

Integration of ICT in the Teaching and Learning Process at Christ the King Catholic Senior High School in the Obuasi Municipality

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Abstract

This study sought to investigate the extent to which teachers were using ICT in the teaching and learning process at Christ the King Catholic Senior High School in the Obuasi Municipality. The study also sought to find out which ICT resources were available for the teaching and learning process. Sixty teachers of different subject's background were sampled through simple random sampling technique. Questionnaire titled 'teachers in the Christ the King Catholic SHS background knowledge in the information and communication technology competency test' was used to collect data. Mean served as the statistical tool for data analysis for research questions II, III and IV, while question I and V were analyzed with percentages. Findings depict that teachers were aware of ICT resources but do not utilize them while teaching. Many constraints were identified including lack of computer literacy on the part of some teachers, lack of ICT facilities, lack of funds, poor power supply, and no adequate knowledge of the use of internet among others. It was recommended that for quality assurance and for effective ICT integration in curriculum, teachers should be encouraged through workshops, seminars and conferences to be ICT literate; stake holders in education should join hands together in making ICT pedagogical and methodological issues fully integrated in the teaching and learning process in secondary education for quality assurance.

Keywords: *Integration, ICT, Teaching and Learning.*

Introduction

The Ministry of Education policy on ICT is to integrate ICT into education and training institutions to prepare the learners for the future technological knowledge-based economy. Although the Government, Private sectors, Non-Governmental Organizations, and individuals have donated ICT facilities to schools and opened training opportunities for teachers in the use of ICT facilities in order to improve on education delivery. The use of ICT in the teaching and learning at Christ the King SHS in Obuasi municipality still lags. Students often refuse to do assignments requiring the use of internet. So, the researcher decided to investigate the extent to which ICT is incorporated in the teaching learning in the school. This study therefore tries to find out the

available ICT resources in the school, the extent to which teachers utilize these resources, the challenges they face in using these resources and possibly make some recommendations for proper integration and the alternative to the use of ICT.

The concept Information Communication Technology (ICT) comprises any product that can store, retrieve, manipulate, transmit or receive information electronically in a digital form.

They include digital television, computers email, modems and internet and it mostly deals with how these different resources can combine and work with each other. In this study, ICT in education is taken to mean the use of digital ICT resources in all aspects of teaching and learning process. Knowledge in Information

Communication Technology (ICT) is a prerequisite in this modern society where every sphere of our lives is controlled by technology. Information Communication Technology must be integrated in the curriculum and in the methods used to teach it to produce students who are ICT literate who can function in this twenty-first century where technology permeates every sphere of life. The view that using ICT resources especially computers, the internet and other related technologies in the classroom better prepares the learners for studies in the workplace where this equipment is used [1].

Students who can use ICT effectively have a better chance of being absorbed in the current globalized job market. Several scholars argue that using ICT in teaching gives the learners a chance to learn how to function better in this digital era. The use of old methods of teaching does not prepare the learners for the job market where knowledge of technology is required.

Therefore, for institutions to claim to be preparing their learners for life in the present century, they must use new technologies in their teaching [2]. Her arguments are in line with [3], who posits that when learners are taught ICT skills in primary schools, they are in a better position to face new developments with better understanding. There are several roles which ICT can play in the educational process. First, ICT has the potential to enhance learners' achievement [4].

Secondly, several theorists and scholars agree that using ICT in the teaching process makes the learners knowledgeable, reduces face to face instruction and provides a learning environment where teachers can assist learners with special needs. In addition, use of ICT will motivate the learners and help them develop a favorable attitude towards learning against this background, concerted effort is being put in place to embrace the use of ICT in education in several countries to reap the benefits of ICT integration.

A review conducted by [5] in ninety

countries, classified countries regarding different levels of ICT development. These classifications include countries with integrated ICT in education system, countries with national policies and master plans formulated and various ICT being applied and tested, and countries where efforts towards ICT integration and formulation of national policies have just begun. Again, this does not reflect the specific achievements of ICT integration in education and these general classifications may leave out concerns of ICT integration. Teachers are thus unprepared for any changes that may be brought about by technology at schools.

The purpose of this study was to ascertain the extent to which ICT tools are used in the teaching and learning process at Christ the King Catholic Senior High School in the Obuasi Municipality.

This study will enlighten the teachers on the importance of integration of ICT in their instruction. It will also provide information about the resources available in the schools. The study will help improve students' achievement in their studies through showing high motivation and better attendance. It will also help Teachers see the need to use ICT in teaching and learning process. It will be useful to the educational training institutions on the need to train teachers who will be able to use ICT in the teaching and learning.

