

Digital Literacy Initiative as a Transformational Tool for the Delivery of Teacher Education Programs for Professional Development in Nigeria

Ayodele M. ASEBIOMO (PhD)
NERDC, Sheda Abuja.
E-mail: ayodele.asebiomo@yahoo.co.uk

Abstract
To make teaching creative and effective in the 21st century, the role of teacher as an organizer cannot be overemphasized. Digital literacy has blossomed in the nation with its popularity among the youth. However, sweeping and abrupt the changes are, most teachers have absorbed them with dispatch. The information tsunamis have made the teachers to have hard time monitoring the student to use the technology to promote teaching and learning. Without digital literacy, our teachers will be at a major disadvantage, both economically. The population of the study consisted of Basic and Post Basic School Teachers in Ekiti State of Nigeria. Data was collected with the aid of a Digital Literacy and Web Based Instruction Analysis (DLWBIA). Instrument was analyzed with Correlation and Regression Statistics. It was found that digital literacy is a necessity for all stakeholders in education and teachers in particular should be giving adequate computer training to facilitate teaching in schools. Therefore, it was recommended that government, and education stakeholders should empower teachers, for effective delivery of education programmes in schools.
Keywords: Digital Literacy, Basic and Post Basic Education, Web Based Instruction, stakeholders.

1. Introduction

In a typical 21st Century Classroom set-up, web resources are used to disseminate information rather than the face-to-face encounter while students equally receive or access the information out of class via same. According to Oyekale, (2012), the advantages of web base instruction include:

- *Freeing the teacher to use class time to develop more hands-on approach to the difficulties of the materials at hand, or to answer questions and encourage deeper discovery that the teacher would not otherwise have time to engage in.*
- *Enabling the students spend time in class practicing with the guidance of the teacher rather than listening to a "talking head".*

This signifies that the role of the teacher in the 21st century classroom is changing as e-learning begins to augment traditional learning. Teachers are now allowed to become more of mentor and guides, and less of orators and lecturers while students are expected to conduct research on their own and come to the community experience (the classroom) ready to question, practice, or collaborate with fellow students. They are expected to collaborate on projects using digital venues as well as the in-class venue. With the walls of the classroom now becoming less physical with digital devices, the amount of knowledge a student can acquire is on the increase with the use of technology. It is expected that everyone has the technology skills; use technologies as part of practice; accept technology integration; and use it as a component of best practice.

Teaching generally involves the use of resources (human and materials), it is an enormous task to build the ICT infrastructure and train the teachers and students at the same time. But it is more important to have a strategy for developing the skills of the workforce by first addressing the digital literacy needs of teachers and educators, before the needs of students.

The use of computers and digital technology is a requirement for the future empowerment of our population. Without digital literacy, our youth will be at a major disadvantage, both economically as well as educationally. If we fail to provide them with education for employment, the size of the unemployment problem will dwarf the current situation and bring tremendous hardship with it.

Web-based instruction is teaching and learning that are supported by the attributes and resources of the internet. While education is a tool for achieving desirable social change that can lead to meaningful growth and development of the nation, instruction is the only means by which this can be transferred or imparted to the target group.

Building the standard of digital literacy among teachers is expected to have a master plan that defines the minimum skills of their teachers and implement a standardized approach toward training and certifying them. But, do we have any standard? Effort to enhance good digital based education must begin with the teachers and educators. In short, this sector should be 21st century compliance. They should move away from traditional curriculum implementation strategies and key with modern way of disseminating information using digital resources rather than face-to-face encounter. It is a known fact that the role of the teacher in the 21st century

classroom is changing as e-learning begins to augment traditional learning.
According to Oyekale, (2012) Teachers are expected to collaborate on project using digital resources as well as the in-class venue. The advantages of teachers and teaching being ICT driven is overwhelming, they include:

- The innovations of giving the teacher enough time to use the class time to develop more hands-on approach to the difficulties of using the materials available per time.
- Assist teachers to answer questions and encourage deeper discovery that he would not otherwise have time to engage in and
- Give the students adequate time to spend in class practicing and demonstrating with the guidance of the teacher rather than listening to a "*talking head*"

To build the ICT infrastructure and train the masses at the same time is an enormous task. But it is more important to have a strategy for developing the skills of the workforce by first addressing the digital literacy needs of teachers and educators, before addressing the needs of students.

