IMPACT OF EMERGING TECHNOLOGIES ON STATE TERTIARY EDUCATION IN BENUE STATE

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Abstract

This study investigated the impact of emerging technologies on state tertiary education in Benue State. Two research questions guided the study and two hypotheses were tested. Descriptive survey design was adopted for the study. The population of the study comprised of 10,200 students in state tertiary education in Benue State. A sample of 300 students was used for the study. The instrument used for data collection was a structured questionnaire titled: Emerging Technologies and State Tertiary Education Questionnaire (ETSTEQ) was used for data collection. Descriptive statistic of mean and standard deviations were used to answer the research questions while chi-square was used to test the hypotheses at 0.05 level of significance. The findings of the study indicated that emerging technologies have great impact on state tertiary education in Benue State. It was recommended among others that government through the state tertiary education management should provide funds for purchase of the required technological tools, train their students to be vast in the use of technological tools to meet the demands of the changing trends and maintenance of the existing ones.

Key words: Benue State, Emerging technologies, Impact, State Tertiary Education.

Introduction

Education is an instrument par excellence. It is a tool used for the development of the nation. Educational system is a process that begins from primary, secondary to tertiary education. Students who have successfully graduated from secondary school proceed to the tertiary institution to equip themselves for the challenges ahead. Students at this point are exposed to the changing technology for career development. The knowledge of technological innovation and advancement in Benue State has seemed to be unpopular but technology has the potential to alleviate most of the challenges facing today's education system. Technological innovation and advancement have brought about drastic societal changes as it has moved the society to what is known as digital world, global village and also shift from face-to face learning to online learning. Emerging technologies are innovations and advancements that are concepts in technological field and tools which are utilized in diverse educational settings (including distance, online, face-to-face, and hybrid forms of education) to serve varied education-related purposes for development. Emerging technologies are evolving organisms that exist in a state of "coming into being." The word evolving describes a dynamic state of change where technologies and practices are in a continuous state of refinement and development.

According to Shambe (2015) emerging technologies are positive developments in the technological world; new inventions in the way people do things, how they apply knowledge to science at particular times, a process by which an innovation is communicated through certain channels, over time, among the members of a social system. Emerging technologies starts and ends in a circular shape from birth to maturity to death (old or out datedness). Today's emerging technology might be tomorrow's fad, and today's simple idea might be tomorrow's key to boosting learner engagement or higher education outreach. They are computerized grading, electronic textbooks (E-textbooks), simulation technology, gamification, flipped classrooms, active learning classroom, massive open online courses (MOOCs), collaborative distance learning environments, active learning forum TM platform, learning management systems (LMSs), instructional radio, television, personal computers, computer-based instruction, the Internet, Web 2.0, e-learning, m-learning, and handsets of different types and so on.

Technology has seemed to have had a major

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impact on state tertiary education as it either man or mar empowerment and job creation. After the tertiary education level, how learning is delivered, managed, negotiated, and practiced is altered if not properly passed to the students. Emerging technologies are potentially beneficial but their importance is mostly unfulfilled. Individuals and organizations may recognize that a potential exists within a technology, but such potential has not yet been realized for the full utilization of state tertiary education system for empowerment and job creation. Emerging technologies allow an individualised, flexible and differentiated focus on learning needs and pedagogy (Mbahan & Rumum, 2017). It provides a more learner-controlled rather than teacher- controlled 'one-size-fits-all' approach (Angbande, 2019).

Computers and E-learning system provide opportunities for collaboration, co-creation, learning and interaction, thus contributing to improved teaching and learning. The adoption of emerging technologies to enhance teaching and learning in state tertiary education system is thus dependent upon institutional resources being allocated to fund, evaluate and reward innovative pedagogical practices (Mbahan and Rumun, 2017). The focus of this work is due to the fact that state tertiary education system cannot afford to ignore the foundation, as students in these institutions need the knowledge and others are already using emerging technologies, yet the pedagogical value of emerging technologies in state tertiary education system remains unexploited. Thus, the purpose of the study is to investigate the impact of emerging technology on state tertiary education systems in Benue State. How state tertiary education are engaging emerging technologies to achieve their core business of teaching and learning, research, publications and scholarly engagement.

