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## **Information and Communication Technology (ICT) Application in Secondary Schools and Students' Academic Performance in Social Studies**

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### **Abstract**

*This study investigated the availability of ICT in schools ICT, skills competence of junior secondary school students (public and private schools) and the influence of the application of ICT innovations in teaching and learning of social studies in the academic performance of students. It was a descriptive survey research. A sample of eight Social Studies teachers and*

*twenty four students from Onitsha South L.G.A Anambra were selected using simple random sampling technique. The study was guided by three research questions and a null hypothesis tested at 0.05 level of significance. A research instrument ICTUTLSS, which was a 12-item questionnaire was used to collect data for the study. The mean and standard deviation statistics were used to answer the research question, while t-test was used to test the hypothesis. The finding of the study showed that the ICT availability in secondary schools is very low and students have low competence on the application of ICT in learning of Social Studies. Equally, the findings showed that ICT raises the interest and performance of students in Social Studies. Based on these the researchers made recommendations that government and proprietors of public and private schools respectively should equip their school with the necessary ICT, ICT should be incorporated in Social Studies curriculum etc.*

## **Introduction**

In this 21st century, many factors bringing to bear on the adoption of ICT in education and contemporary trend suggest large scale changes in the way education is planned and delivered as a consequence of the opportunities and availability of ICT. The emergence of Information and Communication Technology (ICT) has revolutionized the existence and activities of contemporary man especially in the milieu of globalization (Evey, Opera, Akiang, Udama Asinde, 2010).

Attempts have been made to establish relationship between information communication technology and human behaviour. Ibe-Bassey (2000) and Inyang-Abia (2004) noted that media mediate in a continuum between stimulus response learning and cognitive learning to concretize ideas, concepts and facilitate learning. This reveals that ICT is capable of facilitating the collection, preparation, presentation, storage, retrieval, conveyance and dissemination of information. Basset (200) and Inyang-Abia (2004) also identified such ICT media to include radio, television, computer and internet facilities, computer game console, DVD player and recorder, digital camera, scanner and the rest of them.

In recent times, there has been intense advocacy both nationally and internationally for the application of ICT in teaching and learning process. Udo (2010) observed that the application of ICT in the school subjects is to make learners learn better and teacher to teach well, it is not a hindrances to teacher–student (pupils) relationship. It rather ensures transactional

instructional communication where the teacher manages the human materials, time and space to make sure that instructional events (game attention stimulation recall present stimulus thinking elicit performance provide feedback provide generalizing experiences, assess performance) occur leading to change in behaviour of pupils.

It has been noted that Information and Communication Technology (ICT) is an effective medium in contributing towards education in general and Social Studies in particular. The inherent cross-curricular nature of Information Communication Technology makes it ideal medium that can be used not only during Information Technology lessons but also in other subjects. ICT can be an excellent medium for training young people in learning about and appreciating the cultural heritage in its diversity.

Computers and internet facilities are now in place in many state owned and private schools. It is envisaged that educators will see ICT as a major teaching and learning device across all educational institution. With its power of interactivity, multimedia and communication, the computer proves an excellent tool for Social Studies education. The idea is that students will be active “participants” rather than “spectators” in teaching and learning process.

Psychologists agree that the best feedback is that which comes immediately after the event. What is more immediate than “surfing” the interest and getting the results wished for within minutes. Besides, many subjects in schools currently use ICT facilities during their lessons. The cross-curricular approach in Social Studies education can find a common base here by using computers during the subject lessons.

### **Concept of Information Communication Technology (ICT)**

Information Communication Technology according to Unagha(2006) encompasses computer and telecommunication. It is concerned with the technology used in handling, acquiring, processing, storing and dissemination of information. Thus Information Communication Technology is any technology used in producing, organizing and passing information through. Similarly, Oxford Advanced Learners' Dictionary sees ICT as electronic media used in processing, analyzing, storing and sending out information. Evey et al (2010) observed that ICT is innovative device that can carry out such functions as receiving, storing, computing, analyzing, transmitting and retrieving information presented to them and allowing for one-to-one or

group communication among humans. Obashoro (2007) identified ICT infrastructure to include multi-media CD-ROMs, MP3 players, websites, discussion boards, emails, computer-aided assessments, learning management software, blogs, etc. In the same vein, Folorunso, Longe and Ijere (2003) identified ICT infrastructure to include internet, World Wide Web (www), Electronic Data Interchange (EDI), Local Area Network (LAN), Wide Area Networks (WAN), Protocols, Content Management and Meta Data Standard (MDS).

