to access the ICT in Education Programme (MOES, 2006).

As part of the drive towards the attainment of these objectives, there was the need to introduce the study of ICT at the basic school level.

Also among the influencing factors for the introduction of ICT at the basic school level is the recognition of the tremendous transformation that ICT has undergone in recent times as a result of the rapid changes in technology, coupled with the effects of globalization (Asare, 2010). It is again important to note that a perusal of literature clearly suggests that the relevance of the study of ICT in school, especially at the lower levels of education, cannot be over emphasized. For instance, the teaching of ICT at the primary school level prepares pupils to face future development based on proper understanding of issues (Grimus, 2000). Research has also revealed that ICT can motivate students in their learning by bringing variety into the lessons, and at the same time, sustaining teachers' own interest in teaching (Slaouti & Barton, 2007). It is therefore a step in the right direction for the inclusion of ICT in the school curriculum at the primary school level, where learners will be afforded the opportunity of acquiring life-long experiences in the use of ICT for solving problems.

It is however important to note that, whichever form any curriculum change takes, that is, whether an innovation or a reform, the primary concern is to ensure that the major modifications intended are implemented effectively. Curriculum implementation is "translating plans into action" (Oliva, 1992, p.26). It is the process of putting a change into practice. Fullan explains that implementation as a whole is a process over time by which people, events, and resources determine whether or not practice is altered when something new is attempted (Lewy, 1991). Implementation plays a critical role in the curriculum development process. It encourages the open use of the programme, so as to effect the necessary change intended by policy makers. Without successful implementation, the school curriculum will be resigned to just ideas and policies; and the desired changes will not be realized.

There are various models or approaches to curriculum implementation. Posner (1995) has identified two approaches, which are the Research Development and Diffusion model (Jerry Straight's Approach) and the Collaborative model (Sylvia Friedman's Approach). Snyder, Bolin and Zumwalt (1992) however, believe that there are three approaches to curriculum implementation, depending on the system of education. They have identified the fidelity, mutual adaptation and enactment approaches for the centralized, flexible and decentralized systems of education respectively. The focus of this paper is on the fidelity of implementation of the ICT curriculum in primary schools. This is because Ghana operates the centralised system of curriculum development where the curriculum is designed by a centralized body, thus the Curriculum Research and Development Division (CRDD) under the auspices of the Ministry of Education. The development of the school curriculum under this level of curriculum development requires that changes and modifications in the school curriculum be implemented to a large extent as intended by policy makers to ensure standardisation in curriculum implementation. This stems from the fact that, even the final mode of evaluation that facilitates the placement of pupils at the next level of education (SHS level) is standardised. This implies that all pupils will be taking the same examination. There is therefore the need for a fair "playing field" in the implementation of the curriculum in terms of the provision of teaching and learning resources to facilitate effective implementation across all schools. This would enhance the degree of fidelity of implementation to a large extent.

The implementation of curriculum change is influenced by a myriad of factors. Some of these factors facilitate successful implementation, whereas others militate against successful implementation. The main factors

influencing implementation of curriculum change, according to Fullan (1982) are the characteristics of the change, local conditions, local strategies, external factors and measurement and evaluation (Lewy, 1991). For the purpose of this paper, more emphasis has been placed on local conditions in terms of the nature of both human and material resources for the effective implementation of the ICT curriculum. Of prime importance to the researcher with respect to human resource is the teacher.

The role of the teacher in curriculum implementation cannot be over emphasized. It is “the teacher” who “will have a general guide of topics in a subject field, a sequence among topics, a general set of aims, textbooks, and other instructional resources” (Eisner, 1994, p.126), to effectively organize and plan the curriculum to suit that level and background of the learner in the classroom. Even though the role of the teacher in curriculum planning is dependent on the level of curriculum planning, they are “among the key stakeholders (persons with strong personal or professional interests) in curriculum planning” (Marsh & Willis, 2003, p. 195). They further posit that teachers are the major participants in curriculum planning in individual schools and school districts. Their involvement is therefore paramount in making curricular decisions. In situations where the curriculum is planned at the national, state or district levels, teachers serve as the “filter through which the mandated curriculum passes” (Marsh & Willis, 2003, p. 195). This implies that it is very pertinent to ascertain the kind of perception teachers hold about the teaching of a particular subject, especially, ICT (which is an emerging area of study in the primary school curriculum in Ghana).