Nigeria's education system encompasses three different sectors: basic education (nine years), post-basic/senior secondary education (three years) and tertiary education (four to six years, depending on the program of study). At the tertiary level, the system consists of a university sector and a non-university sector. The latter is composed of polytechnics, monotechnics and colleges of education. The tertiary education system offers opportunities for under-graduate and postgraduate studies in vocational and technical education which focuses on emerging technologies. The academic year typically runs from September to July. Most universities use a semester system of 18 – 20 weeks. Others run from January to December, divided into 2 terms of 10 -12 weeks in line with National Universities Commission (NUC) standard.

The National University Commission (NUC) is the government umbrella organization that oversees the administration of higher education in Nigeria. In addition to granting institutional accreditation, the NUC approves and accredits all university programs. Accreditation is granted for an initial three-year period and subsequent five-year periods (For a detailed overview of the process, see the NUCs 2012 accreditation manual). The National Policy on Education (FGN, 2014), defined tertiary education system as a post - secondary section of the education system; that is, Universities, Polytechnics, Colleges of Technology, Colleges of Education, Advanced Teachers Training Colleges, Correspondence Colleges and such Institutions as may be allied to them. The National Policy on Education maintained that higher educational institutions should pursue these goals through: (i) Teaching (ii) Research (iii) The dissemination of existing and new information (iv) The pursuit of service to the community; and (v) by being store- house knowledge in Benue State and beyond (FGN, 2014).

Benue State is one of the states in the 36 states in Nigeria and the Federal Capital Territory. It has so many tribes including Tiv, Idoma and Etulo as the major tribes with agriculture as their major occupation. The variables of the study are computer and on-line learning.

Computer is an electronic machine that accepts data process them to give out information. Mbahan (2020) sees computer as a machine that accepts and process data to give out information that may be of used to students and staff of tertiary institutions as their primary materials for thesis/ project; be it data from primary and secondary sources. With the technological advancement of our time, computers play a leading role as they go help towards the success of teaching and learning in tertiary education system. The knowledge of computer (theory and practical) helps students in the tertiary education to be more effective and efficient on their academics, its exposes them to the world outside the textbooks, easy access to other peoples work which give them a variety of knowledge and literature to choose from. Computers

are increasingly part of the environment in which young adults grow and learn. Tertiary education systems therefore need to reap the educational benefits of information and communications technology (ICT). They help students and lecturers to keep abreast of the constant flow of technological novelty and to manage the change and disruption that new tools may introduce.

On-line learning is an internet exposure to the world on net. On-line learning promises to enhance the (traditional) learning experiences of children and adolescents and perhaps acting as a catalyst for wider change; where such change is desired, the widespread of on-line services in the society is used for everyday work, leisure activities, and the increasing number of goods and services whose production relies on technology to create a demand for digital competencies, which are arguably in the best learned in context, while learning with and about on-line services may well take place outside of school, initial education can play a key role in ensuring that everyone can use these technologies and benefit from them, bridging the gap between rich and poor. Only those who can direct this process of learning themselves, solve unfamiliar problems as they arise, fully reap the benefits of the technology-rich world. It is against this background that the study sought to examine the impact of emerging technologies on state tertiary education system in Benue State in the area of computer and online learning.

Research Questions

The following research questions were raised to guide the study

1. What impact has emerging technologies (computers) on teaching and learning in tertiary education in North Central Nigeria?
2. What impact has emerging technologies (on-line learning) on teaching and learning in tertiary education?

Hypotheses

The following hypothesis are formulated to be tested at 0.05 level of significance

1. Emerging technologies (computers) has no significant impact on teaching and learning in state tertiary education in North Central Nigeria.
2. Emerging technologies (on- line learning) has no significant impact on teaching and learning in state tertiary education.

