

AWARENESS AND UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN LEARNING AMONG SENIOR SECONDARY BIOLOGY STUDENTS IN KWARA STATE, NIGERIA

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Abstract

The place of ICT in the technological development of any nation cannot be overemphasized. ICT has played a prominent role in the teaching and learning process over time. This study investigated senior Secondary School Biology students' level of awareness and utilization of ICT in Ilorin-south, Nigeria. The study was descriptive of survey type in nature. The instrument used was researchers' designed questionnaire which was validated by three ICT experts. The population for the study was all senior school Biology students in Ilorin South, Nigeria out of which 300 respondents randomly selected were used for the study. Five research questions and three hypotheses were tested and results shows that most of the respondents either own or have access to ICT, are aware of educational role of ICTs, used ICTs for leisure purpose and sees poor electricity supply as the major constraint to the use of ICTs in learning. Inferential and differential statistic was used to analyze the data collected for this study. It was therefore recommended that there is the need to raise extensive awareness for students to focus on educational use of ICT than less educative uses and that the government should also provide stable electricity to facilitate effective use of ICTs in teaching and learning.

Keywords: awareness, utilization, ICTs, Biology students

Introduction

The use of computers and its related software is gaining vast popularity globally. Little wonder then that the development in Information and Communication Technology (ICT) has broken all national and international barriers and turned the world into a global village making information available to everybody, anywhere, and any time because of its availability and affordability. Information and Communication Technology serves as the bedrock for the survival of any contemporary nation. According to Amuchie (2015), the usage of computers, the internet, and other telecommunications technology is a revolution that is affecting every facet of human endeavor. ICTs, which include a variety of fast developing telecommunication devices and digital

technologies, are electronic or computerized equipment that are helped by human and interactive materials. They can be used for a variety of teaching and learning activities as well as for personal usage. Chisenya (2006). From the above summations, ICT could be defined as a combination of all tools that are used in processing and disseminating with ease information of all kinds.

Understanding how to use ICT enhances human potential in every area of human endeavor, particularly for educational programs. ICT is a catch-all phrase that refers to any kind of communication tool or program, including radio, satellite, cellular phones, computers, networks, and software. These can be utilized to improve and assist in distance learning, ICT is therefore

understood to be the application of digital technology to all facets of teaching and learning in the field of education. The use of ICT has brought about rapid transformation, which involves the use of computers, internet and other information technologies (Jimoh, 2007). ICT facilitates quick and easy access to a wide range of information; in fact, it is now difficult to imagine a world without ICT in this digital age. ICT helps pupils understand concepts and topics by making abstract topics more real (Jimoh, 2007). It is widely accepted that information and communication technology (ICT) can be utilized to enhance the effectiveness of instruction at any educational level (Onasanya, 2009). ICT has significantly impacted teaching, learning, and research in the field of education (Yusuf, 2005). Numerous studies have demonstrated how ICT can enhance education quality (Al-Ansari, 2006). As a result of this, developed nations have integrated ICT in their educational system. Yusuf (2005) stated that the field of education has been affected by ICTs in areas such as teaching, learning and research.

In Nigeria's secondary schools, ICT is being used to some extent, according to Adomi and Kpangban (2010), who noted recent advancements in the country's education system. They determined that the introduction of computer education in secondary schools began in 1988, the year the Nigerian government passed a law governing the subject. The Federal Government incorporated ICT in education in Nigeria in the National Policy on Education (2004), which acknowledges the significant significance of ICT in the modern world (Adomi & Kpangban, 2010). The National Policy on Education in Nigeria outlines the pre-primary through postsecondary scientific teaching goals in unambiguous terms. At the secondary level, it involves preparing kids to function well in our modern age of science and technology (FGN, 2013). It is aimed at all ages of learners of all abilities and interests. The Federal Ministry of Education launched an ICT-driven project known as School Net (FGN, 2006) which was intended to equip all schools in Nigeria with computers and communications technologies. Although efforts have been made to ensure that ICTs are available and used in Nigerian secondary schools; the level of up-take is still low as visible in both private and public schools. It has been observed that most schools both private and government schools do not offer ICT training programs (Goshit, 2006).

