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The Use of ICT Tools to Enhance Learning: A Case of Atebubu College of Education Student-Teachers

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Abstract:

This study was carried out to find out student teachers' view about the use of ICT tools such as laptops, the Internet, computer games, tablets, Smart phones and desktop computers to enhance their learning. A total population of 397 level 200 students of Atebubu College of Education, Ghana was used for the study. Questionnaires were given to the participants to gather quantitative data from them. Descriptive statistics by way of frequency counts and percentages was used to analyse responses received from the participants. Results from the analysis of the data revealed that 88.0 percent of the student teachers responded that they benefited to a large extent from the use of digital technologies such as the Internet to learn and 97.0 percent believed that the Internet provides an unlimited learning resource to them. 76.8 percent indicated that the use of ICT tools has the capacity to strongly support student-centered inquiry-based learning. Also, 58.7 percent agreed that they liked the challenge of exploring technology and new software and their possibilities. 99.5 percent answered that the use of ICT tools was very beneficial to their learning. It is concluded from the findings of the study that the level 200 students of Atebubu College of Education perceive the use of ICT tools as a catalyst that facilitates their learning.

Keywords: Perception, student teachers, college of education, ICT tools, learning

1. Introduction

The last two or three decades have witnessed a global proliferation of Information and Communication Technologies (ICTs) into the field of education. Harvey (1983) predicts that the effectiveness of the use of the computer in education may be an important factor in determining which countries will succeed in the future. Central to this vision is the powerful metaphor of the "information age", where media, business and industry become increasingly computer-reliant.

Recognising the impact of new technologies on the workplace and everyday life, today's educational institutions try to restructure their educational programs and classroom facilities in order to minimize the teaching and learning technology gap between developed and the developing countries. This restructuring process is providing learners with knowledge of specific subject areas, to promote meaningful learning and to enhance professional productivity (Tomei, 2005).

Elsewhere the computer technology has made it possible for teachers and students to interact through the Internet. Teachers use computers to write lesson plans, prepare materials for teaching, record and calculate student grades and communicate with other teachers. As such, "computers have become a routine tool for helping teachers accomplish their professional work" (Becker, Ravitz, & Wong, 1999). ICTs are resources that can be deployed to augment existing teaching and learning materials. Haddad (2002) identify at least five levels of ICT use in education: Presentation, demonstration, drill and practice, interaction and collaboration. Websites today abound where instructors and students can visit in order to obtain needed information and interact. This is used in most distance education programs. United Nations Institutions for Training and Research (UNITAR), for instance, uses the Internet as a medium to offer training programs to thousands of public sector workers around the world. The computers have become motivating tools for teaching and learning in schools. Hakkarainen (2000) reported that ICT is a transformative tool and its full integration into the school systems is necessary to prepare students for the information society they will inherit.

The use of ICTs in Ghanaian schools and other African countries is gradually growing. From the early 1990s, education stakeholders in Ghana have been concerned about how teachers and students use computers in schools and how their use supports learning. For instance, in the middle of the 1990s, educational providers realised that Ghanaian professionals could not compete on the global market for jobs because they were limited in skill, especially in the area of Information Technology. Subsequently, the authorities incorporated the study of ICTs as part of the study of science. At the

inception of the millennium, Ghana's education authorities embarked on a number of projects to introduce ICT into the Ghanaian education set up, especially at the basic and secondary school levels.

The Ministry of Education, Science and Sports in Ghana implemented education reforms in September 2007 with emphasis on ICT. Currently, ICT has been incorporated into the school curriculum, beginning with the pre-tertiary institutions. ICT is now a subject on the schools' timetable from primary to senior high school (Asamoah, 2008). Colleges of education also started with the learning of ICT as a core course at level 200 since October 2004.

Educational policymakers in Ghana have hailed the introduction of ICT in Ghanaian Colleges of Education as a remarkable step that will contribute to knowledge production, communication and information sharing among students and teachers in the school system. A number of these schools have Internet capabilities, enabling students to deepen their connection to the outside world. In 2010, the Ghana Investment fund for Electronic Communication (GIFEC) in collaboration with the Ghana government connected all the 36 Teacher Training Colleges in the country to the Internet. This was done to provide greater educational access to these students. The question to ask will be about how the students used this facility to their benefit.