The influence of teachers’ personal beliefs on their teaching practices has been observed to be quite a debatable issue. While many authors report positive associations between teachers’ beliefs and teaching practices, others conclude that there is no direct association between the two variables (Levitt, 2001; Wilcox-Herzog, 2002). However, teachers’ perception has been repeatedly studied as a means to evaluate the effectiveness of teaching thinking (Ali, 2001; Rosnani & Suhailah, 2003; Salem, 1995). Many researchers have demonstrated that certain teacher behaviours influence student’s achievement. Some of these behaviours may include: teacher self-concept, social relationship, and thinking abilities (Dunn, 1998; Smith, 2002; Thibeault, 2004; Tyler, 2006). One cannot lose sight of the fact that what teachers do and say in the classroom could affect their teaching and also influence how students perceive a subject, and consequently, their leaning.

Another area of interest worth taking note of in terms of the teacher as a resource in the implementation of the ICT curriculum is teacher empowerment in terms of their acquired content knowledge and skills in teaching ICT. Empowerment is a process whereby school participants develop the competence to take charge of their own growth and resolve their own problem (Greer & Melvin, 1994). People usually like to have confidence in themselves that they possess the knowledge and skills required to improve the situation in which they operate. It is therefore necessary to ensure that teachers, who are charged with the responsibility of translating educational plans into action, are confident enough of their own competency. Maeroff (1988) states that teacher empowerment consists of improved status, increased knowledge and access to decision making. This paper lays emphasis on teachers’ knowledge development in ICT. Research findings clearly indicate that teachers who feel incompetent in their content areas fail to teach those content areas. For example, in a study, Balanskat, Blamire and Kefala (2006) found that limitations in teachers’ ICT knowledge makes them feel anxious about using ICT in the classroom and thus not confident to use it in their teaching. Becta (2004, p.7) also concluded in their study with the assertion that “many teachers who do not consider themselves to be well skilled in using ICT fell anxious about using it in front of a class of children who perhaps know more than they do”.

From the forgoing discussion, one may thus be interesting in the kind of training ICT teachers in the primary schools have acquired and also their preferred modes of training. According to Boser and Daugherty (1994), in order for the technology education profession to move forward, teachers “require updated information on curriculum, methodology, and technology to allow them to make philosophical and programmatic changes that augment technology education” (p. 4). This implies that quality training programmes need to be organized for teachers to augment their knowledge base. This notwithstanding, it is important to ascertain teachers’ preferred training methods. The Odum Library survey report (1997) indicated that employees most often selected “live lecture or demonstration” (21%), and “one-to-one instruction” (17%) as their preferred methods for learning about something new. This suggested that most of the employees preferred on-sight training methods. Other studies however contradict such findings. For instance Garton and Chung (1996), Layfield and Dobbins (2002), as well as Boser & Daugherty (1994) all found that the majority of teachers in their studies preferred to have in-service training in the form of a workshop or seminar.

Finally, it is of paramount importance to ascertain whether the relevant material resources required for ensuring the effective implementation of the ICT curriculum are in place. A subject like ICT requires facilities such as computers, internet connectivity, projectors, relevant textbooks and other peripheral devices to be in place to enhance implementation. In a recent report by the Ghana News Agency (GNA, 2011), Professor Kofi Mereku, Lecturer at University of Education, Winneba made a call on the Ministry of Education to terminate the teaching of ICT as just a core subject in schools and rather focus on resourcing schools with at least a computer with internet connectivity, as well as build capacity of teachers in academic integration of ICTs to ensure that the technology could be used as a means of learning and not what to learn. He made this assertion, based on a research report which revealed that though some basic schools and senior high schools had computers and computer laboratories, most of the equipment had neither been networked nor connected to the internet. He indicated that in some institutions because of lack of plans, a gradual decline in deployment of ICTs was observed, leading to little or no students' hands-on experience during ICT lessons. In identifying some of the factors that hinder the implementation of ICT in education policy in Ghana, Mangesi (2007) in a country report, indicated that Access to ICTs still remains highly inadequate and unevenly distributed through Ghana, with an urban bias.

