Computer Studies and Its impact in Secondary Schools in Umuahia-North Local Government Area of Abia State, Nigeria

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Abstract—The purpose of this research study is to examine the impact of Computer Studies among teachers and students of secondary schools in Umuahia North Local Government Area of Abia State, especially as it affects the teaching and learning process. The authors adopted a descriptive survey design for this study using four research questions which were formulated based on the purpose of the research. The results of the study indicate that Computer Studies has positive impact in the teaching and learning process in secondary schools in Umuahia North Local Government Area of Abia State, Nigeria. From the findings, the computer literacy level of the students was found to be low while that of the teachers was slightly higher than that of the students. The results of the study also show that equipment and infrastructure such as computers and other information and communication technology (ICT) facilities are also needed in schools to facilitate the acquisition of basic computer skills among teachers and students in secondary schools and thereby increase their computer literacy level.

Index Terms—Computer Awareness, Computer Literacy, Computer Studies, Education, ICT and Impact.

I. INTRODUCTION

The twenty- first century is already turning out to be the century of the computer age**.** The computer revolution that started after the Second World War is now developing exponentially and computers are beginning to influence and take over nearly every aspect of our lives.

In a rapidly changing world, basic education is essential for an individual to be able to access and apply information. The Economic Commission for Africa has indicated that the ability to access and use information is no longer a luxury, but a necessity for development.

Unfortunately, many developing countries, especially in Africa, are still low in Information and Communication Technology (ICT) application and use, [1] as cited by [2].The ability to use computers effectively has become an essential part of everyone's education. Skills such as book keeping, clerical and administrative work, stocktaking, and so forth, now constitute a set of computerized practices that form the core IT skills package: spreadsheets word processors, and database [3] as sited by [2].

The demand for computer/ICT literacy is increasing in Nigeria, because employees realize that computers and other ICT facilities can enhance efficiency. On the other hand, employees have also become computer literate.

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The general objectives of the policy include:

1. Bring about a computer literate society by the mid – 1990s
2. Enable present school children to appreciate and use the life in future various aspects of life and in future employment.

According to the National Computer Policy [4], the first objective is to ensure that the general populace appreciates the impact of information and computer technology on packages, understand the structure and operation of computers and their history, and to

appreciate the economic, social and psychological impact of the computer [5].

The modalities and the strategies for achieving the stated objectives include:

1. Training teachers and associated personnel.
2. Hardware facilities.
3. Curriculum development.
4. Maintenance of hardware and peripherals.

Computer education was initially limited to Federal Unity Secondary schools until few years ago when it was introduced to states' government secondary school system. Presently Computer Studies is offered as a core subject in Basic School Certificate for those in junior secondary school level in Abia State, Nigeria.

The aim of this project work is thus to examine the impact of Computer Studies in secondary schools in Umuahia North local Government Area of Abia State, Nigeria. This is because educational systems around the world are on increasing pressure to use the new information and communication technologies (ICTs).

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II. RELATED WORKS

Work done in reference [2], was on the application of ICT in Nigerian Secondary Schools. The authors claimed that the adoption and use of ICTs in schools have a positive impact on teaching, learning, and research. Yet despite the roles ICTs can play in education, secondary schools in Nigeria have yet to extensively adopt them for teaching and learning. Efforts geared towards integration of ICTs into the secondary school system, have not had much impact. Problems such as poor policy and project implementation strategies and limited or poor information infrastructure militate against these efforts. In order to ensure that ICTs are widely adopted and used in Nigeria's secondary school system.

In reference [14], the work was aimed on finding the effects of Computer Assisted Instruction (CAI) on Secondary School Students' Performance in Biology in Oyo state, Nigeria. The result of the authors' findings of the study showed that the performance of students exposed to Computer Assisted Instruction (CAI) either individually or cooperatively were better than their counterparts exposed to the conventional classroom instruction. According to the author there was no significant difference in the performance of male and female students exposed to CAI in either individual or cooperative settings. Based on their research findings recommendations were made on the need to develop relevant CAI packages for teaching biology in Nigerian secondary schools.

Reference [13], research work focused on the effects of introducing computers into the Jamaican schooling system, both primary and secondary. The results of their findings show that computer-based instruction also had smaller, positive effects on scores on follow-up examinations given to students several months after the completion of instruction. In addition, students who were taught on computers developed positive attitudes toward the computer and toward the courses they were taking and computers reduced substantially the amount of time that students needed for learning.