2. Statement of the Problem

Implementing digital based instruction at secondary school level is a requirement for the future empowerment of our population. Without digital literacy, our youth will be at a major disadvantage, both economically. If we can educate the youth population and create jobs and opportunities for them, the economic benefits will be tremendous. And likewise, if we fail to provide them with education for employment, the size of the unemployment problem will dwarf the current situation and bring tremendous hardship with it. The agents of the change are the teachers who must be computer literate for them to deliver effectively and efficiently. No one can give what he or she did not have.

3. Research Questions

- Do Nigerian teachers have the skills required to use digital technologies?
- If they possess any, how are these skills acquired?
- What type of support, training, and professional development do they need to cope with 21st century pedagogy?
- Would empowerment of students in digital literacy improve their global competitiveness?
- What is the role of other stake holders in education on the effective implementation of digital literacy education?

4.1. Design of the Study

The population of the study consisted of teachers, students and principals of Basic and Post Basic Education in Ekiti State of Nigeria. Survey design was used because a survey reveals current conditions and also shows needs for improvement

4.2. Sample

The sample for the study was 314 participants comprising of principals, teachers and students from secondary schools in Ekiti State of Nigeria that were randomly selected as follows: four secondary schools randomly selected from each of the thirteen Local Government Area Councils of Ekiti State giving a total of 52 schools. Secondly, in each of the fifty two selected schools, 2 principal/vice principal, 2 teachers and 2 students were randomly selected from each school making a total of one hundred and four respondents for principal/vice principal, teachers, and students respectively. The choice of Ekiti State was made because of the giant strive of the state as one of the few states in the country that have demonstrated practical interest and demonstration in computer education by giving computer laptop to each of her senior secondary school students as well as teachers.

4.3 Instrument

The research instrument used for the study was a questionnaire named Digital Literacy and Web Based Instruction Analysis (DLWBIA) developed and validated by the researcher and two other research fellows. The instrument has two sections, A and B; Section A sought information on the personal data of the respondents, while B sought for their views on variety of statements on digital literacy. In sections B, each item had a four-point rating scale of Strongly Agree (SA), Agree (A) Disagree (D), and Strongly Disagree (SD).

5. Data Collection and Analysis

The researcher and two research assistants participated in the field administration and retrieval of the 314 questionnaires which took three weeks to complete. Frequencies, means and ranking statistical tools were used to analyze the data.
Using an interval scale of 0.05 and a mean of 1.50 [i.e. 0.05+1.50], the cutoff point was fixed at 1.55. Therefore, items with means of 1.55 and above were considered as significant and below as not significant.

6. Result and Discussion

The results of the data analysis are presented in Tables 1-3.

Table 1: Students Perceive Views of Digital Literacy Statements

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Rank	Remarks
I have opportunity to interact with computer most of the days in a week.	102	02	0	0	3.98	1	Significant
Computer is a necessary teaching resource a school must possess.	100	02	02	0	3.94	2	Significant
The use of computer to teach is the best thing that can happen in the school system for now.	99	02	02	01	3.91	3	Significant
Giving computer to students by government is a welcome development in our state.	100	01	01	01	3.90	4	Significant
Our teachers should be adequately trained on the use of computer and web-based instruction to teach in the school.	81	15	05	03	3.67	5	Significant
Computer education should be made a compulsory subject in our schools.	77	20	03	04	3.64	6	Significant
We have qualified computer teachers in my school.	66	25	10	02	3.47	7	Significant
Browsing from internet will facilitate my learning as a student.	63	25	13	03	3.42	8	Significant
There is well equipped computer laboratory in my school.	40	15	45	04	2.88	9	Significant
There is adequate electricity current to power computers at home and in the school.	20	15	50	19	2.35	10	Significant

Table 1 show that students perceived all the 10 digital literacy statements identified by the researcher as significant. This implies that digital literacy is a developmental project that is relevant to the development of the country educational system. However, their responses to the statement of equipped computer and adequate electricity have almost same acceptance and disagreement view.

