FACTORS INHIBITING EFFECTIVE USE OF E-LEARNING IN TEACHING AND LEARNING OF MATHEMATICS IN OYO STATE PUBLIC PRIMARY SCHOOL'S

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Abstract

The use of Information and Communication Technology (ICT) to improve teaching and learning of mathematics may be connected with the social educational needs. Previous researches on ICT pointed out hindrances to the use of ICT in secondary schools and universities. However, most of these studies have left out factors hindering the use of ICT to improve teaching and learning of mathematics in primary schools which is the foundation on which other level of education are building on. Therefore, this study investigated factors inhibiting effective use of e-learning in public primary schools in Oyo State. Two research questions were posed. The research adopted a descriptive survey method. The population were all primary school teachers in Oyo state. Simple random sampling was used to drawn 15 Local Government Areas, 10 schools and 5 teachers from each school. Total respondents were 750 teachers. A semi-structured interview was chosen as it is the most appropriate strategy to elicit response. The interviews were transcribed and analysed through thematic content analysis. A list of categories was generated from the data to form the frame for analysis. Simple percentages were used to answer the research questions. Findings showed that e-learning facilities are not available in some schools, most teacher teaching mathematics in primary schools have shallow knowledge of e-learning and majority of teachers teaching mathematics are not mathematics expert among others. It was recommended that the Government should provide adequate facilities, organize workshops on e-learning and recruit qualified mathematics teachers.

KEY WORDS: Mathematics, Effective teaching, E-learning, factors inhibiting

Introduction.

The importance of mathematics to mankind in whatever form cannot be over emphasized most especially in this critical moment where knowledge of mathematics is greatly needed in man's physical environment. Mathematics is defined as the study of patterns and relationships, a way of thinking, seeing and organizing the world, a language, a tool, a form of art, and finally as power and a social filter (Steen 1988 in Olaniran, Afolabi, & Adebiyi, 2016). Mathematics develops and supports children's thinking, reasoning and problem-solving skills (Oshin, 2011). As useful as mathematics is, studies have shown many negative phenomena that occur in mathematics classrooms, which kill the interest of learners (Kofi, 2016). For example, poor delivery of subject matter, teaching of mathematics in abstract, that is lack of adequate instructional material which make the learners belief that mathematics is nothing more than a set of formula and symbols which are not practical, and must be learned through memorization and drills. This negative phenomenon may be connected with the social educational needs and the nature of mathematical knowledge a child developed with. The idea emanates from the primary school level which is the grassroots, carries to secondary school and tertiary level which is the apex and to correct such impression, to alleviate the phobias in mathematics and to prevent the negative ideas from passing from one generation to another, there should be a great improvement in the teaching-learning process in mathematics class.

Zwalchir (2010) associates the quality of education to quality of teachers and teacher education which can be measured by the quality of teaching, learning environment, learners and the quality of learning outcomes. This simply means that the poor performances of students in mathematics are as a result of poor input and process. Mathematics teachers are expected to be well versed and have deeper knowledge and enough practical experience of the mathematical concept to be discussed in class. However previous research works have however identified pupils poor performance in the subject most especially in areas like geometry, mensuration, SETS and trigonometry as revealed by chief examiner reports of school certificate

examinations in mathematics core papers.(WASCE, 2017). He identified specific areas where students found it difficult evaluating mathematical expressions involving the application of BODMAS, completing tables of values and drawing graphs of quadratic relation, drawing Venn diagram involving three intersecting sets, carrying out defined operations in modulo Arithmetic, solving quadratic equations, deducing the gradient of a normal to a curve, at a given point, integrating a polynomial function, finding the turning point of a curve, writing relevant mathematical equation, from given word problems, reading antilogarithms of given numbers from the tables, applying circle theorem in finding unknown angles, lack in-depth knowledge in geometry and mensuration etc. one of the factors identified to be responsible for the unfavourable poor performances in the areas highlighted is poor background in mathematics traceable to the grass root teaching processes at the primary school level, because if the foundation is faulty, what can the righteous do.