The work done in reference [11] focused on the factors militating against computer education in Kenyan public secondary schools on Emerging Issues in the Implementation of Computer Technology into Kenyan Secondary School Classrooms. The author identified some factors militating factors militating against computer education in public secondary schools which included the lack of adequate training in computer skills, not enough time for teachers and students to use computers effectively; lack of confidence and skills with computers; difficulties of access to the computers and software; lack of enough computers for students to use effectively and the issue of computer support materials, and technical assistance.

In a related work [10], the author gave the following factors as challenges affecting the implementation of computer education in schools in Chegutu district of Mashonaland West, Zimbabwe: There are no budgets for computer education in most schools and were funds exists these are inadequate or computer procurement as all the respondents; the majority of teachers and parents have a negative attitude towards computer education there are no teachers qualified and trained to teach computers in the schools; the few teachers available are not willing to teach the computer as a subject in the schools and computer teachers were inadequate considering the student enrolment; there is a negligible number of in-service computer training programmes for teachers in the schools and phobia of computers is another significant factor for resenting the subject.

III. ADVANTAGES OF COMPUTERS IN EDUCATION

According to [6], Computer technology has had a deep impact on the education sector. Thanks to computers, imparting education has become easier and much more interesting than before. Owing to memory capacities of computers, large chunks of data can be stored in them. They enable quick processing of data with very less or no chances of errors in processing. Networked computers aid quick communication and enable web access. Storing documents on computers in the form of soft copies instead of hard ones, helps save paper. The advantages of computers in education primarily include:

A.   Storage Of Information

Computers enable storage of data in the electronic format, thereby saving paper. Memory capacities of computer storage devices are in gigabytes. This enables them to store huge chunks of data. Moreover, these devices are compact. They occupy very less space, yet store large amounts of data. Both teachers and students benefit from the use of computer technology. Presentations, notes and test papers can be stored and transferred easily over computer storage devices. Similarly, students can submit homework and assignments as soft copies. The process becomes paperless, thus saving paper. Plus, the electronic format makes data storage more durable. Electronically erasable memory devices can be used repeatedly. They offer robust storage of data and reliable data retrieval.

B.   Audio-visual aids in teaching

Computers are a brilliant aid in teaching. Online education has revolutionized the education industry. Computer technology has made the dream of distance learning, a reality. Education is no longer limited to classrooms. It has reached far and wide, thanks to computers. Physically distant locations have come closer due to Internet accessibility. So, even if students and teachers are not in the same premises, they can very well communicate with one another. There are many online educational courses, whereby students are not required to attend classes or be physically present for lectures. They can learn from the comfort of their homes.

C.   Better presentation of information

Computer software help better presentation of information. Internet can play an important role in education. As it is an enormous information base, it can be harnessed for retrieval of information on a variety of subjects. The Internet can be used to refer to information on different subjects. Both teachers and students benefit from the Internet. Teachers can refer to it for additional information and references on the topics to be taught. Students can refer to web sources for additional information on subjects of their interest. The Internet helps teachers set test papers, frame questions for home assignments and decide project topics. And not just academics, teachers can use web sources for ideas on sports competitions, extracurricular activities, picnics, parties and more.

D.   Quick communication between students, teachers and parents

Computer teaching plays a key role in the modern education system. Students find it easier to refer to the Internet than searching for information in fat books. The process of learning has gone beyond learning from prescribed textbooks. Internet is a much larger and easier-to-access storehouse of information. When it comes to storing retrieved information, it is easier done on computers than maintaining hand-written notes.

E.   Computers facilitate effective presentation of information

Presentation software like PowerPoint and animation software like Flash among others can be of great help to teachers. Computers facilitate audio-visual representation of information, thus making the process of learning interactive and interesting. Computer-aided teaching adds a fun element to education. The otherwise not-so-interesting lessons become interesting due to audio-visual effects. Due to the visual aid, difficult subjects can be explained in better ways.

IV. STATEMENT OF THE PROBLEM

Education has been defined as an act of imparting or acquiring particular knowledge or skills, as a profession. Another definition of education is that education is a field of study involved in the pedagogy of teaching and learning. It is a well known fact that education is important to the society as no human being can survive without education. Also education can help anyone to develop his potential to a maximum extent.