## **2. Statement of the Problem**

The teaching of ICT in school has been found to play a critical role in the training of future leaders in any nation. This is because, it is believed that the teaching of ICT at the primary school level, especially, prepares pupils to face future development based on proper understanding of issues (Grimus, 2000). Consequently, the government of Ghana, in recognition of this important fact, has called for the inclusion of ICT in the basic school curriculum as part of the implementation of government's ICT in education policy.

However, making a strong case for, and ensuring the inclusion of ICT in the curriculum alone does not guarantee the realization of government's vision for embarking on ICT education. There is the need for all stakeholders in education to get involved to ensure that the curriculum is effectively implemented. Of particular interest to the researcher is the availability of both the human (in terms of well trained teachers) and material resources available for implementation of the ICT curriculum at the basic school level. Without the relevant resources, the curriculum might not be implemented in the manner that was originally intended. It is against this background that this research was carried out to find out the status of implementation of the basic school ICT curriculum in terms of the adequacy of both human and material resources required to ensure its effective implementation.

## **3. Research Questions**

1. What are the perceptions of ICT teachers about the teaching of ICT at the basic school level?
2. To what extent are there available resources for the teaching of ICT at the basic school level?
3. What are teachers' acquired content knowledge to facilitate the teaching of ICT at the basic school level?
4. What are teachers' preferred in-service training methods for improving their knowledge and skills in the teaching of ICT at the basic school level?

## **4. Methodology**

The researcher employed a descriptive survey design which is cross sectional in nature. A descriptive survey design was deemed more appropriate for the study because survey research deals basically with obtaining data to determine specific characteristics of a group (Fraenkel & Wallen, 2000). This study sought to obtain information about the status of implementation of the ICT curriculum in terms of teachers' perception, acquired content knowledge in ICT, teachers' preferred training methods as well as the availability of resources for the implementation of the ICT curriculum.

### **4.1 Participants**

The participants for the study consisted of all primary school ICT teachers in the Cape Coast Metropolis. If learners would effectively grasp certain relevant basic skills in ICT at the lower level of education, it might

enhance the future studies and application of such skills both in school and at work. Thus primary school ICT teachers were purposively selected for the study. This measure is supported by Cohen, Manion and Morrison (2008), who explained that in purposive sampling, researchers handpick the cases to be included in the sample on the basis of their judgement of their typicality or possession of the particular characteristics being sought. In this way, they build up a sample that is satisfactory to their specific needs. In all, there are a total of 74 primary schools within the Cape Coast Metropolis. A representative sample of 63 primary schools was randomly selected for the study. Randomization was employed to ensure that each school had an equal chance of being involved in the study. The census method was then used to include all ICT teachers in the selected schools for the study. The census method was used because the size of the study population was not too large, hence each element in the population could conveniently be involved in the study. Some of the schools did not even have ICT teachers. In all, a total number of 84 primary school ICT teachers were involved in the study.

#### **4.2 Research Instrument**

A researcher-developed questionnaire was the instrument employed for the study. The instrument was made up of 39 items with only one open-ended item which sought to find out other constraint ICT teachers faced in the teaching of ICT in primary schools. It was organised into five sections. Section "A" consisted of the bio data of respondents with regard to qualifications, both professional and academic as well as gender. Section "B" consisted of 7 likert-scale items which sought to find out the perception of primary school teachers about the teaching of ICT at the primary school level. Section "C" intended to find out the availability of resources for the teaching of ICT. Section "D" contained items that sought to find out teachers preferred training methods for learning more about ICT. Finally section "E" required teachers to indicate their acquired and required content knowledge in ICT. The instrument was thoroughly vetted before its final approval by experts in teacher education and the field of research to establish its validity. It was then pilot-tested to ensure its reliability. Cronbach's alpha was used to determine the reliability of the perception section of the instrument. A reliability coefficient of .8 was obtained, which according to De Vellis (1991), is considered very respectable for determining the appropriateness of the instrument

#### **4.3 Procedure**

The research instrument was administered personally by the researcher. This was to ensure a high return rate and also to clarify items to the respondents. A letter of introduction was first sought from the Department of Arts and Social Sciences Education to the various primary schools in the Metropolis. The researcher first explained the purpose of the research to respondents and also addressed all their consents before distributing the questionnaires to them. The researcher explained each of the items to the tutors and a one week period was allowed for ICT to fill the questionnaire at their own convenience. The questionnaires were then retrieved after the one week for analysis. There was a 100% return rate.

