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Extent of the Use of E-Learning Facilities in the Teaching of Mathematics in Secondary Schools in Oshimili South Local Government Area Towards Sustainable National Development

[1] Ekwemuka C. [2] Onyewadume E. B
[1&2]Department of Mathematics Education
Federal College of Education (Technical) Asaba

Abstract
The research work determined how knowledgeable the secondary school teachers are on e-learning in the teaching of mathematics in Oshimili South Local Government Area of Delta State. The study adopted a descriptive survey design and guided by three research questions. The population of the study comprises of one hindered and fifty (150) teachers in some selected secondary school in Oshimili South LGA. Structured questionnaire of 21 items was designed in four scales responses pattern was used for data collection. The face and content validity was determined by two lecturers from department of measurement and evaluation. A test-retest was carried out while Pearson's Product Moment Correlation Coefficient was 0.78 and certified that the instrument was fit for data collection. The analysis of data was carried out with tables to obtain the mean value. The result revealed that the teachers in secondary schools hardly make use of e-learning facilities in teaching mathematics in their various schools, which poses a very serious problem to our education system if the issue is not tackle urgently. Just like what will face during COVID-19 period where many schools where close down. The face and content validation were determined lecturers. One from department of Mathematics/ Computer Science and the second from the Department of Education all in Federal College of Education (Technical) Asaba. The results from data analysis revealed that secondary school teachers hardly utilize e-learning software in teaching and learning of Mathematics topics. Some recommendations were made such as: school authorities should collaborate with government to ensure workshop for teachers in secondary schools, modern facilities like laptops, computer desktops should be made available for teachers in secondary schools, and also, school authorities should also try to invite some experts in the e-learning teaching to come and train teachers in their various schools..

Keywords*: Mathematics, Teaching, E-learning, Sustainable development,*

Introduction

E-learning is a learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom (Adebayo, 2019). It involves the use of network technologies to create, foster, deliver and facilitate learning and it encompasses face-to-face, distance, mixed and blended delivery models that utilizes electronic means, a unifying term used to describe the fields of online learning, web

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based training and technology delivered instructions. It is interactive in that you can also communicate with your teachers, professor or other students in your class. Using e-learning in teaching children is one of the way of bringing them face to face with the world which education intends to introduce to them- direct. Onaifoh (2015) in Sims (2008) sees e-learning as a tool that opens new ways of learning through the new models like the use of videos, tele-conferences which changes the process of teaching.

Ekwueme (2013) defined mathematics as a means of communicating and tools for solving problems in a wide range of context. However, Mathematics education is geared to make students problem solvers, critical and analytical thinkers, creative in manipulative skills that are very helpful in their daily activities. Onaifoh (2015) in Ekwueme (2013) sees mathematics as a systematic, organised and exact branch of science which involves the creation of human minds with ideas and reasoning. The use of E-learning cannot be over-emphasized based on its importance in the teaching of mathematics and other subject which brought a large development in the global world today.

However, using e-learning in the teaching and learning of mathematics has helped a lot of teachers and students, most especially during the COVID 19 in the advance nations. Since education is a vital activity and quality education has traditionally been associated with strong teachers having high degree of personal contact with learners. The important of education, particularly in a developing country like Nigeria has increase because of the need to catch up with the developed countries in several area, particularly in global competiveness and best practices. As the world grows more towards being a global village, the need to innovate in teaching and learning with particular reference to Information and Communication Technology (ICT), becomes imperative if attempt is to be made to bridge the gap between the developing and developed world.

Moreover, there is need for mathematics teachers to adjust from the conventional methods of teaching to more technologically advanced methods of instruction delivery. The conventional teaching competencies needs to be urgently changed in order to obtain maximum benefit which e-learning technologies offer, hence mathematics teachers are faced with the responsibility of developing and updating themselves with the new model Information and Communication Technology (ICT) competencies required for education (Joseph & Ekemini, 2014). With the advancement of Information Technology in the 21st Century e-learning has become an invaluable technology for teaching, learning and research in Computer education (Otuka, 2011). The introduction on Information and Communication Technologies, however gave room to the new concept called “Electronic/ online learning of (e-learning)” (Okike, 2014). E-learning in education is the systematic integration of modern technologies and equipment. Teaching and learning of mathematics in

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Nigeria cannot be fully relevant without adequate preparation of new generation of learners' effective use the Information and Communication Technology in their professional practices (Adebayo, 2019).

