Impact of The Application of Audio-Visual Aids in Improving Teaching and Learning of Computer Science in Senior Secondary Schools in Awka North Local Government Area in Anambra State.

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Abstract

The purpose of the study is to identify the impact of the application of audiovisual aids in improving teaching and learning of computer science in Senior Secondary School in Awka North Local Government Area of Anambra State. Out of 1500 Secondary Schools in Awka North Local Government Area. Seventy (70) Students from Senior Secondary School (SS1) students were selected using random sampling technique to serve as the sample. Structured questionnaire was the instrument used for data collection. Mean and percentage were employed for data analysis. The major findings are that, Audio visual materials are not usually available for teaching and learning of computer science in senior secondary schools. Using audio visual materials in teaching and learning of computer science has positive effects on students' academic performance. Audio visual aids have a lot of benefits in improving qualitative computer education in senior secondary schools. Government and other citizens should provide audio visual materials to secondary schools in Nigeria. Experienced and qualified computer science teachers at least with Nigeria Certificate in Nigeria (NCE) should be employed to teach in secondary schools in Nigeria. School authorities should always checkmate whether teachers make use of audio visual aids in teaching.

Keyword: *audiovisual aids, science teaching, computer science*

INTRODUCTION

Background to the Study

For thousands of years, education has been an integral part of society. But is it the single most important factor in the development of a developing country? I believe it is of great significance instead of the most important factor. First and foremost, a complete education system provides large number of qualified people with advanced knowledge and skills in a wide range of subjects. Through attending various educational institutions, including but not limited high school, college and universities, people can get themselves prepared for and contribute to the development of the country, which clearly requires the effort from all profession. In addition to talents cultivation, education in itself has tremendous influence on civilization, which accounts for a large part in a country's development. As a place where knowledge is handed down and wisdom passed around, school represents the homeland of scholars who had huge impact on the promotion of spirit civilization, and the birthplace of innovative ideas. According to Tosin (2013), education is of utmost importance for eradicating the unemployment problem of our country through enlightening citizens on how to be self employed. It is also essential to improve the trade and commerce, and to bring prosperity to our country. It is also the backbone of developing countries because sustainable development of economy and society is achievable if knowledge in science education is embraced.

Science education is very important to the development of any nation that is why every nation must take it very serious in all institutions of learning. It deals with sharing of science content and process with individuals who are not considered traditionally to be member of the scientific community. This branch of education comprises six subjects namely biology, chemistry, physics, integrated science, computer science and mathematics. Developed countries like United States, United Kingdom, Germany and others that have highly developed economy and advanced technological infrastructure were able to achieve these because they realized the importance of science education and embraced it earlier. Developing and underdeveloped nations like Nigeria and other still have difficult challenges seeing how her economy can be highly developed and advanced technologically. According to Kola (2013), the sense of responsibility and caution that science provides along with understanding of how things work (be they chemical reactions, human development, or nutritional needs) can help future parents to provide safe, health environments for their own children. The communication, research, reporting, and collaboration skills that science provides can produce a generation of individuals who are better prepared for any career and can make greater contributions to society. Also, students who have a solid knowledge base in science will later be more open to emerging technologies and ideas that can boost business and stimulate the economy. Ochu (2007) noted that the difference between developed and developing country is based on the quantity and quality of science and technology they possess. Adikwu (2008) maintained that, if Nigeria must survive as a nation we need science and technology used and managed by Nigerians.

Despite the realization of the importance of science education in developing a nation, students hardly choose computer science when they are given the opportunity to choose subjects they would offer in SS2.

This made the researchers to investigate the causes of this nonchalant attitude among students could it be teaching method, poor funding, lack of adequate infrastructure or others? Many researchers have tried different methods like demonstration, study group and others according to Katherine (2009) yet none of this have sufficiently improved students performance in computer science. This made the researcher to conduct a research on the impact of the application of audio visual aids in improving teaching and learning of computer science in senior secondary schools.