Researches have shown that there are many factors limiting the infusion of information and communication technology in secondary schools. These factors include lack of funds, which makes it difficult to purchase ICT facilities and non-availability of trained teachers to implement them. Other factors include high enrolments, inadequate access to ICT and high cost of ownership. Adeyemo (2010) noted that the problem of information technology literacy was rampant among teachers in the country as it cuts across primary, secondary and tertiary institutions of learning. Studies on gender also reported that male students experience less anxiety about information and communication technology and use it more frequently than the female students (Agboola, 2006). The present study thus focuses on knowing the level of awareness and utilization of ICT tools by Biology students in Ilorin South, Kwara State, Nigeria.

Statement of the Problem

Information and communication technology is a tool that is utilized for dissemination of information and communication needs of institutions, organizations, individuals and students. Introduction of ICT in science lessons can raise not only the level of knowledge but students attitudes toward sciences in general, and Biology in particular as well. Biology learning is very important because the knowledge of Biology helps in improving the quality of life, as it helps to solve many societal problems relating to health, poverty, food shortage, crop production and environmental conservation. The learning of Biology in real life context is necessary for personal development and also, the development of scientific and technological world Onyija & Opara (2013). ICT can lead to improved student learning and better teaching methods since they have the ability of getting the students more motivated and creative when faced with new learning situations. ICTs can enhance the quality of education by learner motivation and engagement: facilitating the acquisition of essential skills among students.

Several researches have been conducted on ICT utilization among schools. Asaolu and Fashanu (2012) reported that ICT implementation rate in private secondary schools doubles the rate in private schools hence both the teachers and students in private schools have more access to ICTs than their counterparts in public schools. A view supported by Malero, Ismail and Manyilizu

(2015) whose study revealed that private secondary schools are better off than public schools in ICT usage. Ubogu and Evaristar (2012) in their study observed that the major barrier to effective utilization of ICTs in secondary schools in Delta state were the high cost and unavailability of an ICT enabled environment and classrooms. Amuchie (2015), also observed in their study that there was inadequate provision for ICT facilities in federal higher institutions in Niger state. In the light of these factors it becomes necessary to conduct a research on the awareness and utilization of ICT by Senior Secondary School Biology students in Ilorin South Local Government Area of Kwara State since most of the researches were conducted in other States of the Federation and mostly do not examine the students level of usage of ICT tools.

Purpose of the Study

This study was designed to determine the level of students' awareness and accessibility of ICT in Biology learning, and simultaneously determine students' level of exposure in the utilization of ICT. The specific objectives of the study were to:

1. assess the awareness of Biology students on the educational roles of ICT in both private and public schools
2. find out the students' level of utilization of ICT in both private and public schools
3. determine the purpose of ICT usage among the students in both private and public schools
4. ascertain students' confidence level in terms of ICT skills in both private and public schools
5. find out the hindrances encountered by students in using ICT

Research Questions

In order to look into the above stated problems the study attempts to find answers to the following research questions raised:

1. What is the level of awareness of the Biology students to the educational roles of ICT?
2. To what extent do the students utilize ICT?
3. What are the purposes of ICT usage among the students?
4. What are the students' levels of confidence in terms of ICT skills?
5. What are the hindrances encountered by students in using ICT?

Research Hypotheses

The following research hypotheses were raised and tested in the course of the study

HO₁: There is no significant difference in the awareness of educational roles of ICT by students in public and private schools.

HO₂: There is no significant difference in the utilization of ICT by students in public and private schools.

HO₃: There is no significant difference in the mean scores of male and female students on ICTs ownership

Methods

The research design adopted for this study is a descriptive research of the survey type. This design is suitable for this study as it allows the researchers to make careful record of what were observed for analysis purpose.

Population, Sample and Sampling Technique

The population for the study comprised all senior school Biology students in Ilorin South Local Government Area of Kwara State, Nigeria. A three-stage sampling technique was used to select 300 respondents for the study. In the first stage, all the senior secondary schools in Ilorin South Local Government Area were stratified into private and public schools. In the second stage, a total of 20 schools were randomly selected (10 each from the private and public schools) and in the third stage, five (5) Biology students from SS1, SS2 and SS3 classes were randomly selected to make a total sample of three hundred (300) students.