### **The use of Information and Communication Technology (ICT) in teaching and learning of social studies**

Social studies was adopted a core subject in Nigerian primary and secondary schools during Mombasa Conference of 1968 in Kenya, where African countries gathered and examined the vitality of teaching Social Studies in our schools. It is a course designed to inculcate in the learners right attitudes, values, knowledge and skills for effective citizenry and enable them understand the ways to manage their environmental resources for maximum utilization. This is why Chikwelu, (2007) defined Social Studies as an interdisciplinary study of man and his interaction with his environment and inculcation of right attitudes, values, knowledge and skills for developing effective citizens who contribute positively to the development of his society. It has been observed that there is sharp fall in interest and performance of students and pupils in Social Studies owing to an unbridled use of conventional lecture and storytelling method in teaching and learning of Social Studies (Okafor, 2006). This has resulted in high rate of moral bankruptcy, corruption and poor management of environmental resources.

Social Studies lessons are commonly carried out in the classroom during school hours but a time entails going for an excursion or field trip to an environment different from the usual school environment. This enables students under the guidance of their teachers to discover the riches of a particular situation, site, surrounding, historic and artistic features and the roles they serve. Visit to nearby areas may be easier but a trip to far place or another country to witness the heritage richness it possesses will be difficult. This is where information technology can come as help. All students can be given an opportunity to sample other ethnic groups and countries heritage through the effective power of interactive multimedia. Multimedia is the embodiment of text, graphics, animation, pictures, sound and video clips and it can be easily used in Social Studies education. We know that graphics play

an extreme important role in the learning process. A look at existing teaching methods will show the widespread use of graphic devices and sound, movement and interactivity on a multi-media CD-ROM. To go one step further into the future, students can be provided with realism by using virtual reality system that transport them into an environment created by the computer that generates three-dimensional realistic scenes with which the students can interact.

Oche (2001) noted that the introduction of compact disc (CD-ROM) has revolutionized the way information is stored, retrieved and disseminated. Similar is flash drive. CD-ROMs with Social Studies contents can equally be used in teaching and learning of Social Studies topics. A Teacher can obtain educational software with Social Studies contents from major publishers of books, educational software developers, public domain, shareware packages, computer club, users group and educational institutions that have established ICT software production units.

It has been strongly stressed here that software, as has mentioned above or any other educational software for that matter, needs to be evaluated for suitability in using it for Social Studies. The quality of these ICT infrastructures varies widely. Sound technical design does not guarantee educational value for Social Studies software - it may be a mistake if teachers choose software packages without actually trying them out.

Olaniyi (2006) observed that internet system gives students access to wide range of information and knowledge about environment, socio-cultural, economic and other aspects of life of the people in various parts of the world.

### **What is the internet and how can it be utilized for teaching Social Studies?**

The net possibly is the largest store of information on this planet. Everybody can be part of it - it is one of the few places where races, creed, colour, gender do not prejudice people against others ... Communication is the key. People talking to people. The net isn't computers. That's just the way to access it. The net is people helping each other in a world-wide community (Cooke, 2010).

In this description of the internet, there is already the basis for reaching several aims for which Social Studies has been initiated: to train young people in citizenship, democracy, respect or human rights and for different cultures; to foster social integration, to underline multicultural exchanges.

The internet is millions of computers linked together in a global network giving access to more information than a librarian could ever dream of. One can visit various websites as museums, art galleries, libraries, exhibition and universities. You can access sports, journals and reviews of conferences, statistics, music, literature; languages, religions, festivals and so on. These are rich fields for Social Studies class teacher to explore considering that all these can be experienced in a multi-media format thus making it more effective for young people.