#### **4.4 Data analysis**

Information obtained from the questionnaire were coded and analyzed with the Statistical Product for Service Solution (SPSS). Descriptive statistics, thus the mean and standard deviation were generated to determine ICT teachers' perception about the teaching of the subject at the primary school level. The appropriate frequencies were also generated to determine the adequacy of teaching resources, teachers' acquired and required content knowledge in ICT and teachers' preferred forms of training in ICT.

### **5. Results and Discussion**

#### **5.1. Research Question 1:** What are the perceptions of ICT teachers about the introduction of ICT at the basic school level?

Teachers' disposition towards the teaching of ICT is a factor that is likely to influence the smooth running of the ICT curriculum at the primary school level. For that matter, the researcher sought to find out teachers' perception about the introduction of ICT as a subject in the primary school curriculum. Information obtained has been presented in Table 1.

From Table 1, with a mean range of 0.00 to 2.50 for a negative perception and 2.51to 5.00 for positive perception, and considering a mean of means of 4.2679, it is quite obvious that ICT teachers at the primary

school level, within the Cape Coast Metropolis, had a positive perception about the teaching of ICT in primary schools.

**Table 1: Teachers’ perception about the teaching of ICT**

<b>Perception</b>	<b>M</b>	<b>SD</b>
The introduction of ICT in basic school is not a good thing	4.58	0.73
ICT is irrelevant to the lives of basic school pupils	4.54	0.74
ICT should be restricted to higher levels of education	4.25	0.83
ICT is difficult to teach at the basic school level	3.73	1.11
Pupils may face difficulty in grasping what is taught in ICT	3.86	1.25
The scope off ICT is too broad to be taught at the basic school level	4.00	1.20
It is a waste of time to teach basic school pupils ICT	4.64	0.48
The teaching of ICT in school is likely to create more harm than good	4.55	0.50

*Mean Range: Negative Perception: 0.00 – 2.50*

*Positive Perception: 2.51 – 5.00*

*Mean of Means = 4.2679*

*Mean of Standard Deviation = 0.62278*

Such a result has been obtained because most of the teachers seemed to disagree with the negative statements on the likert – scale that measured perception. It also appears that for most of the statements, teachers almost unanimously disagreed with the negative assertions about the teaching of ICT at the primary school level because the standard deviations appear to be relatively smaller. However, with regard to three statements on the scale, even though teachers generally disagreed, they appeared to differ more with their responses. The statements include: “ICT is difficult to teach at the basic school level”, “Pupils may face difficulty in grasping what is taught in ICT”, “The scope off ICT is too broad to be taught at the basic school level”; with standard deviations of 1.11, 1.25 and 1.20, which are relatively larger than the mean of the standard deviation.

The positive perception that ICT teachers have about the teaching of ICT at the primary school level is a good sign because such a perception about the subject is likely to have a positive impact on their attitude and classroom behaviour in general. It is likely to also have a positive impact on pupils’ performance in ICT. This is because, the positive perception about the subject may propel teachers to put more effort in the teaching of the subject and this could translate into enhanced pupil performance. This assertion is supported by research finding that certain teacher behaviours such as teacher self-concept, social relationship, and thinking abilities influence students learning (Dunn, 1998; Smith, 2002; Tengku Shahrom, 1994; Thibeault, 2004; Tyler, 2006).

**5.2. Research Question 2:** To what extent are there adequate resources for the teaching of ICT at the basic school level?

For any school curriculum to be effectively implemented there is the need for the basic material resources. The researcher sought to find out the adequacy of resources for the teaching of ICT at the primary school level. Information obtained has been presented in Table 2.

