(RESEARCH ARTICLE)

Availability and utilization of the projecting multimedia for computer education in senior secondary schools in Nnewi Metropolis, Anambra State, Nigeria, West Africa

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Abstract

The study investigated the availability and utilization of the projecting multimedia for computer education in the senior secondary schools in Nnewi metropolis. The simple random sampling (SRS) technique was employed during the selection of schools for sampling. The design of the study was the survey descriptive design. Four research questions guided the study. The sample used for the study consisted of one hundred and twenty (120) students, nine (9) teachers and six (6) principals. The research instrument used for the study was the questionnaire. The result of the study showed that majority of the schools did not have nor use the projecting media gadgets for the teaching of computer science in the senior secondary category. The descriptive statistics (mean and standard deviation) was employed during the data analysis which showed that the performances of teachers and students on computer science were far better in those schools that had and used the projecting multimedia during teaching and learning as opposed to those of their counterparts that did not have nor use the projecting multimedia while teaching and learning. The teachers' log and progress report books were also studied in the course of the data collection which revealed that teachers who used the projecting multimedia for teaching were able to record success from the students' angle and from their own side as they performed better, met their target among other numerous advantages. Therefore, the government, school authority, academic staff, non-academic staff and the students were advised on the significant roles they will play towards the availability and utilization of the projecting multimedia for effective teaching and learning of computer science in the senior secondary schools at Nnewi metropolis.

Keywords: Multimedia; Projectors; Teaching; Learning; Computer; School

1. Introduction

Computer Science is a subject in the senior secondary school curriculum which was approved by the educational board with the aim of equipping students with the concepts of computer knowledge and its application in a fast growing ICT-driven economy like ours. Algorithms and data structures have been called the heart of computer science (1).

Computer science education have suffered major setbacks over the years since the use of other more primitive types of multimedia technologies like the black/white board, textbooks, graphs, globes, to mention but a few. This is evident on the poor performance of computer science students on both practical and written examinations. Higher science education has been implementing the use of different strategies like laboratory practice and social media applications such as Twitter, YouTube, Facebook, etc. to increase student collaboration and develop new processes in how information can be conveyed to students to promote effective learning (2; 3).

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The selection of teaching methods must take into account not only the nature of the subject matter but also how students learn (4). In today's school the trend is that it encourages much creativity. It is a known fact that human advancement comes through reasoning. This reasoning and original thought enhances creativity.

Moreover, experts believe that the educational sector is suffering neglect towards effective access to information. Therefore, emphasis is now laid on the enhancement of students' performance on the school subject- computer science through the use of the projecting multimedia technology.

Technology has impacted multimedia as it is largely associated with the use of computers or other electronic devices and digital media due to its capabilities concerning research, communication, problem-solving through simulations and feedback opportunities. The innovation of technology in education through the use of multimedia allows for diversification among classrooms to enhance the overall learning experience for students (5).

Multimedia provides students with an alternate means of acquiring knowledge designed to enhance teaching and learning through various mediums and platforms. In the 1960s, technology began to expand into the classrooms through devices such as screens and telewriters (6).

Multimedia has many definitions which arise from the context it is applied but according to its use in this study; it is the use of more than one medium in the teaching-learning environment. There are many types of multimedia (MM) which includes the following- print media, realia, projecting MM, non- projecting MM, to mention but a few.

Projecting multimedia is one of the many types of multimedia which is used for presenting information. Some components of this projecting multimedia includes set of computer, projector, public address system, speakers, motion pictures or films, slides, microforms, filmstrips, transparencies, video recorder and television set

Moreover, the projecting multimedia is one of the best educational techniques because it addresses both the sense of sight and hearing. It involves the use of texts, spoken words, sound/ music, graphics, still picture to mention but a few.

More so, it is one thing to have the projecting media gadgets but another thing to properly use, maintain and preserve them for continuity and reduction of the cost of running the school occasioned by frequent repairs, theft and replacements.