Research Questions

1. What are the available ICT resources used in teaching and learning at Christ the King Catholic SHS?
2. To what extent do teachers use ICT resources in the teaching and learning process?
3. To what extent do teachers involve students in the use of ICT resources in the teaching and learning process?
4. What are the challenges encountered by teachers in the school in the integration of ICT in the teaching and learning process?
5. What alternative resources do teachers use

in the absence of required ICT resources?

Delimitations of the Study

This study only investigated the extent to which teachers were using ICT in the teaching and learning process and ascertained the ICT tools available at Christ the King Catholic Senior High School in the Obuasi Municipality.

Limitations of the Study

This study was limited to only Christ the King Catholic senior high school in the Obuasi Municipality. The other senior high schools in the municipality were not included in this study due to the limited time available to the researcher to complete the work.

Literature Review

The study was guided by the Constructivism Theory [6]. According to the constructivists, people create their own understanding of the world through undergoing experiences and internalizing these experiences, learning requires that the learners be encouraged to use active methods which include experiments and inquiry using authentic data. Constructivism changes the way the teacher instructs the learners. The teachers' main role is to direct learners so that they construct ideas and not reproduce mere facts. According to constructivism the teacher should provide situations where learners are confronted with problems so that they can formulate answers thereby testing their knowledge, drawing conclusions and getting answers and in the process creating an environment for collaborative learning [7].

The teacher should guide the learners to realize the activities they are undertaking by helping them arrive at a better understanding of their problems. By looking at the tasks given critically and using their chosen strategies, students become expert learners as they learn how to learn on their own. Constructivism theory ties with this study as it shows that the use of ICT in teaching and learning helps learning become learner centered. The learners

look for information on their own and practice what they have learnt using ICT resources. The learners can manipulate the ICT resources and in doing this practically they do not easily forget what they learn. A theory of teaching should look at: the learners' views towards learning, how the materials to be learnt are structured to allow the learners grasp them easily, and the teacher can find the process of teaching easier if the teacher has the knowledge of ICT. [8] The use of ICT resources in teaching make the learners become motivated, they go out and look for more information which they can easily access through ICT resources [9].

The constructivists are of the view that for education to take place there must be action. Knowledge and ideas will only be attained when learners get experiences that are meaningful to them. These experiences do not occur in isolation but when learners work together as in a classroom manipulating resources thereby building their knowledge together and building team spirit. For learning to occur, the learner must be an active participant, for knowledge must be sought and not just accepted. The learner must engage in activities so that this knowledge can be realized [10]. By using ICT, the learner becomes involved in the learning process by manipulating the ICT resources as guided by the teachers.

Information Communication Technology can help students learn by allowing them construct knowledge. Constructivist proponents emphasize learner-centered activities which allow the learner to arrive at answers. Computer based applications support these approaches to learning. Learners can simulate various situations and in thus doing become creative. Problems that are posed as the learners read through materials on the internet help in deep inquiry and problem solving [10]. Information Communication Technology enriches classroom change classroom dynamics, the class becomes more active, and there is

increased classroom interaction. Students learn to cooperate and work as a team thus building team spirit which encourages peer- support learning which is encouraged for better learning.

When computer aided instructions designed for individual learning at different levels of education are used, learners are in a position to work at their own pace and get feedback without being coerced and hence evaluate their own performance [12].

Integrating ICT into teaching and learning is described as the process of determining which products and processes of ICT should be appropriate for a given classroom situation and problems. Referring to the instructional uses of ICT, the teacher is expected to acquire competencies and expertise in the utilization of ICT to be able to use it properly for lesson delivery.

In the teaching and learning process the learner, the curricular contents, the specified objectives, the materials/methods, and the teacher interact in the instructional system to achieve the expected result. Integrating ICT into the curriculum demands the availability of ICT friendly teachers and these ICT friendly teachers are trained teachers with proficiency in computer operation, programmed production and developing suitable software. Most of the developing countries of the world have fallen behind in science education delivery due to their inability to utilize ICT resources [13].

The conventional and traditional teaching approach still takes the lead in our secondary schools. The uses of ICT in education to include ICT as objects, as an assisting tool, as a medium of teaching and learning, as a tool for organization and management in schools. In the instructional uses of computer, some classified computer as a teacher and as a tool, appropriately computer in instructional delivery should be classified as a teaching device because computer cannot substitute a teacher rather it can serve as a device through which the teacher prepared lessons are delivered. Also, it

should not be seen as a tool for learning rather it can be better classified as a learning machine [14].

Computer as a teaching device is used to assist instruction in the form of drills and practice, tutorials and dialogue, simulation, and games and as subject of instruction while as a learning resource, it could be used in information processing, data collection and analysis, data retrieval resources and computer mediated communication.