Making use of the internet during Social Studies could result in breaking down boundaries, getting young people to know each other and to appreciate each others' views and cultural backgrounds. This will foster an interest in the heritage of other ethnic groups and countries. Sometimes, it is the exposure to the heritage of other places and that makes people realize that they also have a heritage of their own worth discovering, enjoying and preserving.

With the use of internet in Social Studies classes, the role of the teacher changes from that of "gatekeeper" of knowledge to that of "facilitator" and "manager" of the learning environment. The students will become self-directed learners rather than a passive learner. Through the guidance of the teacher, each student/pupil sets priorities and achievable goals and assumes responsibility for reaching the goals. As internet enables the students engage in self-directed learning experiences and activities, that encourages self-expression, co-operative learning and interaction not only with immediate environment but with outside world as well, the students are grounded in Social Studies contents.

On the related development, Ibe-Bassey (2000) observed that radio instruction differs from the conventional method of teaching in which the teacher relies almost entirely on the use of human voice to "tell" subject contents to learners. Radio instruction uses human voice as well as music and sound effect. Both music and sound effects are enlargement of the audio mode, they get to the brain by means of the auditory sense. Unlike the speech mode, music and sound effects have ways of electrifying human experience to ensure memory, recall, reasoning and remembering as in problem solving. The sound effects are used in radio lesson for the purpose of creating a special impression on the learners in Social Studies lessons.

Similarly, Inyang-Abia (2004) observed that television instruction appeals to two senses of sight and hearing, which means that two types of signals

impinge on the brain of the learner while Social Studies lesson is in progress. Seeing and hearing at the same time have the positive effects of making deeper impression in the minds of Social Studies learners (Udo, 2010).

The importance of ICT cannot be over emphasized, just as Udoh (2006) acknowledged that Computer Assisted Instruction (CAI) unites all the capabilities of ICT innovations by its multi media approach to presenting Social Studies instruction stimuli to learners in various forms with full-colour impact at the same time.

However, McLain and DiStefano (1995) advised teachers on using internet to do some researches before students are given a task on internet to make sure that the topics chosen is available and is suitable for students. The teachers should have a variety of sites they want their students to explore and should have thoroughly explored the sites themselves. This makes the teachers to be aware of sites that are useful to Social Studies teaching and learning to avoid entangling the students with tasks that do not help in the achievement of the lessons objectives.

### **Purpose of the study**

The purpose of this study therefore is to examine the level of availability of ICT in secondary schools, the extent the Social Studies students have acquired ICT skills and how the use of ICT innovation can influence the academic performance of students in Social Studies.

### **Research questions**

Based on the purpose of the study, the researcher poses these questions:

1. What is the level of availability of ICT infrastructure in secondary schools in Onitsha South L.G.A. of Anambra State?
2. To what extent have the Social Studies students acquired ICT skills?
3. To what extent does ICT influences the academic performance of students in Social Studies?

**Hypothesis:** *There is no significant difference in the mean score performance of the students taught Social Studies using ICT innovation and those taught with textbooks only.*

## **Methodology**

The descriptive survey research design was adopted to assess the level of availability of ICT in secondary schools in Onitsha South L.G.A. of Anambra State, the extent to which the students have acquired ICT skills and the influence of ICT on the interest and academic performance of the students in Social Studies.

Four public and four private owned secondary schools were sampled in the L.G.A., making it a total of eight schools. The schools were selected using simple random sampling. The selected schools are:

### **Public schools**

- i. Urban Girls' Secondary School, Fegge Onitsha.
- ii. Urban Boys' Secondary School Fegge, Onitsha.
- iii. Christ the King College, Onitsha
- iv. Modebelu Memorial Secondary School, Onitsha

### **Private schools**

- i. Promise International Secondary School, Fegge Onitsha
- ii. Divine Providence Secondary school, Onitsha
- iii. Nkem Comprehensive Secondary School, Onitsha
- iv. Queens Comprehensive Secondary School, Onitsha