Research Instrument

The research instrument adopted was a well structured questionnaire made up of five sections (A-E). Section A elicited the background information of the respondents. Section B was based on the awareness of the educational roles of ICT, having a 3-option rating scale of Very Aware, Fairly Aware and Not Aware. Section C was based on the level of utilization of ICTs by the Biology students. It had a 3-option rating scale of Frequently Used, Seldomly Used, and Never Used. Section D was used to rate the students' confidence level in terms of computer skills and had option rating of Very Confident, Confident and Not Confident. While section E, elicited the respondents' opinions about the probable barriers

to ICT usage. Three hundred copies of the questionnaire were administered.

Instrument Validation

The content and face validity of the instrument were determined by subjecting the instrument to the scrutiny of three lecturers in the Department of Science Education, Faculty of Education, University of Ilorin and an ICT expert. A test re-test method was used to determine the reliability of the instrument. Pearson Product Moment Correlation (PPMC) was used to determine the correlation between the two sets of scores. The 'r' value obtained was 0.76 on the average indicating a high degree of consistency and reliability.

Data Analysis Technique

The data obtained from the administered questionnaire were subjected to descriptive statistics such as frequency counts, the percentage, mean, and rank while inferential statistics such as t-test was used to analyze hypotheses one, two and three. The emerging data

from this study were tabulated, analyzed and presented in Tables 1-8.

Results

The following is a description of the data analysis; Table 1 reveals that majority of the students (86.00%) with a weighted mean score (WMS=2.46) were aware of the availability of on-line learning packages offered on ICTs. The students were also aware that ICTs could foster students' interest and motivation (WMS=2.37, 76.7%), it keeps a student updated (WMS=2.28, 75.0%), make students have better view of what is learnt in class (1.93, 51.7%), promote students' commitment to learning (WMS=1.56, 51.6%), offers an interactive opportunities among students from various geographical location (WMS=1.53, 37.0%). However, they were not fully aware that ICTs make students conduct experiments as viewed on screens (WMS=1.41, 31%) and that it could promote distant science learning. This is in line with the submissions of Apapu and Wakili (2015) who opined that the respondents sampled believed that ICT tools, like projector, internet connectivity were substantially available

Table 1

Distribution of the Respondents Based on their Awareness of ICTs Educational Roles

Statement	VA	FA	NA	Score	WMS	Remark
	Freq (%)	Freq (%)	Freq (%)			
Make the lesson more exciting and interesting for students	27 (9.0)	98 (32.7)	175 (58.3)	452	1.51	Aware
Makes students conduct experiments as viewed on screen	30 (10.0)	63 (21.0)	207 (69.0)	423	1.41	Not Aware
It offers many online learning packages which give students greater control over what they learn and how they learn at school	180 (60.0)	78 (26.0)	42 (14.0)	738	2.46	Aware
Promote distant science learning	42 (14.0)	30 (10.0)	228 (76.0)	372	1.24	Not Aware
Promote students commitment to learning	13 (4.3)	142 (47.3)	145 (48.3)	468	1.56	Aware
----- motivation	168 (56.0)	74 (20.7)	58 (19.3)	710	2.37	Aware
It offers an interactive opportunity among students from various geographical location	47 (15.7)	64 (21.3)	189 (63.0)	458	1.53	Aware
It keeps a student updated	160 (53.3)	65 (21.7)	75 (25.0)	685	2.28	Aware
Make students have better view of what is learnt in class	125 (41.7)	30 (10.0)	145 (48.3)	580	1.93	Aware

VA = Very Aware, FA= Fairly Aware, NA= Not Aware, WMS= Weighted Mean Score

In accessing the level of utilization of ICTs, Table 2 shows that game playing ranked first among the list of ICT use with a weighted mean score of 2.22, followed by social media (WMS= 1.99), writing with computer (WMS= 1.73, 3rd), computer use for playing DVDs/video (WMS= 1.72, 4th), information search (WMS= 1.51, 5th). However, there was lesser utilization of ICTs in watching of TV/listening to radio/music on the internet (WMS=1.33, 6th), downloading of music files or software from the internet (WMS=1.24,

8th), surfing of internet to revise for exam (WMS=1.23, 9th), accessing educational software to learn lessons (WMS= 0.97, 10th), sending and receiving e-mails (WMS= 0.62, 11th), internet shopping (WMS= 0.37, 12th), and the least use is in computer programming (WMS= 0.35, 13th). This is in line with the findings of Sarfo and Ansong-Gyimah (2011) who stated that majority of the students made use of their textbooks mainly for their studies while only 1.1% made use of ICT tools like computers and internet for academic purpose.