Ashikuzzaman (2013) define audio visual aids as those materials which do not depend solely upon reading to convey meaning and present information through the sense of hearing as audio resources or through a combination of both senses. From time immemorial, audio-visual materials existed but were not incorporated into educational system. According to Green (2012), the advent of audiovisual is long but it is the use that has been limited until in the 1960s and 1970s when libraries realized the use of these materials and started incorporating them into the library collections for future use. He also said that audio-visual aids strengthen an instructor's verbal presentation while helping his students capture specific message. Audio visual aids keep an audience attention throughout a presentation and help them remember particular information. If simple and efficient aids are used, they will enhance teaching. Examples of audiovisual aids include white boards and flip charts, overhead transparencies and handouts, slides, sound recording and video, physical objects, props and models. Audio-visual aids are very relevant in the teaching of computer science.

Agudosi, (2014) define computer science as the study of computers and computer concept. It includes hardware and software as well as networking and internet. In teaching of computer science in this modern era, the most common tool being used in the classroom these days is PowerPoint slides, which makes the class more interesting, dynamic and effective. Moreover it also helps to introduce new topics in easy way.

However, despite the realization of the relevance of audiovisual aids in teaching and learning of computer science, it has not been adopted in Nigerian educational system. Although computer education was introduced into the nation's secondary school system in 1987 during the 32nd ministerial council meeting, computer science as a subject was not taught both in urban and rural schools in Anambra state according to Jegede (1998). Eventually, it was later introduced when Dr. Peter Obi was the incumbent Governor of Anambra State. During his tenure, computer laboratory buildings, computer systems and Information Communication Technology (ICT) facilities were given to 85% of the secondary schools in Anambra state including secondary schools in Awka North Local Government Area. It was discovered that female student see computer science as a subject meant only for male students, and did show little interest whenever it is being taught in school. This could probably be as a result of lack of application of audio visual aids in teaching and learning of computer science. At this juncture, it becomes important to investigate the impact of the application of audio visual aids in improving teaching and learning of computer science in senior secondary schools in Awka North Local Government Area.

Statement of the Problem

The act of teaching computer studies in secondary is fundamentally concerned with passing technical ideas, skills and attitude from the teacher to the learner. In Nigerian secondary schools, for example, experience has shown that spoken words alone in communication of ideas are grossly ineffective and inefficient in producing desired learning outcomes for computer students in these schools. There are parts of computer studies that pose problem of comprehension to students especially in areas like Corel draw, Photoshop and even hardware coupling and repairs. These cannot be taught effectively without audiovisual instruction materials. With this problem in mind, the question that readily comes to mind is the impact of application of audiovisual aids in improving teaching and learning of computer science in secondary schools especially in Awka North Local Government Area of Anambra State.

Purpose of the Study

The main purpose of this study is to identify the impact of the application of audiovisual aids in improving teaching and learning of computer science in senior secondary schools in Awka North Local Government Area in Anambra State. The specific purposes include to:

1. Examine audiovisual materials that are available for teaching of computer science in senior secondary schools in Awka North Local Government Area.
2. Ascertain the effects of using audiovisual materials in teaching of computer science in senior secondary schools in Awka North Local Government Area.
3. To find out the benefits of using audiovisual materials in teaching of computer science in senior secondary schools in Awka North Local Government Area.

Significance of the Study

The result of this study, when successfully completed, will be beneficial to the following groups of people; students, teachers, parents, curriculum planners and society at large. With the use of audiovisual aids as instructional materials, the students should be able to learn effectively and also retain what they learnt. Audio-visual aids encourage teachers because there will be an increase in productivity if effective teaching and takes place. The parents and society at large will also benefit from this study because when the quality of education their children receives in school is solidified using audiovisual aids, their children will help them do some jobs they do take to business centers and this saves them from spending lots of money. This study will enable curriculum planners plan a curriculum that will address a holistic oriented curriculum which will be beneficial to the society.

Scope of the Study

The study investigated impact of the application of audiovisual materials in improving teaching of computer science in the senior secondary schools in Awka North Local Government Area in Anambta State. The study involved Senior Secondary (SS1) one students from our randomly selected schools in Awka North Local Government Area of Anambra State.

Research Questions

1. What audiovisual materials are available for teaching of computer science in senior secondary schools in Awka North Local Government Area?
2. What are the effects of using audiovisual materials in teaching of computer science in the senior secondary schools in Awka North Local Government Area?
3. What are the benefits of using audiovisual materials in improving qualitative computer education in secondary schools in Awka North Local Government Area?