In each of these schools, three JSS students and a computer literate Social Studies teacher were selected (as research assistants for the study, making it a total of twenty four students and eight Social Studies teachers. The population of the study consisted of all junior secondary schools students in Onitsha South L.G.A. A twelve item questionnaire with three sections was used to collect data for the study. The questionnaire was titled "ICT use in Teaching and Learning of Social Studies" (ICTUTLSS). Section A contains information on personal data of the respondents. Section B contained four items that elicited information on the availability of ICT in schools, while section C contained four items that elicited information on level of ICT skills possessed by the students. Section D contained four items that elicited information on the academic performance of the students in Social Studies.



ICTUTLSS was structured on a four-point likert scale of very high, high, low and very low. Any item with the mean of 2.50 and above was accepted, while any item with the mean of 2.49 and below was rejected.

Two lecturers in the Department of Measurement and Evaluation from Nnamdi Azikiwe University Awka validated the instrument on its face and content validity. The split-half method was used to ascertain the reliability of the instrument. Data obtained were analyzed using Pearson-Product Moment Correlation Co-efficient to determine the internal consistency. A reliability co-efficient of 0.75 was obtained, and this indicates that the reliability of the instrument was high enough.

Copies of the questionnaire were administered to the respondents with the help of the research assistants. On the spot delivery method was used to prevent the instrument from being lost, hence, twenty copies of the instrument were distributed, later retrieved and used for the study.

Mean and standard deviation were used to answer the research questions, while t-test was used to test the hypothesis at 0.05 level of significance.

## **Results**

**Research Question I:** *What is the level of availability of ICT infrastructure in secondary schools in Onitsha South L.G.A.?*

Table I: Mean rating of the availability of ICT in secondary schools.

| S/N | ITEMS   | X    | SD   |
|-----|---|------|------|
| 1   | Computer sets are available.  | 2.20 | 0.36 |
| 2   | Internet system is available.   | 2.32 | 0.38 |
| 3   | CD-ROMs, flash drives and diskettes are digital camera, printer, scanner and DVD player are provided. | 2.03 | 0.32 |
| 4   | Televisions and radios are provided.  | 2.55 | 0.36 |

Results in table 1 shows that the mean scores of the items 1-3 fall below 2.50 with the exception of item 4 that has mean score of 2.55. These show that there is deficiency in the availability of many ICT infrastructures in the schools. The standard deviation (SD) values of respondents rating for

different questionnaire items show a generally fair degree of closeness of the responses. This indicates homogeneity in responses.

**Research Question II:** *To what extent have the Social Studies students acquired ICT skills?*

Table II: Mean rating of extent Social Studies teachers and students acquired ICT skills.

| S/N | ITEMS   | X    | SD   |
|-----|---|------|------|
| 5   | The students can use internet system of ICT.  | 1.33 | 0.46 |
| 6   | They can use flash, CD-ROM and diskette of ICT.   | 1.92 | 0.52 |
| 7   | They can use computerized testing, data processing analysis, data storage and run programs in computer. | 1.56 | 0.45 |
| 8   | They can use televisions and radios.  | 2.51 | 0.55 |

Results in table 2 show that items 5-7 have mean scores below 2.50. These responses indicate that the students find it difficult to utilize the few available ICT infrastructures for Social Studies education except televisions and radios in item 8 with mean score of 2.55. The measure of inter-rater consistency (SD) shows the homogeneity in responses.

**Research Question III:** *To what extent does ICT influences the academic performance of students in Social Studies?*

Table III: Mean rating of the extent ICT can influence the interest of students in learning Social Studies.

| S/N | ITEMS   | X    | SD   |
|-----|---|------|------|
| 9   | ICT appeals to different senses of the body, thereby cater for individual differences in learning | 2.52 | 0.36 |
| 10  | It exposes the students to varied and multi sources of information                                | 2.58 | 0.32 |
| 11  | It helps every student to learn and study at his own pace   | 2.51 | 0.34 |
| 12  | It breaks the monotony of the teacher versus the students classroom lessons                       | 2.56 | 0.38 |

Results in table 3 show that all the items have mean scores above 2.50. These responses indicate that ICT boost the academic performance of the students

in learning Social Studies. The SD values of respondents rating for different questionnaire items show high degree of closeness of the responses pointing to homogeneity in responses.