Table 2

Distribution of Respondents Based on Level of Utilization of ICTs

Statement	Score	WMS	Rank
I use educational software to learn some lessons	290	0.97	10 th
I download music files or software from the web	372	1.24	8 th
I use computer for writing	521	1.73	3 rd
I design websites	400	1.33	6 th
I do computer programming	105	0.35	13 th
I watch DVDs/videos on the computer	515	1.72	4 th
I send and receive e-mails	187	0.62	11 th
I use the internet to look up for information	453	1.51	5 th
Watch TV/ Listen to radio/music on the internet	400	1.33	6 th
I use the internet to revise for exams	368	1.23	9 th
I browse the internet for fun (social media)	598	1.99	2 nd
Computer games	667	2.22	1 st
Internet shopping	110	0.37	12 th

Distribution of Respondents Based on the Purpose of ICT Usage

Table 3 shows that most of the respondents (81.67%) used ICTs for leisure purposes, 71.0% used it for communication. 22.67% used it for reading recommended course work while 2.0% used ICT to access e-mail. This is in line with the

findings of Sarfo and Ansong-Gyimah (2011) who observed that most students in Ghanaian high schools made use of the ICT tools like cell phones mainly for social communication (81.7%) while only 7.5% of the respondents use it for learning purpose

Table 3

Distribution of respondents based on the purpose of ICT usage

The respondents as shown in Table 4 indicated a high level of confidence in operating a mobile phone (WMS=2.51, 92%), basic use of PC (WMS=2.20, 66.6%), Using chat rooms and forums (Face book, Twitter e.t.c) (WMS=2.46, 86.6%), internet browsing (WMS=1.87, 56.6%), use of word processor (WMS=1.78, 56.3%). However, they express no confidence in searching for saved data on Hard disk or compact disk

(WMS=1.49, 38.6%), Downloading of documents (WMS=1.43, 30.0%) and Managing files (WMS=1.18, 13.3%). This is in line with the findings of Thanuskodi (2013) who observed that majority of the respondents sampled (57.25%) had average level of internet skills, 12.31% were experts in the use of ICT while 30.44% were below average.

Table 4:
Distribution of Respondents Based on Confidence Level in ICT Usage

Statement	VC	C	NC	Score	WMS	Remark
Basics of operating PC (Using keyboard, Mouse etc.)	160 (53.3)	40 (13.3)	100 (33.4)	660	2.2	C
Managing files (delete, move to etc.)	15 (5.0)	25 (8.3)	260 (86.7)	355	1.18	NC
Using Word processor such as word program	65 (21.6)	104 (34.7)	131 (43.7)	534	1.78	C
Use spread sheet processor such as Excel	32 (10.6)	48 (16.0)	220 (73.4)	412	1.37	NC
Downloading of documents	40 (13.3)	50 (16.7)	210 (70.0)	430	1.43	NC
Internet browsing	90 (30.0)	80 (26.6)	130 (43.3)	560	1.87	C
Operating of mobile phones	190 (63.3)	85 (28.7)	15 (5.0)	755	2.51	C
E-mails (sending and receiving mails)	40 (13.3)	63 (21.0)	197 (65.7)	343	1.14	NC
Using chat rooms and forums (Face book, Twitter etc)	180 (60.0)	78 (26.0)	42 (14.0)	738	2.46	C
Searching for saved data on hard dick or compact disk	30 (10.0)	86 (28.6)	184 (61.4)	446	1.49	NC

VC= Very Confident, C= Confident, NC= Not Confident

Table 5 reveals that more than half (66.0%) of the respondents with weighted mean scores (WMS= 2.93) stated that poor electricity supply was the major constraint to the use of ICTs in learning, with a nearly equal number (WMS=2.90, 71.7%) who saw shortage of time to use ICT for educational purpose as a hindrance, significant

number (WMS=2.77, 56.7%) of the respondents agreed that lack of economic power to own ICT is a factor, while (WMS=2.70, 63.3%) indicated that poor internet facility was a problem. However, some of the respondents (WMS=2.01, 30.3%) disagreed with lack of personal interest as a reason for inadequate use of ICTs

Table 5:
Distribution of Respondents Based on Perceived Hindrances to the use of ICTs