Statement of Problem

The need for the usage of e-learning facilities in the 21st century is very crucial and cannot be wave out because e-learning facilities have taken over the entire affairs of all areas of academic. However, in the teaching of mathematics as a subject it encounters problems that are difficult to solve in a face-to-face teaching framework for the beginners. Which lead to students paying little or no attention to understanding the basic mathematical concepts or it could be lack of motivation and interests (Abrmovitz, Berezina, Berman & Shvaetsnan 2017). The state of the art of communication technology is a persistent issue that described the current challenges of blended e-learning in mathematics. E-learning approaches supposedly to be an initiative toward linking the conventional teaching and programmes in mathematics education to virtual learning system, so as to benefit from the technology-based learning.

Purpose of the Study

The main purpose of the study is to determine the extent of the use of e-learning in teaching of mathematics in secondary schools in Oshimili South Local Government Area of Delta State.. Specifically, the study seeks to:

1. Investigate how often teachers uses e-learning software facilities in the teaching of mathematics topics in Oshimili South Local Government Area of Delta State.
2. Examine how often teachers used computer projector as a teaching tools in teaching of mathematics topics Oshimili South Local Government Area of Delta State.
3. Determine how often teachers used e-learning hardware facilities as a teaching tools in teaching of mathematics topics in Oshimili South Local Government Area of Delta State.

Research Questions

The following research questions were formulated to guide the study:

1. To what extent do teacher use e-learning software facilities in the teaching of mathematics topics in Oshimili South Local Government Area of Delta State.?
2. To what extent do teacher use computer projector as a teaching tool in teaching of mathematics topics in Oshimili South Local Government Area of Delta State.?
3. To what extent do teachers use e-learning hardware facilities as a teaching tool in teaching of mathematics topics in Oshimili South Local Government Area of Delta State.?

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Methodology

The study followed a survey design. The target population comprises of all teachers of government secondary schools in Oshimili South Local Government Area of Delta State. The sample size of one hundred and fifty (150) teachers from fifteen secondary schools was used and was drawn using the simple random sampling technique. The instrument for data collection was structured questionnaire title Extent of the Use of E-Learning Facilities in the Teaching of Mathematics in Secondary School Questionnaire (EUEFTMSSQ). This questionnaire was designed in a four rating scales (VHE, HE, LE and VLE) and sent to two lecturers. On e from the Department of Mathematics/ Computer Science and another from the Department of Education, Federal College of Education (Technical), Asaba for face and content validation. A test-re-test was carried out with 30 respondent (10% of the sample) form different locations to determine the reliability of the instrument. The co-efficient of reliability was 0.78 after Pearson's Product Moment Correlation Coefficient was used for the test. The data collected were analyzed using mean and standard deviation.

Results

Research Question One: To what extent does teacher uses e-learning software facilities in the secondary school to teach mathematics topics in Oshimili South Local Government Area of Delta State.?

Table 1: *Mean and Standard Deviation of Respondents to Research Question One*

S/N	Items	Mean	SD	Remark
1.	Using of data base package enhance the teaching and learning of Mathematics	3.42	0.37	High extent
2.	Using of power-point package for teaching presentation enhance the teaching and learning of Mathematics	2.02	0.41	Low extent
3.	Ability to use e-mail resources to help in the individualization of instruction	2.34	0,61	Low extent
4.	Ability to use word processing package	3.25	0.43	High extent
5.	Using of spreadsheet package for instruction (Excel) enhance the teaching and learning of Mathematics	1.67	0.38	Low extent
6	Using PDF software to open PDF document enhance the teaching and learning of Mathematics	2.52	0.44	High extent
7	Knowledge of software like Mavia, beacon enhance the teaching and learning of Mathematics	1.25	0.39	Low extent
	Grand mean and SD	**2.17**	**0.43**	**Low extent**

Based on the grand mean score which is 2.17, it went further to show that very few of the teachers make use of software facilities while the others do not make use of software facilities in the teaching of mathematics topics.