Computers have had a huge influence in the advance of the use of technology in education. There are many advantages and disadvantage using computers and technology to educate [7]. In education, the uses of computers are now integrated with the teaching and learning process. While some people agree that computers could enhance the teaching and learning process, others stress that the integration of the computers in the teaching and learning process might bring some disadvantages. It is on this background that the researcher aims at examining the issue of Computer Studies and in its impact in secondary schools in Umuahia North Local Government Area of Abia State, Nigeria. It is also aimed at determining the computer literacy level of the students and teachers of secondary schools in the local government area and highlighting the positive and negative impacts of computer studies on the teaching and learning process and by extension the society at large.

V. PURPOSE AND SIGNIFICANCE OF THE STUDY

A.   Purpose of the study

The Purpose of this Study was to examine:

- The impact of Computer Studies in secondary schools in Umuahia North Local Government Area of Abia State, Nigeria.
- Computer literacy level of teachers and students in the secondary schools and
- The various reasons teachers use computers.

B.   Significance of the Study

The findings of this study will be very significant. It will be important to the stakeholders in the educational system which includes the government, educational

policy makers, teachers, students and the entire society. This is so because the result of this research will help all the stakeholders to:

i. Appreciate both the positive and negative impact of Computer Studies in the teaching and learning process.

ii. Determine the computer literacy level of teachers and students of secondary schools in Umuahia North L.G.A and by extension the entire Abia State and to find ways of bridging the gap in the knowledge if any.

iii. Understand the importance of integrating Computer Studies in secondary education system and highlight their importance in enhancing the teaching and learning process.

iv. The need to provide the necessary infrastructure, support materials, skills and strategies required to achieve the needed impact of Computer Studies among teachers, students and the society at large.

v. Provide researchers in education the necessary information and knowledge to carry out their research for those interested in this area of study.

VI. METHODOLOGY

The authors adopted a descriptive survey design using four research questions that were raised for this study. Descriptive survey design was used for this study because of its appropriateness in seeking to obtain relevant information that describes existing phenomena and to find facts that yields accurate information [8]. In a survey research method, large and small populations are studied by selecting and choosing the relative incidence, distribution, and interrelations of sociological and psychological variables.

The area of study for this research project is Umuahia North Local Government Area of Abia State, Nigeria. The population of this research consists of teachers and senior secondary school three (SS3) students from ten Secondary Schools in Umuahia North Local Government Area of Abia State, Nigeria. This included 4 girls, 1 boys and 5 mixed Secondary Schools in Urban and sub-urban areas of the area under consideration. The sample for this study was selected through a stratified random sampling.

Through this method a total of 40 students and 80 teachers were drawn from the total population of 1550(1000 teachers and 550 students) in this study. The researcher developed a 25-item questionnaire titled "Computer Studies and Its Impact in Secondary Schools in Umuahia North L.G.A of Abia State, Nigeria" for the collection of data. To ascertain the reliability of the instrument, the test and retest method was used. The questionnaire was administered within a two week interval to the students and class teachers. The scores obtained were correlated and the results obtained indicated that the instrument used was reliable. The researcher personally administered the instrument on the respondents. The completed questionnaires were

collected immediately but those that were not completed immediately were collected later and followed by computation. The information collected through the questionnaire and relevant to the research questions were collected, organized and analyzed using simple percentages. The results were stated in tables and converted into their percentage equivalents. The quantitative data was analyzed using a simple tabulation that included frequency and percentages of the respondents on the items of the questionnaire. A percentage score of 50% and above was considered and accepted to be positive while a percentage score less than 50% was regarded and discarded as being negative.

VII. RESULTS, FINDINGS AND DISCUSSIONS

A. Presentation of Results

Research Question 1:

What is the computer literacy level of teachers and students?

Outcome: The information presented in table 1, indicates that the computer literacy level of teachers and students in secondary schools in Umuahia LGA of Abia State. As shown in table 1, it can be observed that the mean percentage score for the teachers (64.4%) for all the items is above the cut-off percentage score of 50% while the mean percentage score of the students (42.4%) in all the items is below the cut-off of 50%. Hence, this shows that the respondents agreed that the computer literacy level of teachers in secondary schools in Umuahia North LGA of Abia State is high while the Computer Literacy level of students of secondary schools in Umuahia North LGA of Abia State is low.