Mathematics understanding influences decision making in all areas of life whether private, social and civil has to be handled in a more meaningful way at all levels of Education (Oyeniran and Adebiyi, 2019). Therefore, there is need for effective teaching of all mathematical concepts at the foundational level, using teaching strategies or technique that encourage learners' participation, make them develop mathematical interests and allow pupils to be physically active during a mathematics lesson. Mathematics teachers are encouraged to be more creative with regards to their methods of teaching. It is an educational believes that ineffective teaching methods bring about poor performance in students across all disciplines including mathematics. In order for instruction to be effective in mathematics classes, it should involve both mental and physical activity. Mathematics teacher has to acquaint themselves with the use of modern technology, acquire knowledge in Information and Communication Technology (ICT), and must be able to process and evaluate new knowledge to meet new teaching demands and practices in mathematics. For the successful implementation of ICT policies, programmes and instructional use of ICT in Nigerian schools, one cannot think of ICT integration and use in instructional delivery without determining whether the teachers are acquainted with the operational skills of e-learning components. National ICT Policy lays out the inputs required to strengthen all productive sectors and ultimately transform Nigeria into a knowledge based, and globally competitive country, in alignment with the National Vision 20:20 objectives (NITEF, 2010). It establishes a comprehensive framework for the ICT sector that will encourage and stimulate investment and also enable rapid expansion of ICT networks and services that are accessible to all at reasonable costs. Therefore, strengthening of ICT human capital should be accorded the highest priority (ICT, 2010). Integration of ICT will not only revolutionize teaching of mathematics but also engender the development of students' innate scientific inquiry mind and their critical thinking abilities.

Information and Communication Technologies offer innumerable benefits in enriching the quality and quantity of learning in our institutions. Despite the prevalent nature of ICT in virtually every aspect of human endeavours, they have not been widely integrated into the teaching and learning process in schools most especially primary schools. Its integration in teaching learning process will be dependent on teachers' knowledge, competence and willingness to integrate it into their teaching. Empirical findings have indicated that even teachers who have competence in the use of ICT do not integrate them in their teaching. When teaching and learning in classroom and out of classroom are electronically supported and facilitated, it is called e-learning. It is essentially technology based. Uhaegbu (2001) opined that it involves the use of computer and its devices to transfer and inculcate knowledge and skills. Adeoti and Adebayo (2014) define e-learning as the use of any electronic technology to help in the acquisition and development of knowledge and understanding in order to demonstrably and positively influence behaviors. The trend of record of low use of ICT in teaching and learning processes by teachers is not limited to secondary schools alone but rampart among lecturers of higher institutions of learning. This has been the subject of major concern to educational planners, administrators, stakeholders in education and teachers themselves.

Osakwe (2010) in his work on the influence of Information and Communication Technology on Teacher Education and professional development in Delta State revealed that there was no significant relationship between ICT and lesson presentation which could be due to lack of information literacy of teacher trainers. The study conducted by Jones (2004) discovered seven barriers affected the integration of ICT into lessons: lack of confidence among teachers during integration, lack of access resources, lack of time for the integration, lack of effective training facing technical problems in use, lack of personal access during lesson preparation, age of the teachers and teaching experiences. British Education Communications and Technology Agency (Becta) (2004) also agreed that lack of technical support available in schools and technical maintenance is the main problem in integrating ICT in classrooms. Thus, there are still several factors hindering the integration of ICT into lessons. Hare (2007) also stated that lack of policy framework, inadequate infrastructure and high cost and inadequate in-service training on ICT integration in education. Nwana (2012) studied the challenges in the application of e-learning by secondary school teachers in Anambra State and concluded that inadequacy of e-learning infrastructure posed a major challenge for teachers' non-use of e-learning in classroom and that the available ones are not utilized because the teachers lack the knowledge and skills of computer application. However, the quality of output of any operation is a function of the input that is processed. Richardson (2009) claimed that the ICT integration in teaching is still difficult for some teachers due to lack of training and practice. Jones (2004) discovered that lack of technical support was a barrier to the successful integration of ICT in teaching. Lack of technical support discourages teachers from adopting and integrating technology in classrooms (Korte & Husing, 2007).

Utilization of e-learning to improve teaching and learning of mathematics may be connected with the social educational needs. This idea emanates from the primary school level which is the grassroots and the use of Information and Communication Technology (ICT) in teaching and learning for the improvement of our educational sector cannot be overemphasized. Previous researches on ICT pointed out hindrances to the use of ICT in secondary schools and universities. However, most of these studies have left out factors affecting the use of ICT to improve teaching and learning of mathematics in primary schools which is the foundation on which other level of education are building on. Also, the researcher realized from literature and experience that most teachers who have knowledge of ICT don't inculcate it in teaching and learning process. To fill these identified gaps, the study examined factors inhibiting against effective use of e-learning in teaching and learning of mathematics in Oyo State public primary schools.