If ICT is used properly, it has the potential to improve upon students' learning outcomes and effectiveness (Wang, 2001). If students are supported or given enough training on ICT tools like smart phones, tablets, the Internet and laptop computers, they can have a useful effect on teaching and learning.

According to Dede (1998), some of the benefits of ICT use in education are that it helps to improve memory retention, increase motivation and understanding. Forcheri and Molino (2000) also indicated that ICT use in education promote collaborative learning and problem-solving activities. Notwithstanding these benefits, the education field has not been faster in its adoption of ICTs compared to fields such as medicine, engineering and others (Oliver, 2002). Cuban (2001) also attests to the fact that even though both the developed and the developing worlds admit that ICT is an important tool in life, education has been slow in its adoption as an integral tool in the classroom.

Many researchers agree that introducing ICT into the classroom is likely to have a positive impact on learning outcomes, creating access to information and creating change in learning approaches and hence improving the quality of education (Wegerif, 2004; Mumtaz, 2001 and Watson, 2001). The question is, why the slow infusion of ICT in education? Many reasons have been assigned by researchers and they range from limited sources of funding, inadequate professional development opportunities for teachers, negative teacher attitudes towards technology and lack of information about students' perceptions and their ICT needs (Keengwe, 2007; Rockman, 2004; Allen, 2001).

2. Literature Review

The potentials of information and communication technology (ICT) to facilitate students' learning, improve teaching and enhance institutional administration had been established in literature (Kazu & Yavulzalp, 2008). The use of information and communication technology as a tool for enhancing students' learning, teachers' instruction and as catalyst for improving access to quality education in formal and non-formal settings has become a necessity.

Omwenga (2005) argues that it is not just the use of ICT but also the context and the need to apply the pedagogy. The limitations of the use of technology also depend on the teacher and student's ability to handle it and apply it in the learning process.

Zakaria, Watson and Edwards (2010) conducted their research on the use of Web 2.0 technology by Malaysian students. The general opinion gathered about the integration of Web 2.0 tools into learning was positive. Result showed that students preferred using e-mail to disseminate and share digital contents. Similarly, it was also found that for finding information related to education, students prefer to use search engines instead of asking friends or teachers.

Maharana, Biswal and Sahu (2009) explored the use of information and communication technology used by medical students. They found 77% of the respondents were of the opinion that ICT should be included in their syllabus. Nearly all respondents expressed their desire to have a computer lab in their college. One hundred respondents out of 128 opined that medical education is not effective without ICT based resources and services.

Saunders and Pincas (2004) examined the student's attitude towards information and communication technologies in teaching and learning in the UK. Forty-five per cent of respondents indicated that they would prefer to have more face-to-face lectures at university. The students surveyed firmly believe themselves that ICT has a significant role to play in supporting and enhancing their university learning experience. It was also suggested that they see the use of ICT as potentially going well beyond the use of the Internet to search for resources and the use of email to stay in touch with tutors and fellow students.

Luambano and Nawe (2004) investigated the Internet use by students of the University of Dare es Salaam. Findings revealed that majority of the students were not using Internet due to the inadequacy of computers with Internet facilities, lack of skills in Internet use and slow speed of computers. It was also revealed that most students who used the Internet did not use it for academic purposes. It was suggested that more computers connected to the Internet should be provided and training should also be given to the students on the use of Internet.

Njagi and Isbell (2003) assessed the students' attitudes towards web-based learning resources. The study addressed the differences in attitude change, towards computer technology, for students using web-based resources and those using traditional textbooks. It was pointed out that the majority of the students in both web-based and the traditional textbook groups had owned personal computers and had Internet accessibility at their homes; it is therefore possible that computer use was equal for all groups.

A study by Deaney, Ruthven & Hennessy (2003) revealed that students of three age groups 8, 10, and 12 in six secondary schools who participated in focused group interviews saw technological tools not just helpful in presenting work but also an opportunity to learn and complete effectively and efficiently.

