

**CHALLENGES IN THE APPLICATION OF E-LEARNING BY SECONDARY SCHOOL
TEACHERS IN ANAMBRA STATE, NIGERIA**

Sabina Nwana

Nnamdi Azikiwe University, Nigeria

Abstract

This is an empirical research study which investigated the challenges in the application of e-learning in secondary schools in Onitsha North LGA, Anambra State, Nigeria. Two hundred and twenty-five (225) teachers in public secondary schools were used as the sample for the study. A self-developed instrument (TIUELM) on the availability and use of e-learning materials was used for data collection. The instrument contained 25 items. The reliability co-efficient of the instrument stood at 0.88. The data collected were analyzed using frequency distribution and mean. The findings revealed: acute shortage of e-learning materials such as on-line/internet-connected computers, e-mail facilities, multimedia television, multimedia computer and digital library. It was also revealed that the few available ones such as off-line/ordinary computers, scanner, printer and ready-made courseware are not utilized because the teachers lack the knowledge and skills of computer application. The only material identified as available and in use is the telephone. It was recommended among other things that, the government should embark on a massive computer training program for teachers. Teachers should be trained and retrained through in-service training, seminars, workshops and conferences for acquisition of the knowledge and skills needed for e-learning application in secondary schools in Nigeria.

Introduction

In this age of Information and Communication Technology (ICT), there is growing concern for the use of ICT resources such as the computer, scanner, printer, Intranet, Internet, e-mail, videophone systems, teleconferencing devices, wireless application protocols (WAP), radio and microwaves, television and satellites, multimedia computer and multimedia projector in curriculum implementation. In e-learning, curriculum content in the form of texts, visuals, e.g. pictures, posters, videos, audio/sound, multicolor images, maps, and graphics, can be simultaneously presented online to students in both immediate locations (classroom model of e-learning) and various geographical distances (Distance Education model of e-learning).

E-learning in education is the wholesome integration of modern telecommunications equipment and ICT resources, particularly the internet, into the education system. Tracy (1995) defines the internet as the international network of communications in which computers in the Wide Area Network (WAN) talk to each other. Shavinina (2001) defines ICT as all the digital technologies, including: computer, scanner, printer, telephone, internet, digital satellite system (DSS), direct broadcast satellite (DBS), packet-switching, fiber optic cables, laserdisc, microwaves, and multi-media systems for collection, processing, storage and dissemination of information all-over the world. E-learning as an aspect of ICT is relatively new in Nigeria's educational system. It is a departure from the conventional approach in curriculum implementation. The main purpose of e-learning is to transform the old methods and approaches to curriculum implementation and not to silence the curriculum or to extinguish or erase the contents of curriculum. E-learning is driven by the curriculum. It should follow the curriculum and should not rob the curriculum of its essence.

E-learning should ensure effective pedagogy and curriculum implementation in the computer age. According to Nicholls and Nicholls (1980), Mkpa (1987), and Offorma (2002), curriculum implementation is the planning and execution of the contents of curriculum in order to bring about certain changes in the behavior of the learners and the assessment of the extent to which the changes take place. The primary purposes of implementation is to achieve the objectives of instruction, and achieve retention and transfer of knowledge. E-learning is an instructional medium that permits alternative approaches to curriculum implementation in an ICT age. Richmond (1997) observed that, there is a great link between the curriculum and ICT and that there are three major areas that technology can influence learning, including:

- i. Presentation, demonstration and the implementation of data using productivity tools.
- ii. Use of curriculum – specific applications such as educational games, drills and practice, simulations, tutorials, virtual laboratory visualizations and graphics, representations of abstract concepts, musical composition and expert systems.
- iii. Use of information and resources on CD-Rom, online encyclopedia, interactive maps and atlases, electronic journals and other references.

Similarly, the role of ICT in curriculum implementation is recognized by the Nigeria National Policy on Education (FRN, 2004, p. 53) where it stated that, “the government shall provide facilities and necessary infrastructures for the promotion of ICT and e-learning.” It is against this background that the researcher intends to find out the extent of availability and use of e-learning materials by teachers in secondary schools.