Research Design

The study adopted a descriptive design. According to Nwogu (2006), Survey is those studies which aim at studying in a systematic manner, the characteristics features of facts about a given population. This study therefore seeks to investigate the impact of the application of audio-visual aids in improving teaching and learning of computer science in senior secondary schools in Awka North Local Government area.

Area of Study

The area of study is community secondary school, Amansea. Amansea is one of the towns under Awka North Local Government Area of Anambra State.

Awka North is perhaps unique in that it is so centrally located and it is bounded with Oji river Local Government Area of Enugu State. Amansea people are mostly known as farmers and traders.

Population of the Study

The population of the study comprised all the senior secondary schools in Awka North Local Government Area with over 1500 senior secondary students.

Sample and Sampling Technique

The sample is made up of selected seventy students out of the senior secondary one (SS1) students in community secondary school, Amansea.

Instrument for Data Collection

A questionnaire tagged Impact of Audio-visual aids Questionnaire (IAVAQ) was constructed by the researcher and used as instrument for data collection. Part A of the questionnaire was concerned with the personal information about the respondents. The respondents were required to thick good (√) in the appropriate box in order to indicate their choice of opinion as they apply to them. Part B of the questionnaire contains fifteen (15) structured items and was distributed evenly. The questionnaire was developed on three-point scale and also four-point scale of:

Available (A)
Not available (NA)
Do not know (DK)
Strongly Agree (SA) – 4 points

Agree	(A)	-	3 points
Disagree	(D)	-	2 points
Strongly Disagree	(SD)	-	1 point

Validation of Instrument

The validation of an instrument is the determination of the degree to which a test actually measures what it is meant to measure. To ascertain the validity of the instrument, copies of the questionnaire were given to experts in measurement and evaluation. The project supervisor was also given the instrument for correction and final approval.

Reliability of the Instrument

To ensure the reliability of the instrument, clarity of content, ability of the instrument to test what it is supposed to test as well as the ability of instrument to address the level of respondents' answers, twenty copies of the questionnaire were given to twenty senior secondary two students who are not among the sample. The twenty questionnaires were later collected. Pearson Product Moment Correlation was used and it yielded a coefficient of 0.73. According to Nwogu 2006, a reliability coefficient of 0.7 is very highly related and this was considered adequate for the study.

Method of Data Collection

The instrument was personally administered by the researcher. The purpose of adopting on the spot technique was to reduce loss of instrument and ensure a high percentage return.

Method of Data Analysis

The statistics used for the analysis was mean and percentage. The mean and percentage were used to answer the research question. The mean of the responses of the respondents was calculated using the formula:

$$\dot{x} = \frac{\sum fX}{N} = \frac{4+3+2+1}{4} = \frac{10}{4} = 2.50$$

Where:

$\dot{x}$ = Mean

$\sum$= Summation

F = Frequency

X = Number Value

N = Total number of Scale

While the percentage of the respondents in research question one was calculated using normal percentage calculation using this formula:

Percentage for Available = No of respondents who ticked Ava × 100
Total no of students

Percentage for Not Available = No of respondents who ticked Not Ava × 100
Total no of students

Percentage for Do not Know = No of respondents who ticked Not Ava × 100

Total no of students

Decision Rule

For items that require available, not available or do not know, the option that has the highest percentage among the three options would be regarded as Agree. For items that require strongly agree, agree, disagree or strongly disagree, the decision point was 2.50. Therefore items with a mean response score 2.50 or above would be regarded as Agree, while items with mean score below 2.50 would be regarded as Disagree by the researchers.

PRESENTATION ANDANALYSIS OF DATA

Data analyzed were dependent on the responses from the questionnaire administered to the respondents. Seventy (70) copies of the questionnaire were distributed and seventy were duly completed and returned. The analysis was done based on the questions posed to guide the study.

Research Question 1

What audio visual materials are available for teaching and learning of computer science in senior secondary schools in Awka North Local Government Area?

Table 1: Percentage response on availability of audio visual materials in senior secondary schools in Awka North Local Government Area.