Oliver (2002) investigated the role of ICT in higher education in 21st century. He stated that ICT offers a student-centered learning, it supports in knowledge construction, distance education, learning at any time. It expands the pool of teacher and students as well. It was summarized that we should see marked improvements in many areas of educational endeavor. Learning should become more relevant to stakeholders' needs; learning outcomes should become more deliberate and targeted. ICTs within education have a strong impact on, what is learned and how it is learned?

3. Methodology

Leedy (1993) stated that a method is a way of accomplishing an end result. A research methodology, therefore, refers to a set of methods, systems and procedures used in a particular research to achieve stated objectives. The word method is coined from two Greek words: 'meth' and 'odos'. The meth means 'after' and 'odos' means 'way'. A method is therefore, following after the way someone found to be effective in solving a problem or reaching an objective or getting a job done. Another point he made was that, a research methodology is dictated by the nature of data and the problem of the research. If the data is verbal, the methodology is qualitative; if the data is numerical, the methodology is quantitative. This study employed the quantitative methodology.

The survey research design was adopted for the study. Osuala (2001) affirmed that when a study centers on individuals and their opinions, belief, attitude, motivation and behaviour, the survey research is most appropriate. The population consisted of 397 level 200 students of Atebubu College of Education. This number was made up 227 (57.2%) males and 170(42.8%) females. Level 200 students were used for the study because only students at that level in our college system study ICT as a course in both first and second semesters. Questionnaire was given to the respondents to solicit data from them regarding their perceptions about the use of ICT tools such as laptops, the Internet, computer games, Tablets, Smart phones and desktop computers to enhance their learning.

The data was analyzed using Statistical Package for the Social Sciences (SPSS). The researchers used descriptive statistics by way of frequency counts and percentages to analyse responses received from the participants. Descriptive survey was chosen because it has the advantage of producing good responses from a wide range of people. It also provides a meaningful picture of events and seeks to explain people's opinion and behaviour on the basis of data gathered at the time of data collection. Cohen & Manion (1991) asserted that descriptive surveys involve gathering data at a particular point in time with the intention of describing the nature of existing conditions, identifying standards against which existing conditions can be compared, or determining the relationship that exist between specific events. Descriptive survey is also concerned with describing, recording, analyzing and interpreting conditions that either exist or existed and that the researcher does not manipulate the variables or arrange for the events to occur.

3.1. Presentation of Data and Analysis

Gender	Frequency (F)	Percentage (%)
Male	227	57.2
Female	170	42.8
Total	397	100

Table 1: Gender Distribution of Respondents
Source: Fieldwork Survey, 2018

Table 1 shows the gender distribution of the students. Out of the 397 participants, 227 were males representing 57.2% and 170 were females, representing 42.8%.

Age	Frequency (F)	Percentage (%)
15-20	241	60.7
21-25	98	24.7
26-30	50	12.6
Above 30	8	2.0
Total	397	100

Table 2: Age Distribution of Respondents
Source: Fieldwork Survey, 2018

The data from table 2 indicate that 241(60.7%) students were within the ages from 15-20 and 98 (24.7%) students were within the ages from 21-25. The number of students within the ages from 26-30 were 50, representing (12.6%), while 8 students were above 30 years, representing (2.0%).

Item	Frequency (F)	Percentage (%)
Small extent	8	2.0
Moderate extent	40	10.0
Large extent	349	88.0
Total	397	100

*Table 3: The Extent to Which Students Benefit from the Use Digital Technologies Such as the Internet to Learn
Source: Fieldwork Survey, 2018*

When asked about the extent to which students benefited from the use of digital technologies such as the Internet to learn, 8 (2.0%) students reported that they benefited to a small extent, 40 (10.0%) indicated that they benefited to a moderate extent and 349 (88.0%) said they benefited to a large extent.

The picture depicted in table 3 shows that majority of the students to a large extent benefited when they used digital technologies such as the Internet to learn.