Analysis of the table shows that the computer literacy level of teachers is higher than that of the students. This could be as a result of the percentage of teachers45 (56%) that own a computer in comparison to the number of students 18(13%) that own a computer. Secondly more teachers 70(87%) have access to computers at home, school or cyber café in comparison to only 18(46%) of students. Also the number of teachers 45 (56%) that can use computer packages is higher than the number of students, 24 (40%) that can do the same.

Research Question 2:

What are the reasons Teachers use the computer?

Outcome: Table 2 below shows the various reasons teachers use computers. The table indicates that 84(70%) use computer for preparing learning materials, 106(88%) use it for improving the quality of teaching and learning while 101(84%) use it for personal research.70(58%) teachers use it for processing students' result. The mean percentage score (79.3%) of all the items for the reasons teachers use computer is above the cut-off score of 50%. This is an indication that the items are regarded by the respondents as the reasons that teaches use the computer in the teaching and learning process in secondary schools in Umuahia North Local Area, Abia State, Nigeria.

Research Questions 3:

What are the positive impacts of Computer Studies in secondary schools?

Outcome: Analysis of table 3 below shows that majority of the respondents agreed that computer studies have great positive impact in secondary schools especially in the teaching and learning process. This can be seen with the number of respondents 101(84%) who believed that it enhances information gathering, motivation of learners 78(65%),116(97%) respondents agreed that computers provide students access to information on different subjects while 104(87%) supported the fact that computers facilitate the process of learning through interaction and simulation. As could be seen from table 3 below, the mean percentage score (84%) of all the items in the table is above the cut-off mark of 50%. This is an indication that majority of the respondents agreed that Computer Studies have positive impact in secondary schools in Umuahia North Local government Area of Abia State especially as it relates to the teaching and learning process.

Research Question 4:

What is the negative impact of Computer Studies in secondary schools?

Outcome: Table 4 shows the negative impact of computer studies in selected secondary schools in Umuahia North LGA of Abia state. The respondents agree that Computer Studies also have negative impact. These include disappearance of effective teaching between the teacher and learner indicated by 50(42%) respondents. 70(58%)respondents indicated that computers exposure learner to health risks while 97(81%) respondents indicate that knowledge acquired through Computer Studies can be used to commit cyber crimes such as financial crime and hacking into other peoples' databases. A summary of table 4 below shows that the mean percentage score of all the items in the table is (56.8%) and this value is above the cut-off percentage score of 50%. This is an indication that the respondents agreed that Computer Studies can also have negative impact in secondary schools in Umuahia North L.G.A of Abia State.

Table 1. Computer Literacy Level of Teachers and Students

S/N	Use of Computer	No of Teachers	Percentage (%)	No of Students	Percentage (%)
1	Ownership of computer	45	56	5	13
2	Access to computer at home, school or cyber café	70	87	18	46
3	Ability to use computer software packages	45	56	16	40
4	Ability to use computer on your own	54	68	24	60
5	Ability to use the computer to access the internet.	45	56	21	53

Mean percentage score for teachers (64.4%), while the mean percentage score for the students (42.4%)

Table 2. Reasons Teachers Use the Computer

S/N	Reasons	No of Respondents	Percentage (%)
6	Preparing Learning Materials	84	70
7	Improving Quality of Teaching and Learning by Accessing Materials not easily Available to the teacher	106	88
8	Enhance Learning Especially from the Internet	106	88
9	Teaching students Computer Science, hardware, software etc.	106	88
10	Processing students' result	70	58
11	Personal Research	101	84

Mean percentage score = 79.3%

Table 3. Positive Impact of Computer Studies

S/N	Positive Impact of Computer Studies	No of Respondents	Percentage (%)
12	Enhanced information gathering and writing skills	101	84
13	Increased reading, comprehension and communication Skills	101	84
14	Improved test skills	97	81
15	Motivation of learners	78	65
16	Increase in basic Knowledge of computer skills	108	90
17	Students access to information on different subjects	116	97
18	Information of new concepts of learning e.g Online learning	101	84
19	Facilitate the process of learning through interaction and simulation	104	87

Mean percentage score = 84%

Table 4. Negative Impact of Computer Studies.