Reason	SA	A	D	SD	Score	WMS	Remark
Shortage of time to use ICT for educational purpose	95 (31.7)	120 (40.0)	45 (15.0)	40 (13.3)	870	2.90	A
Lack of economic power to own ICT	110 (36.7)	60 (20.0)	80 (26.6)	50 (16.7)	830	2.77	A
Poor internet facilities	90 (30.0)	100 (33.3)	40 (13.3)	70 (23.3)	810	2.70	A
Poor electricity supply	130 (43.3)	68 (22.7)	52 (17.3)	50 (16.7)	878	2.93	A
Lack of personal interest	55 (18.3)	36 (12.0)	65 (21.7)	144 (48.0)	602	2.01	D

SA= Strongly Agreed, A= Agreed, D= Disagreed, SD= Strongly Disagreed

Though information communication technologies have become common source of knowledge in academic communities, respondents identified some challenges to the use of the technology. The specific problems faced by the users are lack of economic power to own ICT, poor electricity supply among others. This is in line with the findings of Amuchie (2015) who listed poor electricity supply, high cost of ICT, insufficient funds among other as challenges to ICT usage in schools.

HO₁: There is no significant difference in the awareness of educational roles of ICT by students

in public and private schools.

The result in Table 6 shows that the difference in awareness of educational roles of ICT for respondents in private schools (27.32) and public schools (34.21) yielded a t-statistics of 0.675 and p-value of 0.272; this result was not statistically significant since the obtained p-value (0.272) was greater than 0.05 level of significance. Therefore, there is no significant difference in the awareness of educational roles of ICT based on type of school. This implies that the awareness of educational roles of ICT is similar for respondents irrespective of school type.

Table 6:

t-test Analysis Output for Significant Difference in Awareness of Educational Roles of ICT on the Basis of Type of School

Variable	N	Mean	SD	Df	t _{cal}	p _{value}	Decision
Private	150	27.32	6.47	298	0.675	0.272	Accept HO ₁
Public	150	34.21	7.84				

Significant at $p < .05$

HO₂: There is no significant difference in the utilization of ICT by students in public and private schools

The result in Table 7 shows that there is a significant difference in utilization of ICT between students in private school (44.38) and public (31.92) which yielded a t-statistics of 3.80 and p-value of 0.004; this result was deemed to be

statistically significant since the obtained p-value (0.004) was less than the 0.05 level of significance. Therefore, there is a significant difference in the level of utilization of ICTs based on school type. On a specific note, the result implies that private school respondents had a significantly higher level of utilization than their counterparts in public schools.

Table 7:

t-test Analysis of Output for Significance Difference in the Utilization of ICTs on the Basis of School Type

Variable	N	Mean	SD	Df	t _{cal}	p _{value}	Decision
Private	150	44.38	9.18	298	3.80	0.004	Reject HO ₂
Public	150	31.92	6.43				

Significant at $p < .05$

HO₃: There is no significant Difference in the mean scores of male and female students on ICTs ownership

The result in Table 8 shows that the difference in ICTs' ownership for Male (28.60) and female (31.27) yielded a t-statistics of 0.709 and p-value of 0.285; this result was not statistically

significant since the obtained p-value (0.285) was more than 0.05 level of significance. Therefore, there is no significant difference in ICTs ownership based on gender of the Biology students. This implies that both genders had similar access to ICTs.

Table 8:
t-test Analysis of Output for Significant difference in the Ownership of ICTs on the Basis of Gender

Variable	N	Mean	SD	Df	t _{cal}	p _{value}	Decision
Male	157	28.60	6.77	298	0.709	0.285	Accept HO ₃
Public	143	31.27	5.71				

Significant at $p < .05$

Summary of Major Findings

Consequent on the results of the analyses conducted to answer the research questions and hypothesis, the summary of the major findings is presented below:

1. Most (96.3%) of the respondents of the respondents own/have access ICTs
2. Eighty-six percent (86%) of the respondents with weighted mean scores (WMS=2.46) were highly aware of the on-line learning packages offered on ICTs.
3. In assessing the level of utilization of ICTs, result shows that game playing ranked 1st among the list of ICT usage with a weighted mean score (WMS=2.22).
4. Most (81.67%) of the respondents used ICTs for leisure purposes.
5. There was a very high level of confidence in operating a mobile phone as majority of the respondents (92.0%) expressed confidence in their ability to use mobile phones.
6. More than half of the respondents (66.0%) stated poor electricity supply as the major constraint to the use of ICTs in learning.
7. There was no significant difference in the awareness of educational roles of ICT based on school sector as the result of the t-test analysis shows a p-value of 0.272 which is not significant at 0.05 level of significance implying that the awareness of educational roles of ICT is similar for respondents irrespective of type of school.
8. There was a significant difference in the level of utilization of ICTs based on school sector as the result of the t-test analysis shows a p-value of 0.004 which is significant at 0.05 level of significance implying that the level of utilization of ICTs differ based on school type.
9. There is no significant difference in ICTs ownership based on gender of the Biology students as the result of the t-test analysis shows a p-value of 0.285 which is not significant at 0.05

level-of significance implying that the ownership of ICTs differ based on gender.

Discussion

The study found out that the respondents had high awareness of educational roles of ICTs. They were aware of the on-line learning packages, which give students greater control over what they learn and how they learn in school with level of awareness of 86.0%. Markedly, this puts the average student at a vantage position to have more knowledge of biology. This finding agrees with the finding of Oye, shallsuku and Iahad (2012) who asserted that online learning or web-based training is an approach that can facilitate and enhance learning both through computer and communication technology and students who takes advantage of this have better advantage to be more knowledgeable than those who do not. The finding is also corroborated with the findings of Oloyede (2004) who noted that the ICT is a way to compliment the present methods used in teaching Biology in secondary schools in Nigeria in order to produce maximum results for the acquisition of scientific knowledge.

Ironically, despite the high level of awareness of the educational role of ICTs among the respondents, the study found out that there was under utilization of educational potentials of ICTs among the respondents. However, the students in the private schools were observed to have a higher level of utilization than their counterparts from the public schools. This is in line with the findings of Malero *et.al* (2015).

The study identified Computer games, social media and watching of DVDS/videos on the computer as what the students majorly do with ICTs. However, use of internet to revise for exams and seeking academic information online were least utilized. This could be due to interest of the students on the purpose they want ICTs to serve

and constraints to ICTs utilization such as lack of access to the right ICTs, shortage of time to use ICT for educational purpose, lack of economic power to own ICT, poor internet facility and poor electricity supply. This finding is contrary to those of McMahon's (2009) who observed that there were statistically significant correlations between studying with ICT and the acquisition of knowledge. A longer exposure in the ICT educational resource environment can foster students' knowledge of specific topics. Thus, the researcher recommended that schools should integrate technology across all of the learning areas and among all learning levels. Where this is done, students are able to apply technology to the attainment of higher levels of cognition within specific learning contexts. This will help students focus on higher-level concepts rather than less meaningful tasks.

Conclusion

The study comprehensively focused on the awareness and utilization of ICTs among senior school Biology students in Ilorin South LGA, Kwara State, Nigeria.

1. It is clear from the study that the Biology students were highly aware of the on-line learning packages offered on ICTs. However, a more productive use of ICT needs to be campaigned to the students as majority used ICTs for playing games.
2. The high level of confidence in operating mobile phone may be due to the students having high accessibility to the ICT.
3. Poor electricity supply was mentioned as the major constraint to the use of ICTs.
4. The test of hypotheses shows high awareness of students about the educational roles of ICT is similar for the respondents irrespective of school type
5. Respondents in the private schools had a significantly higher level of utilization than their counterparts in public schools and both genders have similar access to ICTs.

Recommendations

Based on the findings of the study, the following suggestions were made to improve the use of the ICT resources by students in senior schools:

- i. There is need to raise more extensive awareness for students to focus on educational use of ICT than less educative uses.
- ii. All Biology teachers should embrace ICT integration in the delivery of their lessons to encourage students to use the facility for upgraded learning.
- iii. The use of ICT facilities by students should be closely monitored so that the students only engage in useful academic activities when using the ICTs. Also, students should be advised on responsible use of ICT facilities in order to ensure that there is no addiction to non-important activities like games.
- iv. ICT training should be encouraged in schools to increase the competence of students in use of computer software by setting up computer clubs
- v. The government needs to help secondary schools have access to stable electricity to facilitate the effective use of ICTs in teaching and learning.

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