Items	Strongly Agree	Agree	Disagree	Strongly Disagree	Total (%)
	Frequency/ Percentage	Frequency/ Percentage	Frequency/ Percentage	Frequency/ Percentage	
Student use of ICT tools has the capacity to strongly support student-centered, inquiry-based learning	305(76.8)	92(23.2)	--	--	397(100)
There is no need to use ICT tools in learning	--	--	5(1.3)	392(98.7)	397(100)
The world would be better off without computers	--	--	7(1.8)	390(98.2)	397(100)
I like the challenge of exploring technology and new software and their possibilities	159(40.0)	233(58.7)	5(1.3)	--	397(100)
The Internet provides an unlimited learning resources to students	386 (97.2)	11(2.8)	--	--	397(100)

*Table 4: The Extent to which Students Agree or Disagree with the Statements
Note: Bold Values Represent the Largest Values in Each Category; the Percentage Responses are Stated Beside (I.E. at the Right Side) the Number of Respondents in Each Cell
Source: Fieldwork Survey, 2018*

Students were asked to indicate the extent to which they agree or disagree with the statements in Table 4. More than half of the students indicated that they strongly agreed with the following statements: student use of ICT tools has the capacity to strongly support student-centered inquiry-based learning-76.8%. The Internet provides an unlimited learning resource to students -97.2%. However, 392 students, representing 98.7% strongly disagreed with the statement that, "There is no need to learn about ICT". 390 (98.2%) students strongly disagreed that the world would be better off without computers and 233 (58.7%) agreed that they liked the challenge of exploring technology and new software and their possibilities.

As can be seen from the Table, majority of the students strongly agreed that student use of ICT tools has the capacity to strongly support student-centered inquiry-based learning and they also strongly agreed that the Internet provides an unlimited learning resource to students. On the other hand, majority of the student strongly disagreed with following statements: There is no need to learn about ICT and also the world would be better off without computers. Also, majority of the students agreed that they liked the challenge of exploring technology and new software and their possibilities.

Item	Frequency (F)	Percentage (%)
Smart phones	377	95.0
Tablets	187	47.1
Laptop computers	298	75.0
Desktop computers	152	38.3

Table 5: Number of Students Who Possess and Use the ICT Tools Below

Table 5 depicts data about the number of students who owned some ICT tools. From the table, 377 (95.0%) students responded that they possessed and used smart phones and 187 (47.1%) indicated that they possessed and used tablets. 298 (75.0%) students said that they owned and used laptop computers, while 152 (38.3%) students answered that they possessed and used desktop computers.

Responses	Frequency (F)	Percentage (%)
Yes	395	99.5
No	2	0.5
Total	397	100

Table 6: The Use of ICT Tools Such as Smart Phones, Tablets, Laptop Computers, Desktop Computers and the Internet is Very Beneficial to Students' Learning
Source: Fieldwork Survey, 2018

Students were asked to indicate whether or not the use of ICT tools such as smart phones, tablets, laptop computers and the Internet is very beneficial to their learning. The data in table 4 shows their responses. 395 (99.5%) students indicated that the use of ICT tools is very beneficial to their learning. Whereas 2 (0.5%) responded in the negative.

4. Findings

The following are the findings of the study:

- Majority (88.0%) of the students indicated that they benefited to a large extent from the use of digital technologies such as the Internet to learn.
- Most of the students (76.8%) strongly agreed that their use of ICT tools has the capacity to strongly support student-centered inquiry-based learning. 97.2% of the students believed that the Internet provides an unlimited learning resource to them.
- Many of the students (58.7%) also agreed that they liked the challenge of exploring technology and new software and their possibilities.
- Majority of the students owned and used ICT tools such as smart phones (95.0%) and laptop computers (75.0%).
- A large number of the Students (99.5%) indicated that the use of ICT tools such as smart phones, tablets, laptop computers, desktop computers and the Internet was very beneficial to their learning.

5. Conclusion

Data from the research attest to the fact that the level 200 student teachers of Atebubu College of Education perceived the use of ICT tools such as smart phones, tablets, laptop computers, desktop computers and the Internet as catalysts that facilitate their learning. They indicated that they have benefited from the use of ICT tools. Students actually believed that there is the need to learn about ICT and that ICT tools can enhance their learning experience. Maharana, Biswal and Sahu (2009) explored the use of information and communication technology used by medical students. They found that 77% of the respondents were of the opinion that ICT should be included in their syllabus. The potentials of information and communication technology (ICT) to facilitate students' learning, improve teaching and enhance institutional administration had been established in literature (Kazu&Yavulzalp, 2008).

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