S/N	Negative Impact of computer studies	No of respondents	Percentage (%)
20	Effective teaching will disappear between the teacher and the learner	50	42
21	Barrier in communication between the teacher and the learner	50	42
22	Addition to computer makes an individual difficult to form personal connection to others	58	48
23	Exposure to health risk disturbance associated	70	58
24	Over dependence on computers for fundamental skills such as spelling and grammar	84	70
25	Using computer to commit cyber crimes such as financial fraud and lacking other people's computer data bases	97	81

Mean percentage score = 56.8%

B.   Summary of Findings

The results of the findings are discussed below:

The aim of Research Question 1 is to determine the computer literacy level of teachers and SS 3 students of secondary schools in Umuahia North Local Government Area of Abia State. The result showed that the computer literacy level of students in secondary schools is low although it was a little higher among teachers. This was in agreement by other authors [5] [9] [10] who observed the same in their different studies.

Research question 2 attempts to identify the various reasons why teachers use computers. The respondents are in agreement that teachers make use of computers for various reasons which included preparing learning materials improving quality of teaching and learning, and for personal research. This tally with the findings of a research work [11] in Kenyan secondary schools and [12] who advocated that teachers should also be motivated and encouraged to develop and use multimedia courseware and software relevant to teaching and learning.

Research Question 3 dealt with the positive impact of Computer Studies in secondary schools. The result of the findings should that the majority of the respondents rated the items listed in table 3 very high. This shows that they all agreed that Computer Studies have a very positive impact in secondary schools in Umuahia North L.G.A. The result of these findings is in agreement with [2] [13] [14] that posited that the adoption and use of computers in schools have a positive impact on teaching, learning, and research

In Research Question 4, the researcher wanted to know the negative impact of computer studies among the teachers and students of the secondary schools. Table 4 showed a varying degree of responses from the respondents which some agreed that computer studies have a negative impact in secondary schools, others did not quite agree with this opinion. This is in agreement with [15] who asserted that Computers viruses are harmful to the systems and can be transferred from one computer system to another.

VIII. Conclusion

This study focused on the impact of Computer Studies in Secondary Schools in Umuahia North LGA of Abia State, Nigeria. The study covered 10 secondary schools in the Local Government Area under consideration. The major areas covered in the study included to determine the computer literacy level of teachers and students, the reasons why the teachers use computers and the positive and negative impacts of computer studies in secondary schools.

The results of the research indicate that the inclusion of Computer Studies in secondary schools has positive impact in the teaching and learning process in secondary schools in Umuahia North Local Government Area of Abia State, Nigeria. Despite the roles Computer Studies can play in education, many secondary schools in Umuahia North LGA of Abia State are yet to include it in their teaching and learning process. Hence Computer Studies should be sustained in secondary schools and basic infrastructure provided to ensure that teachers and students maximize the benefits of the positive impact of Computer Studies.

IX. Recommendations

Based on the results and findings of the research study, the following recommendations are hereby made:

- Basic equipment and infrastructure such as computers and other information and communication technology (ICT) facilities should be put in place in schools to facilitate the acquisition of basic computer skills among teachers and students in secondary schools. This assertion agrees with [16] who purposed equipping of computer classrooms for improved effective understanding and achievement of learning goals.
- Teachers should be encouraged to utilize computers in their teaching and learning process because goes a long way to enhance the process and enable teachers to perform their duties effectively, and efficiently.
- Considering the fact that Computer Studies have been found to impact positively in secondary shows in Umuahia North computer education should be sustain in all the secondary schools in Abia State, more qualified computer teachers should be employed to quicker the dissemination of computer knowledge among the teachers and students in secondary schools.
- Students and teachers should be discouraged from using computers and computer knowledge to commit various cyber crimes which do not portray the nation in good light, but rather should use the computers and their knowledge for only good purposes which will impact positively in their lives and in the lives of the entire society.

- Computer education should be made compulsory at all levels of secondary schools. Also Computer Studies should be made a core subject in the senior secondary examinations organized by examination bodies such WAEC, NECO and NBTE. This will encourage students to endeavour to increase their knowledge on computer education and improve on their quality of education.

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