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UTILIZATION OF ICT RESOURCES AS A CHALLENGE TO UBE IMPLEMENTATION IN UPPER BASIC EDUCATION LEVEL

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Abstract

The study investigated the utilization of ICT resources as a challenge to UBE implementation in upper basic education level. It was a survey research design with four research questions guiding the study. All the basic science teachers in Upper Basic level of UBE from the 14 public schools in Obot Akara local government area formed the population of the study. Proportionate sampling technique was used to select 110 basic Science teachers who formed the sample for the study. Instrument for data collection was Basic Science Teachers' ICT utilization questionnaire. Frequencies and percentages were used to analyze data collected. Findings of the study showed that basic science teachers do not possess skills for ICT utilization. ICT infrastructural facilities are grossly inadequate for effective basic science instructional delivery. Based on these findings, it was recommended amongst others, that each state Universal Basic Education board should make necessary efforts to train basic science teachers on skills for utilization of ICT resources and provide ICT facilities in evolving creative ideas for meeting challenges on new initiatives for sustainable development.

Introduction

The National Policy on Education (NPE, 2008) identified four goals for JSS upper basic school education. They include, among others, providing the student with diverse basic knowledge and skills for entrepreneurship educational advancement; inculcating values and raising moral upright individuals capable of independent thinking, and appreciating the dignity of labour; equipping students with mental skills and capabilities to solve everything problem; arousing and sustaining the natural curiosity children through investigative opportunities available in science. For education in basic science at the junior secondary school level, the objectives include, developing interest in the subject, acquiring basic STEM knowledge and skills; developing reasonable level of competence in ICT applications that will promote entrepreneurial skills; applying skills to meet societal needs of creating employment and wealth; taking advantage of numerous career opportunities in the job market; and being adequately prepared to further studies in the sciences in the senior secondary level. These goals and objectives are in line with the objectives stipulated in the guidelines of the Nigerian National Policy on Science and Technology (FRN, 1999) that science and technology should form the basis for national development as well as a tool for influencing the thinking and working process of Nigerians.

It is on this basis that students are encouraged to acquire scientific skills and develop skills that will reposition them for positive attitudes and interest towards the sciences and in particular today, in acquiring skills of ICT for meaningful basic science knowledge and entrepreneurship .

Nigeria has made several attempts on reforms in reviewing, restructuring and realigning its basic science contents, objectives and policies to meet global changing trends. As a nation, it recognizes education as critical to meeting her set goals. ICT being on the lead is intended to promote and enrich a friendly-engaging instructional environment. Modern day instructions are therefore to take advantage of the benefits provided by these emerging technologies. Etiubon (2011) stresses that basic science teaching should incorporate new and emerging technologies

in planning and execution of lesson delivery as the computer and internet have become essential tools. Curricular offerings in basic science teaching should therefore evolve creative ways of promoting knowledge through the use of ICT.

ICT holds out the opportunity to revolutionize pedagogical methods, expand access to quality education, and improve the management of education systems (UNESCO, 2008). Basic science teachers have to exploit the potentials of ICT to transform the instructional process and learning enhancement skills. There is need to brace up to the challenges basic science teachers in Nigeria are facing through the deployment and use of ICT in schools by teachers. When properly integrated into a broader educational programme, it facilitates skill and knowledge acquisition; enhances varieties of learning ideas and opportunities through creative means thereby making learning interesting, stimulating motivational and concrete. The versatile use of ICT provides opportunities for students' knowledge expansion on higher order thinking (Etuk, 2008), problem-solving and skill acquisition for creativity and ideas-innovations. ICT-based technologies can improve the quality of teaching and provide varied and wide learning experiences that make for good pedagogical skills in capacity building for teachers' professionalism and expertise through ICT facilities use.