Materials and Methods

Research Design

The design adopted in this study was descriptive research. The descriptive research design was appropriate for this study since it was a fact finding with an intention of arriving at the truth. The use of this design enables one to describe events as they are at that time [15].

The purpose of this study is to identify teachers' level of computer skills and knowledge, level of ICT integration in teaching and learning process in classroom. Besides, this study also investigates the relationship between teachers' computer skills and knowledge and the ICT integration in their daily teaching and learning process in classroom.

The populations which were surveyed consist of all the teaching staff at Christ the King Catholic Senior high school in the Obuasi Municipality.

Participants

The target population for the study comprised 60 teachers who teach different subjects in the school.

60 teachers of different subjects' background were selected for the study. This sample size was manageable and feasible for the study. In determine sample size, it must be kept manageable [16]. This would allow the researcher to get detailed data at a cost which is manageable in terms of finance, time, and human resources.

Instruments

Data was obtained using a questionnaire and observation. There was a set of questionnaires which were completed by the teachers. The researcher carried out observations in the school to ascertain the use of ICT resources during the instruction process.

A set of questionnaires titled “Christ the King SHS teacher’s information and communication technology competence test” was used as the instrument to collect data. 60 respondents returned their questionnaire appropriately completed. The use of questionnaires gives the respondents ample time to think out the answers to give and it is also effective when using a large sample [17].

The researcher also observed the ICT resources available in the school. The information collected through the observation was used to confirm the data obtained through questionnaires. Areas that were examined included physical facilities such as the library and IT rooms.

There were also four observations of lessons in progress in the school in order to identify the use of ICT resources employed by teachers during instruction. There were two observation guides, one to check on physical resources and the other to confirm the usage of these resources in the teaching and learning of process. The merit of this method is that if observation is carried out effectively there is no fear of the research being biased, there is no subjectivity [18].

Procedure

The researcher self-administered the questionnaires to the respondents. The researcher gave ample time to the respondents and agreed on the day and time for completion of questionnaire by the teachers. The respondents were informed about the intention of the research, its potential for the wider society and of their right to choose to participate or not. After completion of filling in the questionnaires, the observation was done by the researcher. He sat in the class and observed the lessons in progress. The IT room and the library were visited to see which ICT resources were available.

Results

This chapter presents the results, analysis, interpretation, and discussion of the research findings. The study had five objectives which were to:

1. To find out the available ICT resources used in teaching and learning at Christ the King Catholic SHS.
2. To ascertain extent to which teachers use ICT resources in teaching and learning.
3. To examine the extent to which teachers involve students in the use of ICT resources in the teaching and learning process.
4. To find out the challenges encountered by teachers in the school in the integration of ICT in the teaching and learning process.
5. To find out the alternative resource’s teachers use in the absence of required ICT resource.

Table 1. The Study Response Rate

Respondents	Targeted	Obtained	Response rate %
Teachers	60	60	100

As presented in Table 1, the study targeted teachers from the Christ the King SHS and managed to get the views of all of them and this was a response rate of 100%.

Research Question 1. What are the available ICT resources used in teaching and learning at Christ the King Catholic SHS?

Table 2. Response of Teachers Indicating the Available ICT Resources for Use in the Schools

S/N	Item	Available	%	Not available	%
1	Smart board	0	0	60	100
2	Computer	21	35	39	65
3	Projectors	1	1.6	59	98.3
4	Televisions	10	16.6	50	83.3
5	Video discs	20	33.3	40	66.6

From Table 2 above, 100% of the respondents agreed that there is no smart board in the classroom also, this confirm the observation the researcher made that there is no smart board in the school. Only 35% of the respondent agreed that there were computers in the school, and this also confirms to the

observation made that there were few computers in the school and out of these some are in bad state and need to be repaired.

Research Question 2: To what extent do teachers use ICT resources in the teaching and learning process?

Table 3. Mean Response of Teachers' Use of ICT Resources in Teaching and Learning

S/N	Item	Mean
1	Smartboard	0.0
2	Computers	2.0
3	Projectors	2.0
4	Television	1.1
5	Video disc	0.4

From table 3 the mean of all the listed ICT resources was less than 2.5 showing that none of the ICT resources were used by the teachers at Christ the King Catholic SHS not even the

computer considered available.

Research question 3. To what extent do teachers involve students in the use of ICT resources in the teaching and learning process?