Research question

Two research questions were answered

1. What are the identified factors inhibiting against effective utilization of ICT in primary schools?

2. Which of the factors is most prevalent?

Methodology

The researcher adopted a descriptive survey design method, using all primary school teachers in Oyo state. Simple random sampling was used to drawn 15 Local Government Areas (LGAs), 10 schools from each LGAs and 5 teachers from each school. Total respondents were 750 teachers. A semi-structured interview was chosen as it is the most appropriate strategy to elicit response towards understanding a phenomenon (Creswell, 2007). The interviews were transcribed and analysed through thematic content analysis. A list of categories was generated from the data to form the frame for analysis. Simple percentages were used to answer the two research questions.

Results

1. Research Question 1: What are the identified factors inhibiting against effective utilization of ICT in primary schools?

Table 1
Factors inhibiting against effective utilization of ICT and Percentage of respondents that identify each factor

Factors identified	Percentage (%)
Inadequate knowledge of E-learning	65
E-learning facilities availability	50
Lack of capacity building	55
Schools strategies and conception	30
Lack of confidence among teachers during integration	35
Lack of access to ICT resources	75
Instability of power supply	82
Lack of effective training	85
Facing technical problems when use	30
Lack of personal access to computer during lesson preparation	90
Teachers' hesitancy in integrating ICT	63
Amount of workload	72
Insufficient time	88

Table 1 revealed thirteen (13) factors inhibiting against effective utilization of E-learning in teaching and learning of mathematics in primary schools and the percentage of participants that suggested each item.

Research question 2: Which of the factors is most prevalent?

The most prevalent factors as revealed in Table 1 are lack of personal access to computer during lesson preparation (90%), insufficient time (88%), Lack of effective training(85%), Instability of power supply (82%), Lack of access to ICT resources (75%), Inadequate knowledge of E-learning (65%), Teachers' hesitancy in integrating ICT (63%), Lack of capacity building (55%), E-learning facilities availability (50%).

Discussion

The findings revealed that some of the schools were resourced with ICT facilities, but the barriers identified in table 1 above were obstacles to the teachers to incorporate ICT in their teaching. The finding was in consonance with the study conducted by Jones (2004) who discovered seven barriers affected the integration of ICT into lessons: lack of confidence among teachers during integration, lack of access resources, lack of time for the integration, lack of effective training facing technical problems in use, lack of personal access during lesson preparation, age of the teachers, and teaching experiences. It is also in agreement with the work of Becta (2004) who discovered that lack of technical support available in schools and technical maintenance in integrating ICT in classrooms as part of the problems. Hare (2007) also stated that lack of policy framework, inadequate infrastructure and high cost, and inadequate in-service training on ICT integration in education as part of the problems. The result also toil the line of
Nwana (2012) who studied the challenges in the application of e-learning by secondary school teachers in Anambra State and concluded that inadequacy of e-learning infrastructure posed a major challenge for teachers' non-use of e-learning in classroom and that the available ones are not utilized because the teachers lack the knowledge and skills of computer application. However, the quality of output of any operation is a function of the input that is processed. Richardson (2009) claimed that the ICT integration in teaching is still difficult for some teachers due to lack of training and practice. It also supports Jones (2004) and Korte

and Husing (2007) who found that lack of technical support was a barrier to the successful integration of ICT in teaching.

The finding that teachers' hesitancy in integrating ICT support the finding of Albirini (2006) who found that teachers' attitudes are major predictor of the use of new technologies in the educational settings. It also supported Baylor and Ritchie (2002) who stated that the successful utilization of technologies in the classroom depends mainly on the teachers' attitudes toward these tools in adopting and integrating. Hence, it can be understood that teachers' attitudes have direct impact on the usage, frequency of technology and usage amount of the technology

Conclusion

The building of the physical infrastructure as well as teacher training, teaching materials and internet facilities are necessary before the full benefits of the e-learning educational can be achieved in educational settings. The findings revealed that most primary school teachers are experiencing challenges such as inadequate facilities, facing technical problems when use, lack of personal access to computer during lesson preparation, lack of teachers' exposure to training and retraining on usage of ICT among others.

Recommendation

1. Teachers should realize that most pupils are knowledgeable on the usage of ICT and should therefore be advanced and not hesitate to integrate ICT into their classroom teaching.
2. Teachers should develop their classroom management skills in order to control and involve the students in their lessons.
3. Teachers should learn and acquire the innovative ways of integrating ICT to enhance teaching and learning process.
4. Government should organize more seminars, workshops and conferences for teachers on e-learning for effective instruction in primary schools.
5. Government/School managers should allocate both financial and material resources in such a way that will promote professional development of teachers thereby providing sustainable overall development of technical skills and versatility needed for e-learning.

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