Recent events in knowledge and skill application of technology worldwide have affected the way basic science is taught and learnt, but Nigeria is still lagging behind in its non implementation of ICT- based instructional delivery in basic science. The types of education learners receive do not equip them to live effectively in this information age. There is therefore need, to improve the training of teachers for appropriate and effective basic science teaching as ICT is gaining control of how teaching should be done. UNESCO (2008) states that low education and literacy levels, lack of awareness of the capabilities of the technology and absence of skills to develop and use ICT applications represent significant obstacles to adoption even the physical and institutional infrastructure is available. Dirschweit (2009) found that the existence of various barriers such as poor infrastructure, lack of provision of equipment and training, has created a digital-divide among nations.

With ICT gaining global acceptance and its integration in every field of endeavour, it is important that concerted effort be made to equip teachers and students for challenges ahead. The Asians have revolutionized their school basic science curriculum to advance their economy more than two decades ago with the aim of achieving unprecedented scientific and technological feat. The public and private sectors are meaningfully driving their economy through support and research funds and active participation in providing most facilities such as infrastructure and instructional materials. This is done in diverse ICT trainings and programmes carried out for basic science teachers. These supports help for ease of curriculum implementation and innovations.

In Nigeria, there are many challenges that militate against the implementation of basic science teaching. Authors of basic science textbooks on one hand, publish incoherent and complex drawn textbooks with difficulty in comprehending structures, illustrations and labelings without integrating the means of ICT to teach the concept.

Students on their part complain that too many-subject-content-topics are lumped together making understanding and comprehension difficult for them without the use of ICT to decode some topic-difficulties. They position that their teachers are not trained on how to use the new textbooks so it becomes difficult teaching them with the approved textbooks. The learning environment itself with few structures on ground does not help them appreciate learning basic science.

Most teachers of basic science cannot write quality teaching materials for students who learn through technology to create sustainable livelihood. They are unable to prepare lesson plans that meet learners active participation in practical activities. The materials used for lesson delivery do not meet with lesson specifications to effect adequate knowledge acquisition of lesson content. This has led to students dwindling interest in the subject. According to Murphy (2012) assessing education means that teachers have to use ICT resources appeal to the interest of younger learners to attract their attention. This in effect will expose and nurture inherent potentials among learners to create sustainable livelihood using ICT skills they have acquired. Basic science teachers' responsibility therefore, is to facilitate the cognitive, social and productive skills by integrating learning experiences that utilizes various aspects

of ICT. This will engage learners knowledge for self-reliance, development initiative and employment generation. Etuk (2008)

This implies that effective basic science teaching demands that the teacher should use a variety of ICT instructional materials as basic science is activity-oriented. Problem affecting the implementation of ICT utilization in UBE include, inadequate and unskilled ICT basic science teachers, inability of teachers to meaningfully interpret the performance objectives on ICT guidelines and software, inadequate provision of infrastructure such as buildings maintenance and repairs workshops for ICT programmes and accessories, inadequate communication skills to effectively use ICT resources incorporating and adapting local resources on e-library information services for simulation on ICT devices. These problems hamper the proper and effective implementation of ICT utilization in junior (upper basic schools).

Lack of skilled teachers with relevant knowledge and competence on use of ICT determines students' level of success or failure in basic science. Teachers therefore need to be equipped in developing new concepts to update their knowledge and improve their professional skills by attending workshops, seminars and conferences on ICT training. As they engage in reading, learning from science and technology journals, magazines, using cybercafés for self-study, they gain confidence and take interest in utilizing ICT resources for their own development.

Information base for knowledge dissemination has been transformed with the participation of large number of students using this medium. Ugo (2012) opined that it is not possible to develop students' creative ability, ideas and skills without adequate e-library online information services. e-library information services provide access to current books, journals, researchers, e-mail messages and global network of online libraries that connects to wider access of knowledge.

Effective teaching of basic science in upper level UBE can only function with adequate infrastructure in place. Adequate infrastructure will equip basic science teachers in promoting skills, competence and knowledge – sharing to impart effectively on students' knowledge and improve standards. Oyedeji, Saliu and Oluwolola (2008) revealed that there is inadequate provision of scientific and technological equipment and laboratory facilities to impart adequately on students' knowledge. When structures are in place, then development models could be developed for strategic national planning and capacity building development.