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Research Question 2: To what extent does teacher uses computer projector as teaching tools in teaching of mathematics topics in Oshimili South Local Government Area of Delta State.?

Table 2: *Mean and Standard Deviation of Respondents to Research Question Two*

S/N	Items	Mean	SD	Remark
1.	Using projector reduces time wasting by writing on chalkboard	2.34	0.36	Low extent
2,	Effectively use of projector makes teaching and learning more interesting	2.57	0.46	High extent
3.	The use of screen freeze feature to revise lesson taught enhance the teaching and learning of Mathematics	2.05	0.38	Low extent
4.	Using projector makes teaching process more organized	1.82	0.43	Low extent
5.	Using projector for presentation enhances teaching process	2.18	0.37	Low extent
6.	Using projector to display texts, images and video enhancing teaching and learning of mathematics	2.20	0.35	Low extent
7.	Using projector help to share notes digitally during teaching and learning	2.42	0.40	Low extent
	Grand mean and SD	**2.23**	**0.39**	

The grand mean score of 2.23 which indicates that the teachers hardly make use of projector as a teaching tool in teaching and learning mathematics in the school

Research Question Three: To what extent do mathematics teachers have knowledge of e-learning hardware facilities as teaching tools in teaching mathematics topics in Oshimili South Local Government Area of Delta State.?

S/N	Items	Mean	SD	Remarks
1.	Ability to use flash drive for storing instructional materials	3.05	0.32	High extent
2.	Ability to use interactive whiteboards to deliver lectures to mathematics students	2.02	0.43	Low extent
3.	Using video recorders for recording teaching activities in the classroom	2.75	0.48	High extent
4.	Using laptop computer enhance the teaching and learning of Mathematics	3.35	0.49	High extent
5,	The use CD-ROM, Flash drives containing prepared lesson materials for teaching enhance the teaching and learning of Mathematics	1.25	0.42	Low extent
6	Using electronic board and projector in enhancing learning of mathematics	1.83	0.42	Low extent
7	Knowledge of computer simulation in teaching and learning of mathematics. enhance the teaching and learning of Mathematics	2.78	0.36	High extent
	Grand mean and SD	**2.43**	**0.42**	

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The grand mean of the distribution above was 2.43 which shows that the secondary teachers hardly make use of e-learning hardware facilities as a teaching tool in teaching of mathematics

Discussion of the Result

The findings from table 1 research question one revealed that the secondary teachers hardly utilize e-learning software in teaching and learning of mathematics topics. Based on the grand mean of 2.17 which indicatesvery low extent. The findings from table 2 research question two revealed that secondary schools teachers hardly make use of projector slide and others in teaching their students, mathematics and this make most students not to have knowledge on how projector look likes or how it works. The finding from table three research question three revealed that secondary school teachers, find it difficult to use e-learning hardware facilities as a teaching tool in teaching and learning of mathematics topics based on the grand mean of 2.40 which indicates low extent, which is contrary to Abe and Gbenro (2014), who observed that public secondary schools mathematics teachers hardly or rather use e-learning facilities in the teaching of mathematics topics.

Conclusion

This paper looked into how effective teachers in secondary schools has knowledge of ICT in teaching of mathematics topics and it was observed that teachers hardly or often use e-learning facilities in the teaching of the subject and that some of them have little or no knowledge of the internet facilities. However, there is the need to improve on the use of e-learning facilities not only that but also the use of e-learning brings a new mix of professional and instructional knowledge advantages to teachers, but is also consistent with the modern education life and global practice.

Recommendation

Based on the findings of the study, it was recommended that:

i. School authorities should collaborate with government to ensure workshops for the teachers in secondary school so as to enable them to meet up with the current trend in the use of e-learning in teaching and learning
ii. Modern facilities like laptops, computers desktop, c;mputer projector and so on should be made available for teachers of mathematics and other subjects for the teaching in secondary.
iii. Also, the school authority should try to invite some expert in the e-learning teaching to come and train teachers in their various schools.

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