Table 4. Mean Response of Teachers' Involvement of Students in the use of ICT Resources in Teaching and Learning

S/n	Item	Mean
1	Giving assignment to be done using internet	2.0
2	Using virtual library	1.4
3	Video tape lesson	1.1
4	Using projectors in lesson	0.5

The mean score of all the listed items in table 4 were below 2.5 showing that the teachers' involvement of the students in the use of ICT resources is very low.

Research Question 4. What are the challenges encountered by teachers in the school in the integration of ICT in the teaching and learning process?

Table 5. Mean Response of Constraints to Effective Integrative Use of ICT Resources in Teaching and Learning Process

S/n	Item	Mean
1	Lack of funds	3.5
2	Inadequate skills in using internet	2.9
3	Lack of funds	3.7
4	Poor power supply	2.6
5	Lack of qualified personnel	3.7
6	Unable to identify required resource	1.7
7	Lack of time	1.9
8	Lack of ICT facility	3.7
9	Lack of computer literacy on teachers	3.8

Data presented in Table 5 shows that the most inhibiting factor to the integrative use of ICT resources was lack of computer literacy on the part of some teachers (mean=3.8) followed by non-availability of ICT facilities in schools (mean=3.7). Lack of funds (Mean=3.7) and

lack of qualified technical personnel among others were indicated as being very problematic.

Research question 5: What alternative resources do teachers use in the absence of required ICT resources?

Table 6. Response of Teachers Indicating Alternative Resources Used in Absence of the Required ICT Resources?

S/N	Item	Frequency used	%	Frequency not used	%
1	Posters	31	51	29	48
2	Textbook	60	100	0	0
3	Chart	43	72	17	28
4	Maps	55	92	5	8
5	Newspaper	46	77	14	23
6	Bulletin board	55	92	5	8
7	Realia	58	97	2	3

From the displayed in Table 6, all the listed items (instructional media) recorded percentages above 50% indicating that they are used.

Discussion of Findings

The purpose of this study was to determine the extent teachers utilize ICT resources in teaching and learning process at Christ the King SHS. The study revealed that out of seven (7) listed ICT resources, only few of these items was available. Others like interactive whiteboards, video discs, multimedia projectors etc were not available as they were below 50%. This finding confirms the recommendation made by the previous study that adequate

learning environment in form of infrastructural facilities and technological equipment with internet connectivity should be provided for successful implementation of ICT in the classroom. [19] The result also showed that teachers in the Christ the King Catholic SHS were not utilizing ICT resources in teaching and learning. This implies that they are yet to embrace ICT resources in an ICT era or ICT world base. The non-utilization of ICT resources may not be unconnected with the non-inclusion of ICT in teacher education curriculum where these teachers were trained. These finding lays credence to the findings of that a growing number of teachers in most schools lack the required knowledge, technique,

and professional capabilities to harness computer technologies into teaching and learning [20].

The study further revealed that teachers' involvement of students in the use of ICT resources is very low. This finding confirms the teacher's low-level perception and low ICT literacy level which has been identified as a common problem which needs to be addressed adequately and urgently too. A successful use of ICT is dependent on learners' acceptance which has been found to be affected largely by teachers' literacy level and attitude [22]. Some constraints and challenges to effective integration of ICT resources into teaching and learning were also highlighted. They include the following: lack of computer literacy on the part of some teachers, non-availability of ICT facilities, lack of funds, lack of qualified technical personnel, erratic power supply, lack of Internet services and others. This implies that for effective integrative use of ICT resources in the teaching and learning process, these constraints must be given urgent attention by the appropriate authorities.

Conclusions

This study has revealed that teachers in the Christ the King Catholic SHS are aware of ICT facilities in the school but were not yet utilizing them in teaching and learning process. The involvement of students in the use of ICT resources is very low because of their low literacy level and poor attitude towards the use of ICT resources in instructional process. The older technologies are very much in use in the secondary schools, and this is a pointer to the fact that teachers in the Christ the King Catholic senior high school are yet to embrace ICT resources in teaching and learning process. It is easily understandable that ICT is a part of technical and specialized knowledge and skills whose acquisition is much important in staying at par with the constantly dynamic global market. It should be integrated in the education system to build globally competitive graduates

from all levels of education. This study therefore recommends the following:

The government through the Ghana Education Service should organize continuous and periodic training and retraining of teachers through capacity building workshops, seminars, and conferences to boost their ICT literacy level to enable them utilize ICT resources while teaching their students.

There is an urgent need for government to provide ICT facilities at all levels of education. There should be training in ICT experts specifically for instructional design who will work with the teachers and the students in the schools. The problem of erratic power supply should be addressed while schools should on their own procure stand-by generators that can supplement the Power supply in the school.

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Conflicts of Interest Statement

The author whose name is listed immediately below certify that they have No affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

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