The general objective of this study was utilization of ICT resources as a challenge to UBE implementation in Upper Basic Education level. Specifically, the study intended to determine

1. The skills basic science teachers possess for ICT utilization.
2. The availability of instructional resources for ICT utilization.
3. The availability of e- library information services for ICT utilization.
4. Infrastructure put in place to equip basic science teachers utilization of ICT.

Research Questions

The following research questions guided the study.

1. What are the skills possessed by basic science teachers for ICT utilization?
2. What are the ICT resources available for basic science teachers' utilization?
3. What e'-library information services are available to update basic science teachers' knowledge on ICT utilization?
4. What infrastructures are in place to equip basic science teachers' utilization of ICT?

Method

The study adopted a survey research design. The population was all the 412 basic science teachers of upper basic level in all 14 public schools in Obot Akara Local Government Area of Akwa Ibom State. Proportionate sampling technique was used to select a sample size of 110 basic science teachers from JSS1 (34), JSS2 (38) and JSS3 (38). Basic science Teachers ICT utilization Questionnaire was the instrument used to collect data for the study. The

instrument was validated by two lecturers in computer science department and one ICT technologist in the Vocational Department of the University of Uyo, Uyo. Frequencies and percentages were used to analyze data collected.

Results

TABLE 1: Responses of Basic Science Teachers on Skills Possessed for ICT Utilization

| Items | Possessed | | Not Possessed | |
|--|-----------|------|---------------|------|
| | Frequency | % | Frequency | % |
| 1. Using mouse to search website Environments for browsing | 23 | 20.9 | 87 | 79.1 |
| 2. Creating software programmes | 18 | 16.4 | 92 | 83.6 |
| 3. Creating websites designs for quality instruction | 31 | 28.2 | 79 | 71.8 |
| 4. Using simulation for virtual practical activities | 11 | 10.0 | 99 | 90.0 |
| 5. Operating computers and using basic software for word process | 36 | 37.2 | 74 | 67.3 |
| 6. Creating effective computer-based presentation | 20 | 18.2 | 90 | 81.8 |
| 7. Creating multimedia documents to support instruction | 9 | 8.2 | 101 | 91.8 |
| 8. Booting and using computer cables to switch on and off a computer | 91 | 82.7 | 19 | 17.3 |
| 9. Searching and downloading resources for instruction online | 47 | 42.7 | 63 | 57.3 |
| 10. Using word sheet, spreadsheet and writing formula to demonstrate power-point | 29 | 26.4 | 81 | 73.6 |

Table 1 shows items 1 to 10 having very high percentages indicating that upper basic science teachers do not possess skills of ICT utilization except item 8 on skill of booting and using computer cables to switch on and off a computer. Only 42.7% of item 9 can search and download resources for instruction online.

TABLE 2 : Responses of Basic Science Teachers on Available ICT Resources of Utilization

| | Items | | Available Frequency | | Not Available Frequency | |
|---|--------|------|---------------------|------|-------------------------|---|
| | | % | | % | | % |
| 11. Mouse and Keyboard accessories | 46 | 41.8 | 64 | 58.2 | | |
| 12. Flash drive, CD-ROM, DVD, Slides | 2724.5 | | 83 | 75.5 | | |
| 13. Digital camera with video-Accessories | 16 | 14.5 | 94 | 85.5 | | |
| 14. TV screens, Projector, Monitors for recording | 39 | 35.5 | 71 | 64.5 | | |
| 15. Laptops, Softwares and Tape recorders | 25 | 22.7 | 85 | 77.3 | | |
| 16. Scanners and remotes | 21 | 19.1 | 89 | 80.9 | | |
| 17. Computers | 76 | 50.9 | 34 | 49.1 | | |

Table 2 shows that ICT resources are not available for utilization for the delivery of instruction by basic science teachers. Only 50.9% indicated availability of computers.