UNESCO (2003) findings identified several problems and challenges confronting education in Nigeria to which solution are being proffered to be deficiencies in the curriculum content of education, integration of computer literacy in African and third world schools, gross inadequacies in the infrastructural facilities at all levels of education, inadequate funding, overcrowded classroom and menace of cultism and exam malpractices.

Table 2: Teachers' Perceived Views of Digital Literacy Statements

Statements	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Rank	Remarks
The use of computer to teach is the best thing that can happen in the school system for now.	99	3	2	0	3.95	1	Significant
Computer is a necessary teaching resource a teacher must possess.	100	2	2	0	3.94	2	Significant
Giving computer to teachers by government will enhance teaching and learning in schools.	97	4	2	1	3.89	3	Significant
Browsing from internet will facilitate my teaching as a teacher.	93	4	4	3	3.79	4	Significant
There is need for me to undergo study leave on the use and application of computer in teaching and learning.	83	20	1	0	3.79	5	Significant
I have opportunity to use computer of any kind often.	85	13	2	4	3.72	6	Significant
Regular training for teachers is the only way to facilitate computer teaching in schools.	90	4	4	6	3.71	7	Significant
Computer literacy should be major criteria for teacher's promotion and employment.	65	35	2	2	3.57	8	Significant
There is adequate electricity current to power computers at home and in the school.	30	21	41	12	2.66	9	Significant
There is well equipped computer laboratory in my school.	34	20	1	49	2.38	10	Significant

Table 2 shows teachers' perceived views of digital literacy statements of reforms and implementation. The results presented in table 2 indicate that teachers identified all the statement as significant. The ranking of the perceived importance of digital literacy (3.95) as the most significant statement while the status of availability of computer laboratories in school with mean score of 2.38 as the least statement. The agreement pattern of teachers to all the statement was very strong which attest to the importance and relevance of digital literacy to the educational development of the state.

Table 3: Stakeholders' Perceived Views of Digital Literacy Statements

Statements	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Rank	Remarks
Necessary infrastructure is needed to make computer literacy feasible in the state.	102	2	0	0	3.98	1	Significant
Provision of computers to students and teachers is a policy that we subscribed to and we shall do all what it needed to make it succeed.	101	2	1	0	3.96	2	Significant
As an administrator of education, 1 equally needs computer literacy to perform effectively on my job.	100	2	1	1	3.93	3	Significant
Lack of necessary infrastructure like electricity, laboratories, and trained teacher could hinder the implementation of computer literacy in our schools.	100	2	1	1	3.93	3	Significant
There is need for total restructuring of education to encourage computer education in the state.	99	2	2	1	3.91	5	Significant
It is the responsibilities of both the government and parents to develop digital literacy in the state	98	2	3	1	3.89	6	Significant
The government has done much to promote digital literacy among school students in the state but there is room for improvement.	96	4	2	2	3.87	7	Significant
Web-based instruction would not by any means affect school aged students negatively if both parents and teachers perform their own role effectively.	94	3	3	4	3.80	8	Significant
Supervisory agency like inspectors of education needs computer education to faithfully perform their own education responsibilities.	88	8	4	4	3.73	9	Significant
Adequate sensitization and advocacy of all citizen of the state is necessary to spread the importance of computer literacy.	88	6	4	6	3.69	10	Significant

Table 3 shows principals' perceived digital literacy statements. The results presented in table 3 indicate that principals agreed totally to all the statements as solutions to the effective teaching and learning in schools across the state. The ranking of the statement as perceived by the principals revealed that adequate infrastructures is necessary for successful implementation of digital literacy with mean of 3.98 while adequate sensitization took the least stage but with high level of significant (3.69). Egwaoje (2007) from his finding asserts that the presence of new technologies has led to the demands for training and retraining in new skills in the existing and new occupational areas so that people might fit into today's and tomorrow's world of works. Enlightenment or awareness is coming up gradually and with the availability of industries, opportunities are expanding in vocational and technical areas such as architecture, computer science, medicine, engineering etc. hence there is need for more qualified teachers in teaching and learning.