### Hypothesis

*There is no significant difference between the performance of the students who were taught Social Studies with ICT and those taught with textbooks only.*

Table IV: T-test analysis of the performance of the students taught Social Studies with ICT and those taught with textbooks only.

| Sources                                 | Mean scores | SD   | df | A    | t-cal | t-critical | Decision                        |
|---|-------------|------|----|------|-------|------------|---------------------------------|
| Students taught with ICT- 12            | 32          | 4.10 | 22 | 0.05 | 6.65  | 2.074      | There is significant difference |
| Students taught with textbooks only -12 | 23          | 2.28 |    |      |       |            |                                 |

The results in table 4 show that the calculated “t” at 0.05 level of significance with 22 degree of freedom is 6.65. The value is greater than “t” critical which has the value of 2.074. The null hypothesis is rejected. Therefore, the performance of the students taught Social Studies with ICT differ significantly from those taught with textbooks alone.

### Discussion

Results in table 1 show that the level of availability of ICT infrastructure in secondary schools is low. The finding is in line with the word of Evey, et al (2010) who noted the lack or inadequate ICT infrastructure in many secondary schools and then called for improvement and inclusion of ICT in secondary school curriculum. It is very important to note that ICT infrastructural availability in school is sine-qua-non especially in this era of globalization and breakthrough in knowledge for maximum academic benefit.

The results in table 2 show that the students have low competence in application of ICT Infrastructures except television and radio. The cause of this situation can be attributes to lack or poorly supplied ICT infrastructures.

It is it true that ICT exists in some places outside the school but it is not all the students can afford the cost of trainings over there.

The results in table 3 show that the use of the ICT in teaching and learning of Social Studies improves the academic performance of the students in Social Studies. This is very obvious as ICT makes teaching and learning very enjoyable and appeals to different senses of the body. Inyany-Abia (2004) noted that ICT makes deeper impressions in the mind of the Social Studies learners. On the other hand, it releases the student of the teacher centred classroom study as commonly witnessed in many schools. This every day classroom “sermon” makes the students to feel bored.

The results in table 4 which it a hypothesis reveal that there is significant difference between the performance of the students taught Social Studies with ICT and those taught with text books alone. In a related research, Ekpo and Ifreke (2001) assessed the performance of students in physics using Computer Assisted Instruction (CAI) and reported that it influences the performance of the student positively.

## **Conclusion**

The break through and advancement in information communication Technology in the 21<sup>st</sup> century is a welcome development. Its application in education system has opened wide range frontier of knowledge for both young and old. Thus, it poses a great challenge to the government and managers of private schools to put in place the necessary ICT infrastructures in schools and a greater challenge to the teachers and students to acquire the necessary ICT competence and skills. It is believed that this will bring about much improvement in the performance of the student in Social Studies and in a long run bring a reflective change in students study and performance in other subjects.

## **Recommendations**

Based on the findings of the study and conclusion thereof, the following recommendations are made:

1. The government and managers of private schools should procure the necessary ICT infrastructure for their schools to enable the teachers and students benefit maximally in the ongoing technological development and ICT contribution in educational advancement.

2. Department of Computer Education in universities and colleges of education should be adequately equipped with human and material resources to train and equip students with needed competence and skills. When large numbers of computer educationists are produced, the government will then employ them to fill up gaps for competent computer teachers in schools. The work of computer teachers will complement the efforts of Social Studies teachers in the use of ICT to study.
3. ICT competence should be incorporated into the curriculum of Social Studies at all levels of education.
4. Government can give soft-loan to teachers who want to acquire personal ICT. On the other hand the government can procure computers and supply to the teacher at a subsidized cost or at hire purchase. This will help the teachers of different subjects procure and ICT appropriately.

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