Therefore, the government/school authority, students, academic staff and non-academic staff in every school, all have a contribution to make towards the availability, utilization, maintenance, preservation and security of the projecting media gadgets.

Finally, this research is geared towards the provision and utilization of the projecting media gadgets as a type of multimedia to promote the effective teaching and learning of computer science at the senior secondary schools in Nnewi metropolis.

1.1. Statement of the Problem

It is obvious that over the years, computer education has been a 'tough' subject for the students with the use of the other types of multimedia in the teaching- learning environment which is evident when tests, examinations and practical demonstrations are carried out. It therefore calls for the introduction of new and modern technologies to alleviate such difficulties being faced by students.

The problem which this research is meant to address is whether the projecting multimedia is available and in use for computer education in the senior secondary school level of education in Nnewi metropolis?

1.2. Purpose of the Study

This research aimed at determining the availability and utilization of the projecting type of multimedia for computer education in senior secondary schools at Nnewi metropolis.

Specifically, the study sought to;

- Find out the availability of the projecting multimedia for computer education in senior secondary schools at Nnewi metropolis.
- Examine the extent of the usage of the projecting multimedia for computer education in senior secondary schools at Nnewi metropolis.
- Discover the problems bedeviling the provision and utilization of the projecting multimedia for computer education in senior secondary schools at Nnewi metropolis.
- Investigate how to solve the problem of unavailability and non-utilization of the projecting multimedia for computer education in senior secondary schools at Nnewi metropolis.

Significance of the Study

The result of this study will enable the provision and application of the projecting multimedia for computer education in senior secondary schools at Nnewi metropolis to heighten good results during tests, examinations and practical demonstrations to support stepwise knowledge building that will further lead to both human and societal development.

Research Questions

The following research questions guided the study.

- To what extent is projecting multimedia available for computer education in senior secondary schools at Nnewi metropolis?
- How is the available projecting multimedia being used by the teachers and students in senior secondary schools at Nnewi metropolis during computer lessons?
- What are the possible reasons for the unavailability and non-utilization of the projecting multimedia during computer lessons in the senior secondary category of schools in Nnewi metropolis?
- Which possible ways can the projecting multimedia be available and utilized for the teaching and learning of computer science in the senior secondary schools at Nnewi metropolis.

Scope of the Study

The scope of this research was limited to the availability and utilization of the projecting multimedia for the achievement of success while teaching and learning of computer science in senior secondary schools at Nnewi metropolis.

1.3. Research Design

The study employed the descriptive type of research design with survey as its sub-type.

1.4. Area of the Study

The research was carried out in the senior secondary schools at Nnewi metropolis. Nnewi is a developing city that is located east of the Niger River and about 22 kilometers south east of Onitsha in Anambra State Nigeria and about 347 kilometers South of Abuja, the country's capital town. Nnewi is located 6.02 latitude and 6.92 longitudes and it is situated at elevation 151 m above sea level. Nigeria is a country in West Africa.

1.5. Population of the Study

During the research, efforts were made at collecting data from all the secondary schools in Nnewi. The summary of the results which forms the population of the study is as follows:

Total population of schools= 31; Total population of teachers= 48; Total population of senior secondary students= 605

1.6. Sample and Sampling Techniques

For this study, out of a total of thirty-one (31) senior secondary schools in Nnewi, six (6) schools were randomly sampled.

The following population of the students, teachers and principals were randomly sampled:

- Total number of Students= one hundred and twenty (120)
- Total number of Teachers= nine (9)
- Total number of Principals= six (6) (representing the six (6) schools)

Simple Random Sampling (SRS) technique was used to sample the six (6) schools based on characteristics of the schools, aim of the study and proximity to the researcher.