7. Implication and Recommendation

The fact that the reforms on education in the state have genuine impact on digital education as attested to in the table one of the findings and as revealed in the research, the findings of this research have a number of implications for digital literacy in particular and education in general. Hence, based on the findings of this study, the following recommendations are made:

i. **Repositioning of Digital Literacy in Nigeria:** There is need to borrow a leaf from the 21st century education of the developed world whose training and emphasis is on advance technology. According to Kabiru & Dairo, (2007), "no nation can be self-reliant without developing her indigenous talents and technology to a world standard" We should have a rethink on our traditional system of education with a view to making it more effective and relevant to Nigeria for self reliance and national emancipation. Teaching in our schools should no longer be the conservative type but innovative for national development which digital education provides.

ii. **Attitudinal change**: The type of education or experience one allows him or herself to be exposed to determines to greater extent the level of his or her productivity for self- reliance in life. The way you see your self is superior to the way others see you. In fact, the ways you dress determines the way you are addressed. If people regard digital education as superior, we must begin to see ourselves as a successful entrepreneur in any field of study we find ourselves. We must begin to see beauty and success in digital literacy commonly called computer education or Information Technology (IT) even if the society does not see the usefulness of digital literacy to everyday life.

iii. **Adequate Funding**: Computer Education is capital intensive and needed adequate funding in order to produce the desired result. Government should ensure adequate supply of the necessary infrastructures to schools to enhance digital literacy teaching. Above all, government, NGOs and philanthropists should come together to fund digital literacy in the area of equipment and infrastructures. Budgetary allocation to education in general should be increased.

iv. **Man-power Management and Development**: It is not possible for anyone to teach the skill he does not possess no matter how good he may be in teaching methodology. The demand for qualified experienced and dependent personnel in computer education is very high. Most of these qualified personnel prefer to go to industries and oil companies for greener pastures. There must be staff development programmes as suggested by Kabiru & Dairo (2007). In-service training/workshop/seminar and conference should be organized for all teachers to among other things prepare relevant, valid and reliable instruments/materials that can be used for effective teaching of digital literacy in schools. There is need for improved pay package to retain information technology teachers in the classroom.

v. **Strategic Curriculum Transformation**: According to Obioma, (2006), *"in order to sustain the on-going national reforms, Nigeria needs to grow the appropriate culture that will engender positive values and in the process bring about peace in the citizenry. This can be accomplished through systematic education in the generic context through the backbone of strategic curriculum transformation"*. Curriculum planners and developers in all subjects should come up with a computer-based curriculum to provide educators with competent skills needed in the present day global village. The advancement of knowledge, innovations and the diffusion of new method of production are aided by higher level of education and training (Dekom, 2007). Effective and efficient curriculum restructuring and transformation strategies is what will guarantee intense in-plant discussion on how best to select what to teach and institute dynamic delivery system.

vi. **Automation of Examination Administration**: The adoption of Computer Based Test (CBT) platform as a transformative tool for educational advancement will be a welcome development which will promote the learning of digital competency. All necessary requirements that will foster these must be put in place such as adequate staffing and provision of ICT equipment in schools, advocacy and sensitization towards full migration from Paper Pencil Test (PPT) to the Computer Based Test (CBT) platform, international partnership, and creation of CBT centres across the country.

8. Conclusion

Implementing digital based instruction in our secondary schools is a requirement for the future empowerment of our population. Without digital literacy, our youth will be at a major disadvantage, both economically. If we can educate the youth population and create jobs and opportunities for them, the economic benefits will be tremendous. Likewise, if we fail to provide them with education for employment, the size of the unemployment problem will dwarf the current situation and bring tremendous hardship with it.

The place of computer literacy cannot be overemphasized in our educational system and so any step that will transform its teaching to a word class global ethics must be encouraged hence, computer-based instruction is the 21st century could make a meaning.

Teaching would not change if we are using the same traditional approaches that have taken it to its present state, however, necessary but adequate infrastructure like electricity, laboratories, and trained teacher; total restructuring of education; instituting supervisory agency like inspectors of education for monitoring policy implementation; adequate sensitization and advocacy of all citizen are some of the measures necessary to promote digital literacy in our schools. All hands must be on deck by Government, School Management,

Teachers and Students to see that digital literacy instruction is given the adequate support in our secondary schools.

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