From Table 2, it can be deduced that with the exception of ICT textbooks, which 57 (67.9%) ICT teachers considered as being adequate, all the other basic resources required for implementing the ICT curriculum in the primary school were considered to be inadequate.

For instance, with respect to computers, which is a major teaching and Learning resource for the implementation of the ICT curriculum 19(22.6%) of teachers perceived that resource to be adequate, while a greater number of them 65(77.4%) perceived it to be inadequate. ICT teachers were also considered by 53(63.1%) of respondents to be inadequate.

**Table 2: Adequacy of ICT Teaching Resources**

Resource	Adequate		Inadequate	
	F	%	F	%
ICT laboratory	25	29.8	59	70.2
ICT teachers	31	36.9	53	63.1
Computers	19	22.6	65	77.4
Internet connectivity	17	20.2	67	79.8
Projector	9	10.7	75	89.3
ICT textbooks	57	67.9	27	32.1

In order to obtain a better picture of the other kinds of resource constraints ICT teachers are faced with, item 13 on the questionnaire required respondents to indicate other resource constraints they were faced with. Paramount among the responses were power fluctuations, unpreparedness of other Colleague teachers to get involved in the teaching of ICT and the unavailability of other peripheral devices such as scanners and printers. Others also complained that the time allotted on the timetable for practical lessons was woefully inadequate. The unpreparedness of other colleague teachers to get involved in the teaching of ICT might be as a result of their lack of confidence in teaching the subject well. This may be supported by the assertion made by Becta (2004, p.7) that “many teachers who do not consider themselves to be well skilled in using ICT fell anxious about using it in front of a class of children who perhaps know more than they do”.

The inadequacy of the relevant material resources for the implementation of the ICT curriculum is a serious concern. This is because teachers may not be able to implement the curriculum as intended. Since facilities such as computers and other peripheral devices are not in place for teaching, there is the likelihood that teachers may end up teaching pupils abstract things which they cannot readily identify with. This implies that pupils might end up not getting any practical experience in using ICT facilities later in life. Such a scenario is likely to defeat the whole idea of introducing ICT in the curriculum at the lower levels of education.

**5.3. Research Question 3: What are teachers’ acquired content knowledge to facilitate the teaching of ICT at the basic school level**

Another focus of the study was to find out teachers’ acquired and required content knowledge in the teaching of ICT. Information obtained has been presented in Table 3. From Table 3, most of the ICT teachers involved in the study, to some extent, appeared to be knowledgeable in ICT. This is because for the specific content areas they were questioned on, they indicated to have acquired some knowledge in those areas. However, considering that some teachers still require certain knowledge in ICT implies that there is more work to be done in terms of in-service training. Also coupled with the fact that the instrument used is a self-report measure, there is the likelihood that some teachers might not even be knowledgeable in certain areas they have indicated to be knowledgeable in.

**Table 3: Teachers’ Acquired and Required Content knowledge in ICT**

Knowledge	Acquired		Required	
	F	%	F	%
Send and receive e-mails	78	92.9	6	7.1
Chat online	72	85.7	12	14.3
Use social networking website (yahoo, facebook, etc)	82	97.6	2	2.4
Use social bookmarking and tagging	40	47.6	44	52.4
Use presentation software for instruction	45	53.6	39	46.4
Use online resources to prepare lessons	54	64.3	30	35.7
Use e-mail to communicate with teachers	62	73.8	22	26.2
Creating and editing document using word processing	64	76.2	20	23.8
Set up hardware such as projector for presentation	58	69.0	26	31.0
Use spreadsheet such as excel to organize data	57	67.9	27	32.1
Save data and create folders	73	86.9	11	13.1

As a result of this, the respondents were asked to indicate the kind of training programme they had participated in since the introduction of ICT in the primary school curriculum. Information obtained has been presented in Table 4.

From Table 4, it is obvious that the majority of ICT teachers, thus 43 (51.2%) engaged in independent studies to acquire the relevant knowledge required for them to teach ICT. Only a total number of 35 (41.6%) had participated in seminars, conferences and workshops.