Table 1 The distribution of the names of the sampled schools, numbers of students, teachers and principals used for the study

S/N	NAMES OF SCHOOLS	X	Y	Z
1	Nnewi High School	23	2	1
2	Comm. School Nnewichi	19	2	1
3	Dr Alutu's College	18	1	1
4	Victorious Holy Innocent	19	1	1
5	Maria Regina Model	20	2	1
6	Nneoma Secondary School	21	1	1
	Total	120	9	6

Keys: X= Number of sampled Students; Y= Number of sampled Teachers; Z= Number of sampled Principals

1.7. Research Instrument

The research instrument used for this study was the questionnaire.

1.8. Method of Data Analysis

In this study, the inferential or descriptive statistics was employed during the data analysis which involves the use of the Mean and the Standard Deviation.

1.9. Decision Rule

1.9.1. MEAN

The Mean value of 2.5 was used as standard. Any mean that was 2.5 and above was Accepted while any mean that was below 2.5 was Rejected.

1.10. STANDARD DEVIATION (STD)

The 68/95/99.7 Rule was used, which tells us that standard deviation can be converted to percentage thus:

- 68% of all scores fall within 1 Unit STD of the mean.
- 95% of all scores fall within 2 Units STD of the mean.
- 99.7% of all scores fall within 3 Units STD of the mean.

1.11. Data analysis, discussion and findings

This chapter involves the presentation and analysis of result gathered from the responses to the questionnaires used during the survey process.

There are three results from the three categories of respondents namely the principals, teachers and the students.

The results were carefully collated, scrutinize and analyzed in the presence of about three teachers who were not part of the exercise.

The results which now form the data were used to construct a frequency distribution table from where further calculations and conclusions were derived from in order to achieve the aim of the research.

2. Research Questions' Analysis and Results

Research Question 1: To what extent is projecting multimedia made available for the teaching and learning of computer science in senior secondary schools at Nnewi metropolis?

This question received response in the section B of the questionnaire. The result of the response was collated and tabulated as follows:

Table 2 The mean and standard deviation showing the extent of availability of the projecting multimedia for computer education in senior secondary schools at Nnewi metropolis

S/N	RESPONDENTS	SA	A	U	SD	D	∑FX	MEAN	STD	DC
		5	4	3	2	1				
1	Students	2	4	1	59	54	201	1.7	26.60	R (95%)
2	Teachers	0	1	1	6	2	18	2.2	2.24	R (68%)
3	Principals	0	1	0	3	2	12	2.0	1.26	R (68%)
Total								5.7		

Keys: SA= Strongly Agree; A= Agree; U= Unknown; SD= Strongly Disagree; D= Disagree; STD= Standard Deviation; DC= Decision; A= Accepted; R= Rejected; F= Number of direct response; X= Likert's Rate

Overall mean test, using the following formula:

Summation of tests   = 5.7

Number of occurrence   3   = 1.9

This should be rejected and taken that the projected multimedia is not available for computer education in senior secondary schools at Nnewi metropolis.

Research Question 2: How is the available projecting multimedia being used by teachers and students during computer lessons in senior secondary schools at Nnewi metropolis?

This question received response in the section C of the questionnaire. The result of the response was collated and tabulated as follows:

Table 3 The mean and standard deviation showing the extent of usage of the available projecting multimedia for computer education in senior secondary schools at Nnewi metropolis**.**

S/N	RESPONDENTS	SA	A	U	SD	D	∑FX	MEAN	STD	DC
		5	4	3	2	1				
1	Students	1	3	1	61	54	196	1.6	27.45	R (95%)
2	Teachers	0	0	0	7	2	16	1.8	2.72	R (68%)
3	Principals	0	0	0	4	2	10	1.7	1.61	R (68%)
Total								5.1		

Overall mean test was gotten using the following formula:

Summation of tests   = <u>5.1</u>

Number of occurrence   3   = **1.7**

This should be rejected and taken that the projecting multimedia is not used for computer education in senior secondary schools at Nnewi metropolis.