Statement of Problem

The call for application of e-learning in secondary education is to infuse and inject efficiency and

effectiveness in curriculum implementation. However, in developing countries like Nigeria, e-learning is challenged with the problem of material devices such as computer, computer laboratories, internet and e-mail facilities, videophone systems and teleconferencing devices, fax and wireless applications, digital library, digital classrooms, multimedia systems and the problem of multimedia courseware development among others (Global Information Technology Report, 2005). Other studies indicated that there is dearth of trained teachers for e-learning, lack of facilities, infrastructures and equipment (Ikemenjima, 2005; and Jegede & Owolabi, 2008).

The problem is that e-learning in secondary education is challenged by the new technologies in terms of availability and use. It is against this background that the present study is carried out to determine the extent of availability and use of e-learning materials. Second, it seeks to identify possible strategies for availability and use in curriculum implementation.

Purpose

This study examines:

1. The availability of e-learning materials for curriculum implementation in secondary schools.
2. The extent of application and/or use of the available e-learning materials by teachers.
3. The strategies for improving e-learning application in secondary schools.

Research Questions

1. What are the e-learning materials available to secondary school teachers for curriculum implementation?
2. To what extent are the available e-learning materials currently used by the teachers?
3. What are the strategies for improving the use of e-learning materials in secondary schools?

Methodology

The study employed a survey research design. The population was all the teachers in the (13) thirteen public secondary schools in Onitsha North Local Government Area of Anambra State, Nigeria. The sample for the study was comprised of 225 teachers who were randomly selected from the total population of 525 teachers. The instrument for data collection was a self-developed 25-item questionnaire titled, "Teachers' Identification and Use of E-Learning Materials" (TIUELM). It was structured on a four-point scale and has three sections (A-C) which sought information on the three research questions. The face and content validation of the instrument were established by two experts each in the Curriculum and Measurement and Evaluation Units of the Department of Educational Foundations at Nnamdi Azikiwe University, Awka. The reliability of the instrument was determined using the Pearson Product Moment Correlation. A reliability coefficient of 0.88 was obtained, an indication that the instrument was reliable for data collection. The copies of the questionnaire that were administered by the researcher were returned and used for computation. The data collected were analyzed using frequency distribution and mean. Since the items were structured on a four-point rating scale, the decision rule was based on the mid-point of the scale, 2.50. Therefore, items with mean scores of 2.50 and above were regarded as agreed or positive responses while items with below 2.50 were regarded as disagreed or negative responses.

Results

Research question 1. What are the e-learning materials available to secondary school teachers for curriculum implementation?

Table 1

Mean responses on the availability of e-learning materials for curriculum implementation
N = 225

S/N	Items: Availability of Materials	SA	A	D	SD	X	Decision
1	Off-line/ordinary computers	52	138	23	11	3.03	AV
2	Telephone/wireless Applications	191	32	02	0	3.84	AV
3	On-line/Internet Computers	0	0	04	221	1.02	NA
4	Scanner	43	119	40	23	2.81	AV
5	Printers	46	152	19	08	3.05	AV
6	E-mail facilities	0	0	10	215	1.04	NA
7	Multimedia Television	0	0	03	222	1.01	NA
8	Multimedia Projectors	0	0	0	225	1.00	NA
9	Digital Library	0	0	0	225	1.00	NA
10	Ready-made courseware: CD-Rom, etc	35	116	57	17	2.75	AV

Table 1 columns are labeled as follows: S/N = Item Number; Items: Availability of Materials = do you believe the following item (as listed by S/N) is available; SA = Somewhat Agree it is available; A = Agree it is available; D = Disagree it is available; SD = Somewhat Disagree it is available, X = mean score of responses for this item; Decision = overall respondent outcome based on the mean score for the item. The “decision” is AV which means Available or NA which means Not Available. Table 1 shows that items 1,2,4,5 and 10 with mean ratings of 3.03, 3.84, 2.81, 3.05 and 2.75 are available. They include: off-line or ordinary computers, telephone and/or wireless applications, scanners, printers and ready-made courseware. The Respondents affirmed that items 3,6,7,8 and 9 with mean ratings of 1.02, 1.4, 1.01, 1.00 and 1.00 are not available. They include: on-line or internet connected computers, e-mail facilities, multimedia television, multimedia projectors, and digital library.