S/N	**ITEMS**	**A**	**A%**	**NA**	**NA%**	**DK**	**DK%**	**N**	**DECISION**
1.	Audio visual materials like white boards and flip charts are available for teaching and learning purposes in computer lab.	64	91%	4	6%	2	3%	70	AVAILABLE
S/N	ITEMS	A	A%	NA	NA%	DK	DK%	N	DECISION
2.	Videos tapes are also available in the computer laboratory.	0	0%	60	86%	10	14%	70	NOTAVA
S/N	**ITEMS**	**A**	**A%**	**NA**	**NA%**	**DK**	**DK%**	**N**	**DECISION**
3.	Power point slides are available for teaching computer science.	0	0%	60	86%	10	14%	70	NOT AVA
S/N	**ITEMS**	**A**	**A%**	**NA**	**NA%**	**DK**	**DK%**	**N**	**DECISION**
4.	Projectors are available	0	0%	67	96%	3	4%	70	NOT AVA

for teaching computer science.

S/N	ITEMS	A	A%	NA	NA %	DK	DK%	N	DECISION
5. Televisions are available for teaching computer science.		0	0%	57	81%	13	19%	70	NOT AVA

From the results of the above table, white boards and flip charts scored 91% for available while videotapes, power point slides, projectors and television scored 86%, 76%, 96% and 81% respectively for not available. This shows that audio visual materials are not usually available for teaching and learning of computer science in secondary schools.

Research Question 2

What are the effects of using audio visual materials in teaching of computer science in senior secondary schools in Awka North Local Government Area?

S/N	ITEMS	SA	A	D	SD	N	ẋ	DECISION
6.	An audio visual aids keeps students attentive throughout the whole lesson period.	47	20	2	1	70	3.6	AGREE
7.	An audio visual aid makes a lesson not to be boring.	50	13	5	2	70	3.6	AGREE
8.	Audio visual aids help students to Participate and observe what the Teacher is teaching.	61	7	2	0	70	3.8	AGREE
9.	Audio visual aids help students to understand a lesson with ease.	59	7	3	1	70	3.8	AGREE
10.	Audio visual aids help to clear Some doubts or confusion in the minds of the students.	41	14	8	7	70	3.3	AGREE

From the results of the above table, item 6, 7, 8, 9, and 10 scored 3.6, 3.6, 3.8, 3.8 and respectively. This shows that using audio visual materials in teaching and learning of computer science has positive effects on students.

Research Question 3

What are the benefits of using audio visual materials in improving qualitative computer education in senior secondary schools in Awka North Local Government Area?

S/N	ITEMS	SA	A	D	SD	N	ẋ	DECISION
11.	Audio visual aids attract learners attention.	38	20	7	5	70	3.3	AGREE
12.	Audio visual aids make class more interactive and interesting.	43	14	9	4	70	3.4	AGREE

13. Audio visual aids provides opportunities for effective communication between teacher and students in learning.	34 19 10 7 70	3.1	AGREE
14. Audio visual aids help in maintaining discipline in the class.	25 29 7 9 70	3.0	AGREE
15. The use of audio visual aids help makes the students to remember the concept for a longer period of time.	52 11 5 2 70	3.7	AGREE

From the results of the above table, item 11, 12, 13, 14 and 15 scored 3.3, 3.4, 3.1, 3.0 and 3.7 respectively. This shows that audio visual aids have a lot of benefits in improving qualitative computer education in senior secondary schools.

Summary of findings

The major findings of this study were:

- Audio visual materials are not usually available for teaching and learning of computer science in senior secondary schools.
- Using audio visual materials in teaching and learning of computer science has positive effects on students' academic performance
- Audio visual aids have a lot of benefits in improving qualitative computer education in senior secondary schools.

Discussion of Findings

Discussion of findings in relation to research question one which investigated the availability of audio visual materials for teaching and learning of computer science connotes that whiteboards and flipcharts are the only audio visual materials available for teaching and learning of computer science in most secondary schools. Audio visual aids like television, video tapes, power point slides and projectors are not usually available for teaching and learning of computer science in most community secondary schools. This does not help to inculcate the needed skill of computer technology hence the students get to see computer science as a difficult subject. These findings agree with Eze (2013). Eze's study reveals that human beings learn more easily and faster using audio visual processes than by verbal explanations alone.