Research Question 3: What are the possible reasons for the unavailability and non- utilization of the projecting multimedia during computer lessons in senior secondary schools of Nnewi.

2.1. Students' Responses

The students pointed out the following factors:

- No space in the classroom
- No computer laboratories
- Epileptic power supply
- No stand-by generator set
- Not enough time for lesson period
- Too many subjects to learn
- Hatred on the teacher
- Hatred on the subject- computer
- Fear of the computer
- Many computer jargons (new terms) to learn

2.2. Teachers' Responses

The teachers pointed out the following on the section D of the questionnaire.

- Not enough time for lesson period
- Overloaded syllabus and scheme of work
- Increase in work load
- Poor budget's implementation.
- Late attendance to budget proposal by the principal
- Low salary structure to boost their morale
- Non- payment and late payment of their principal allowance as science teachers.
- No space in the classroom
- No computer laboratories
- Epileptic power supply
- No stand-by generator set

2.3. Principals' Responses

- Poor budget
- Poor salary structure to boost their morale
- Late attendance to budget proposal by the government authority
- No space in the classroom
- No computer laboratories
- Epileptic power supply
- No stand-by generator set
- High cost of running the school occasioned by frequent repairs, theft and replacements.

Research Question 4: Which possible ways can the projecting multimedia be made available and used for computer education in the senior secondary schools at Nnewi metropolis?

This research question was answered in the section E of the questionnaire which was used by the researcher to proffer the recommendations at the end of this study thus:

2.4. Students' Responses

- Classrooms should be widened.
- Computer laboratories should be built.
- Regular power supply should be provided.
- Stand-by generator sets should be made available.
- More time should be allocated for lesson period.
- Total number of subjects offered should be reduced.
- Teachers should be kind and loving.
- Computer lessons should be simplified.

2.5. Teachers' Responses

- More time should be given for lesson period
- Syllabus and scheme of work should be reviewed.
- More schools should be built to reduce work load'
- More teachers should be employed.
- Budget should be made and released on time.
- Teachers' remuneration should be reviewed and increased to boost their morale.
- Early attendance to budget proposal by the principal
- Spacious classroom should be constructed.
- Computer laboratories should be built.
- Regular power supply should be provided.
- Stand-by generator set should be purchased.

2.6. Principals' Responses

- Budget should be made, signed and released on time by the government authority.
- Salary structure should be reviewed to boost their morale.
- Spacious classroom should be constructed.
- Computer laboratories should be built.
- Regular power supply should be provided.
- Stand-by generator set should be purchased.
- School properties should be handled with care and preserved.

2.7. Students' Progress report book

The study revealed that the results of the students in the few schools that have and use the projecting multimedia were far better than their counterparts' results in those schools that do not have nor use the projecting multimedia.

2.8. Teachers' Log and Progress report book

It revealed that teachers who used the projecting multimedia for teaching were able to record success from the students' angle and from their own side as they performed better, met their target among other numerous advantages.

3. Discussion

The responses gathered from the questionnaires signals the fact there are poor availability and non-utilization of the projecting multimedia during the teaching and learning of computer in Nnewi metropolis.

More so, a study of the students' progress report reveals that senior secondary students performed far better on computer science in schools where the projecting multimedia was available and used during computer education.

As well, the teachers performed far better on computer science in schools where the projecting multimedia was available and used during the teaching and learning of computer.

All these helped the researcher to draw an inference that there is absolute need for the availability and utilization of the projecting type of multimedia in computer education in the senior secondary school at Nnewi metropolis.

4. Conclusion

Since the research findings revealed that the projecting type of multimedia is not readily available in most senior secondary schools for computer education and when available were not being utilized and having reviewed the pros or contribution of this great assest- the projecting media towards improving computer education in the senior secondary category; it then demands that every stakeholder in the educational sector should contribute towards the provision, use, maintenance and preservation of the projecting media gadgets.

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