Research question 2. To what extent are the available e-learning materials used by the teachers?

Table 2

Mean Responses on the Use of Available Materials
N = 225

S/N	Items: Use of Available Materials	SA	A	D	SD	X	Decision
11	Off-line/ordinary computers	0	04	08	213	1.07	NIU
12	Telephone/wireless Applications	193	30	2	0	3.85	IU
13	Scanner	0	0	5	220	1.02	NIU
14	Printers	0	04	06	215	1.06	NIU
15	Ready-Made courseware: CD-Rom, etc	0	0	0	225	1.00	NIU

Table 2 columns are labeled as follows: S/N = Item Number; Items: Use of Available Materials = to what extent do you believe the following available item (as listed by S/N) is used by the teachers; SA = Somewhat Agree it is used; A = Agree it is used; D = Disagree it is used; SD = Somewhat Disagree it is used, X = mean score of responses for this item; Decision = overall respondent outcome based on the mean score for the item. The “decision” is either IU which means In Use or NIU which means Not in Use. Table 2 indicates that items 11, 13, 14 and 15 are available but not in use. They have mean ratings of 1.07, 1.02, 1.06 and 1.00. However, the only material available and in use is item 12 that is telephone and/or wireless applications with mean rating of 3.85.

Research question 3. What are the strategies for improving the use of e-learning materials in secondary schools?

Table 3

Mean Responses on the Strategies for Improving E-learning Applications

N = 225

S/N	Items: Strategies for Improvement	X	Decision
16	Massive computer literacy program for teachers.	3.81	Agree
17	Adequate provision of online computers/e-mail.	4.00	Agree
18	Connection of classrooms/Auditorium to the internet.	3.91	Agree
19	Procurement of multimedia systems.	3.75	Agree
20	Provision of incentives for courseware development.	4.00	Agree
21	Provision of digital libraries.	3.97	Agree
22	Employment of computer technicians for routine repairs.	3.70	Agree
23	Provision of standby generators for regular power supply.	3.88	Agree
24	Provision of security for safeguarding e-learning materials.	3.67	Agree
35	Training & retraining of teachers through seminars, workshops, and/or conferences.	3.94	Agree

Table 3 addresses research question 3 on the strategies for improving e-learning applications in curriculum implementation. The table shows that all the respondents agreed that variables 17, adequate provision of online computers and e-mail, and 20, provision of incentives for courseware development, with mean ratings of 4.00 and 4.00 respectively will promote e-learning applications in curriculum implementation in secondary schools. The table also shows that all respondents somewhat agreed or agreed that items 16, 18, 19, 21, 22, 23, 24, and 25 with mean ratings of 3.81, 3.91, 3.75, 3.97, 3.70, 3.88, 3.67 and 3.94 respectively will promote e-learning applications in curriculum implementation in secondary schools.

Discussion

The findings from research question 1, Table 1 indicate the availability of five out of the ten items listed for e-learning applications. The five that are available are: off-line or ordinary computers, telephone or/and wireless applications, scanner, printers and ready-made courseware. This

supports the findings of Akinola (2005) in which only five out of the twelve ICT tools needed for Business Education were available. This study is also consistent with the findings of Ikemenjima (2005) and Jegede and Owolabi (2008) that there are infrastructural deficiencies and shortage of facilities, including: computers, computer laboratories and online-classroom for the study of Computer Education in secondary schools. Similarly, the findings agree with the research reports of Ololube, Ubogu, and Egbezor (2007) that ICT infrastructures and facilities are not available for instructional delivery in Nigerian tertiary institutions. The findings are also in line with the Global Information Technology Report (2012, p. xxiii) which revealed that Nigeria ranked 112 out of 142 countries surveyed for network readiness to participate and benefit from ICT development.