Again, the result of this study revealed the positive effects of using audio visual materials on students performance in computer science in the sense that students attention remains focused throughout the whole lesson period. The findings here also revealed that application of audio visual aids in teaching and learning of computer science is useful in achieving positive academic performance amongst students in senior secondary schools since the computer knowledge is practical oriented. Students also get involve in seeking out required information, process the information and go on to utilize them in their everyday living. This finding agree with Katherine (2009). Katherine's study stated that audio visual aids provides learning situation which makes a child learn faster because of his natural reactions of the provided materials.

Further findings have also shown that audio visual aids have a lot of benefits when used as a means of impacting qualitative computer education on students academically. Learners' attentions are attracted and learning environment becomes much more interactive and interesting. These findings agree with that of Oketunji (2000). His study revealed that audio visual aids when effectively applied in teaching and learning lessen major weakness of verbalism, humanize and vitalize subject matter.

Finally, since application of audio visual aids in teaching of computer science will have a great positive impact in the academic performance of senior secondary students, government can adopt measures that can trigger excellence in students' performance such as the following:

- Provide audio visual materials for senior secondary schools.
- Collaborate with professional science teachers association like science teachers association of Nigeria (STAN) in seeing that certified and qualified computer science teachers are employed for teaching of computer science in senior secondary schools.
- Collaborate also with educational organization like Curriculum Development and Instructional Material (CUDIMAC) to make sure that funding of audio visual aids which also serve as instructional materials are purchased and distributed to senior secondary schools.
- Build well equipped computer laboratory with constant power supply whenever lesson is going on.

Conclusion

If urgent attention is given to see that audio visual aids are being used on a daily basis while teaching of computer science in senior secondary schools in Awka North Local Government Area, there will be an improved performance of student in computer knowledge. Again, twenty-first century which is a digital age will be embraced by these students which will be utilized by them. Students in senior secondary school are active and vibrant and so enabling them to learn positively would farewell for all Nigerians generally and the education sector particularly.

Recommendations

Based on the findings of this study, the researchers wishes to make the following recommendations:

- Government and other citizens should provide audio visual materials to secondary schools in Nigeria.
- Experienced and qualified computer science teachers at least with Nigeria Certificate in Nigeria (NCE) should be employed to teach in secondary schools in Nigeria.
- School authorities should always checkmate whether teachers make use of audio visual aids in teaching.
- School authorities should sometimes interview students may be weekly or monthly to know if their teachers in their school actually use audio visual aids during computer science lessons.
- The training and retraining of teachers on the use of audio visual aids while teaching should be given serious attention. Seminars symposia or workshops should be organized for teachers and

staff from time to time to upgrade and update them on how to use any newly invented audio visual aids.

REFERENCES

Agudosi, A.C (2014). *Introduction to the Fundamentals of Computer Science and Information Technology Application.* (First Edition) Awka : Christon publisher

Ashikuzzaman, Z.A. *Understanding Curriculum* .Ndudim printing and Publishing Company Nsukka.

Adikwu, C.O.(2008) *Introduction to Integrated Science for Schools and Colleges*

Eze, E.U. (2013) . *Application of Audio-visual aids in Nigerian secondary schools.* Retrieved from http:// www. ios.journals.org

Jegede, C.A (2010), *The Impact of Office Technology on Secretarial Education.*Business Education Book of Reading 1 (3).

Katherine, M. (2009). *The use of Audio-visual aids in Teaching of Computer Science*. Retrieved from http:// www. iosjournals.org

Ochu, B.S (2007). *Social Learning Theories*. Retrieved from http:// medium

Kola S.C, and Jegede B.G. (2013). *Educational Research: Basic issues and methodology (Revised and enlarged edition)*. Nsukka : University Trust publisher.

Oketunji,A J. (2000). *Gender Difference in Students attitude towards Science*. London: Longman Publishing Company.

Tosin, S.B (2013), *Using Computers in Information Age* NY; Delman Publishers Inc.