**Table 4: Training programmes ICT teachers have participated in**

Training programme	Frequency	Percentage
Workshop	10	11.9
Conferences	8	9.5
Seminars	17	20.2
Independent studies	43	51.2
Others	6	7.1
Total	84	100

It is refreshing to know from the study that most of the teachers who participated appeared to be to some extent knowledgeable in ICT. This situation is likely to enhance the implementation of the ICT curriculum at the primary school level because teachers' confidence levels might be boosted in employing the relevant content knowledge in the classroom. It is however worrying to notice from the study that, some of the teachers appeared to still require some content knowledge to enable them function effectively in the classroom. Such teachers might not be in a good position to see to the effective implementation of the subject in the classroom. This assertion is supported by Becta (2004) as well as Balanskat, Blamire and Kefala (2006) who in their study found that limitations in teachers' ICT knowledge makes them feel anxious about using ICT in the classroom. Also, it is not a good sign that the majority of teachers who participated in the study engaged in their own individual efforts to update their knowledge in ICT. This is because the quality of the kind of independent studies they might have participated in cannot be guaranteed. It is also possible that the required competences for teaching ICT at the basic school level might not have been emphasized in the kind of private studies they might have engaged in. This could be a serious source of concern that needs to be addressed to ensure effective implementation of the curriculum.

**5.4. Research Question 4: What are teachers' preferred form of in-service training for improving their knowledge and skill in the teaching of ICT at the basic school level?**

Teachers were asked to indicate their preferred form of training in ICT. Information obtained has been presented in Table 5.

From Table 5, the majority 63 (75%) of respondents preferred workshops as a means of acquiring more knowledge in ICT as against 7(8.3%) and 14 (16.7%) who preferred conferences and seminars respectively.

**Table 5: Teachers' Preferred form of Training**

	Frequency	Percentage
Workshop	63	75.0
Conferences	7	8.3
Seminars	14	16.7
Total	84	100

This finding supports the findings of Garton and Chung (1996), Layfield and Dobbins (2002), as well as Boser & Daugherty (1994) that the majority of teachers in their studies preferred to have in-service training in the form of a workshop or seminar. Teachers' preference for workshops may be attributed to the fact that workshops afford them the opportunity to interact with other ICT teachers and share ideas, new knowledge as well as experiences in the teaching of ICT. Other forms of training might not allow such interactions among professionals in the field of ICT to effectively exchange knowledge.



## 6. Conclusion

From the findings of the study, it can be concluded that ICT teachers at the primary school level, within the Cape Coast Metropolis, have a positive perception about the teaching of ICT in primary schools. However the relevant material resources required by primary school teachers for the implementation of the ICT curriculum in the Cape Coast Metropolis are inadequate. Again teachers are of the view that the time allotted on the time table for practical lessons in ICT is inadequate for them as a result of the inadequate resources. Another major constraint is erratic power supply, which hinders the effective organization of practical lessons in ICT. It can also be concluded that the majority of teachers who teach ICT at the primary level within the Cape Coast Metropolis appear to be knowledgeable in ICT. However, some of them also seem to lack certain basic knowledge that would enable them to implement the curriculum effectively. Finally, most of the ICT teachers prefer workshops as a means of acquiring more knowledge and skills in the teaching of ICT.

## 7. Recommendations

Based on the findings of the study, it is recommended that the Ghana Education Service should embark on rigorous in – service training programmes, preferably workshops, for teachers to update their knowledge in the teaching of ICT in the primary schools. This is against the background that most teachers appear not to have participated in any formal training since the introduction of ICT in the primary school curriculum. It is again recommended that the government expedites action on its promise to provide basic schools with lap tops and also ensure that certain basic resources such as ICT laboratories are provided for the schools. Better still; the Ministry of Education could adopt the strategy of providing well resourced ICT laboratories that could serve a cluster of schools to augment the other facilities available in the individual schools. Again, considering the fact that most of the schools lack access to the appropriate facilities to ensure effective teaching, it is recommended that the implementation of the ICT curriculum be done on a pilot basis, so that the scarcely available resources can be effectively deployed to the limited number of schools. Other schools could be roped from time to time so that eventually, all schools could be fully equipped to implement the curriculum. In addition, basic schools could be provide with alternative power supply, such as solar energy to obviate the constant power fluctuations that plague most schools in the use of ICT facilities.

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