TABLE 3 Responses of Basic Science Teachers on Available e'-Library Information Services

| | Available | | Not Available | |
|---|-----------|------|---------------|------|
| | Frequency | % | Frequency | % |
| 18. Accessibility to websites internet information | 31 | 28.2 | 79 | 71.8 |
| 19. Books and knowledge sharing | 17 | 15.5 | 93 | 84.5 |
| 20. Search tools for online study | 17 | 15.5 | 93 | 84.5 |
| 21. Search engines to connect to relevant contents | 8 | 7.3 | 102 | 92.7 |
| 22. Provide research materials unavailable in local libraries | 15 | 13.6 | 95 | 86.4 |
| 23. Access to academic libraries | 13 | 11.8 | 97 | 88.2 |
| 24. Widening access to education | 29 | 26.4 | 81 | 73.6 |
| 25. Improve online pedagogies | 24 | 21.8 | 86 | 78.2 |

In Table 3 findings on all the items shows that e'-library information services are not available for basic teachers to access instructions online for teaching.

TABLE 4: Responses of Basic Science Teachers on Infrastructure in Place for ICT Utilization.

| | In Place | | Not in Place | |
|---------------------------------------|-----------|-----|--------------|------|
| | Frequency | % | Frequency | % |
| 26. ICT studios | 8 | 7.3 | 102 | 92.7 |
| 27. Maintenance/repairs workshop | 0 | 100 | 110 | 100 |
| 28. Spare parts and accessories rooms | 0 | 100 | 110 | 100 |
| 29. Airconditioners/Fans | 5 | 4.5 | 105 | 95.5 |
| 30. PHCN/Generator electricity supply | 0 | 100 | 110 | 100 |

Results in Table 4 reveals that all the listed items are not in place to equip basic science teachers for ICT utilization.

Discussion

The result of the study in Table 1 revealed that Upper Basic Science teachers do not possess relevant skills for ICT utilization that will improve and promote classroom instruction. This findings is in agreement with (Etuk, 2008) who found that teachers have not acquired ICT skills that will help each learner recognize his unique talents and provide relevant experiences to strengthen their natural ambition that will be beneficial to himself, his employer and society. The only skill basic science teachers possessed was using computer cables to switch –on and off a computer, a skill they have already possessed from home on use of the TV sets. Table 2 showed that ICT resources are not available for delivery of instruction by basic science teachers. This corroborates the findings of Etiubon (2011) and Murphy (2012) who posited that teachers have to use ICT resources to appeal to the interest of younger learners to attract their attention and evolve creative ways of promoting knowledge for greater career opportunities.

Findings on Table 3 revealed that e'-library information services are not available for basic science teachers to access instructions online for teaching. This is in agreement with Ugo (2012) who found that it is not possible to develop students' creative ability, ideas and skills without adequate e'-library online information services. There is an e'-library complex in Akwa Ibom State but it is non-functional and so online information services cannot be accessed by basic science teachers.

Findings in Table 4 showed that infrastructure are not put in place to equip basic science teachers' utilization of ICT. This is in agreement with (Oyedeki, Saliu and Oluwolola, 2008) who corroborated that there is inadequate provision of technological equipment and laboratory facilities to impart adequately on students' knowledge. There is need therefore, to provide and put infrastructure in place to train and equip teachers for ICT skills to move the education reform agenda forward.

Recommendation

- (a). Basic science teachers should be exposed to acquire skills on ICT utilization by their various school authorities and with community assistance.
- (b). The NERDC should review the basic science curriculum, scaling it down to meet what the learners can handle, comprehend and effectively made use of by integrating guidelines on ICT for creativity nurturing.
- (c). Each state having e-library information services should open it up to teachers and students for wider knowledge-information sharing and accessibility.
- (d). The Government should encourage private sectors to partner with it to provide adequate infrastructure to equip basic science teachers for ICT utilization in instruction.

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