Research question 2, Table 2 addresses the use of the available e-learning materials for curriculum implementation. The respondents affirmed those items 11, off-line or ordinary computers; 13, scanners; 14, printers; and 15, ready-made courseware: CD-Rom, etc., were available but not in use as indicated in the mean ratings of 1.00 for each of them. The respondents indicated that the only material available and in use is item 12, telephone or wireless applications with mean rating of 3.85. This confirms the results of Effiong (2005) and Jegede and Owolabi (2008) that ICT materials such as computers, computer labs, printers, scanners, e-books, textbooks, workbooks and books on ICT are not available and not in use in Nigerian secondary schools for computer education. Again, the findings agree with that of Seiden (2000) and Uhaegbu (2001) for Nigeria which revealed a low level of usage of ICT equipment and facilities in secondary schools. However, as a comparison, the findings are contrary to that of Becker (2000) that found US primary and secondary schools use computers in all subjects, particularly in the teaching of languages and mathematics.

Research question 3, Table 3 indicates that the vast majority of respondents agreed with items 16 through 25 as measures to take to improve e-learning application in curriculum implementation in secondary schools. Providing a massive computer literacy program for teachers had a mean score of 3.81. Adequate provision of online computers and e-mail facilities had a mean score of 4.00. Connection of classrooms and auditoriums to the internet had a mean score of 3.91. Procurement of multimedia systems had a mean score of 3.75. Provision of incentives for courseware development had a mean score of 4.00. Provision of digital libraries had a mean score of 3.97. Employment of computer technicians for routine repair had a mean score of 3.70. Provision of standby generators for regular power supply had a mean score of 3.88. Provision of security for e-learning materials had a mean score of 3.67. Training and retraining of teachers through seminars, workshops, and conferences had a mean score of 3.94. The findings agree with Sundarajan (2005), Evoh (2007), and Nwana (2008a, 2008b, 2009a, 2009b) that teachers should have adequate training for computer education. Also, that necessary facilities and e-learning materials should be provided for effective curriculum implementation in secondary school.

Conclusion

E-learning means electronic learning. It is a computerized and digital type of education in which texts, audio or sound, pictures, images, graphics and videos can be simultaneously presented online to students. Two models of e-learning are the classroom and distance education models. E-learning enhances curriculum implementation through the development and use of multimedia courseware relevant to teaching-learning situations. Some multimedia coursewares include Learning Activity Package (LAP), power point slides, and diskettes. Software may be ready-made or teacher developed instructional software. Problems hindering e-learning were identified as

follows: a dearth of videophone and teleconferencing systems, massive computer illiteracy, difficulties in the internet application and use, difficulties in the use of World Wide Web (www), and problems associated with e-mail. Other factors include the opportunities for development and use of courseware, the high cost of digital libraries, cost of internet connection, cost of computer and its accessories, lack of multimedia systems, epileptic or inconsistent power supply, techno-phobia and resistance. In conclusion, the government should mount an intensive e-learning training program for teachers, as well as adequately provide all the materials needed for e-learning application in curriculum implementation in secondary schools.

Recommendations for Prospective and Effective E-learning

In view of the problems hindering e-learning in Nigeria, the following recommendations are offered for prospective and effective e-learning:

- The government of Nigeria should embark on a massive computer literacy training program nation-wide particularly for teachers and learners at all levels. This should be accomplished through in-service training of teachers, workshops, seminars, and conferences. For students computer education should be a compulsory subject at all levels.
- All classrooms and auditoriums in Nigeria should be connected to the internet in order to enhance web-based instruction. The government should do this by paying internet connection fees to internet service providers (ISP) to provide internet services.
- Videophone, teleconferencing and multimedia systems e.g. multimedia computers and multimedia projectors should be provided in adequate quantities by the government of Nigeria for effective e-learning in secondary education.
- Teachers in Nigeria should be motivated and encouraged to develop and use multimedia courseware and software relevant to teaching and learning. The government should motivate teachers through provision of adequate funds for courseware development.
- The government of Nigeria should provide digital libraries in every educational institution. The library is the highest reservoir of knowledge and no educational institution can do without it. Ensure that each digital library has a server for storage, retrieval, uploading and downloading of information.
- The government of Nigeria should employ technologists and technicians to take care of internet facilities and equipment and to carry out routine repairs within education facilities.
- The government should set up standby generators and uninterruptable power supplies (UPS devices) to tackle the problem of epileptic or inconsistent power supply in order to support the use of electronic equipment for e-learning.

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