Methodology

The research design adopted for this study is the descriptive survey design. Descriptive survey research design investigates events in their natural setting without the researcher's manipulation of the dependent and independent variables. The descriptive survey design according to Emaikwu (2015), seeks to collect data from a representative sample of the population with regards to Impact of Emerging Technology on State Tertiary Education in Benue State. The researcher's choice for the design was because of its suitability to the study. The population of the study comprised of 10,200 students in 4 state tertiary institutions in Benue State (Benue State Tertiary Education Commission, 2020). The sample size for the study comprised of 300 students (respondents) from 4 states chosen in Benue State. The study employed simple random sampling and proportionate sampling techniques. Two states tertiary institution- Benue State University and Benue State Polytechnic Ugbokolo was purposively selected. The research instrument used for data collection was a self- designed questionnaire titled: Emerging Technologies and State Tertiary Education Questionnaire (ETSTEQ). A 4- point rating scale with the response mode of Strongly Agreed (SA) =4, Agreed (A) =3, Disagreed (D) = 2 and Strongly Disagreed = (SD) =1 respectively was used to weigh the responses. The cut off point of 2.50 was used. The questionnaire was administered to the respondents from the two sampled schools using two research assistants that were chosen from the sampled schools in Benue State. The data gotten were analysed using mean scores and standard deviation to answer the research questions while chi-square was used to test the null hypotheses at 0.05 level of significance.

Data Presentation

Research Question 1: What impact has emerging technologies (computers) on teaching and learning in State Tertiary Education in Benue State?

Table 1: Mean Ratings and Standard Deviation of Respondents on Impact of Emerging Technologies (computers) on Teaching and Learning in State Tertiary Education in Benue State.

Item No	1. Item description	N	X	SD	Decision
1.	Students have computers before they are admitted in the school?	300	2.83	0.99	Agree
2.	There are enough teachers to handle the students on ICT courses?	300	3.15	0.73	Agree
3.	There is insufficient number of internet connected computers to aid students learning?	300	3.44	0.74	Agree
4.	The school space organization is adequate for the students learning?	300	2.36	1.01	Agree
5.	There is enough number of interactive white boards for effective teaching/ learning?	300	3.45	0.92	Agree
	Cluster mean & SD		3.05	0.88	Agree

Table 1: Show high ratings on all the items which are above the accepted cut off point of 2.50 which were 2.83, 3.15, 3.44, 2.36 and 3.45 with corresponding standard deviations of 0.99, 0.73, 0.74, 1.01 and 0.92 respectively. Since the mean ratings of all the five items were above the cut-off value of 2.50, it implied that emerging technologies (computers) has great impact on teaching and learning in state tertiary education in Benue State as most students have computers before they are admitted in the school, there is enough teachers to handle the students on ICT courses, there is insufficient number of internet connected computers to aid students learning, the school space organization is adequate for the students learning, there is enough number of interactive white boards for effective teaching/learning. The cluster mean of 3.05 and standard deviation of 0.88 implied that emerging technologies (computers) has great impact on teaching and learning in state tertiary education in Benue State.

Research Question 2: What impact has emerging technologies (on-line learning) on teaching and learning in tertiary education?

Table 2: Mean and Standard Deviation of Respondents on Impact of Emerging Teachnologies (On-line Learning) on Teaching and Learning in Tertiary Education in Benue State.

Item No	Item Description	N	X	SD	Decision
1.	The shift to online learning affect the students' academic performance?	300	3.41	0.98	Agree
2.	Tertiary education system have the technical knowhow for e-learning?	300	3.20	0.91	Agree
3.	All tertiary education systems have functional wi-fi for connections to the web?	300	2.99	1.07	Agree
4.	Most students have knowledge about on line learning?	300	3.28	0.78	Agree
5.	Students in the rural areas are not conversant to the web/ICT?	300	3.56	0.77	Agree
	Cluster mean & SD		3.29	0.91	Agree

Table 2 indicates high mean ratings on all the items which are above the accepted cut-off point of 2.50. The mean ratings of the items were 3.41, 3.20, 2.99, 3.28, and 3.56 with corresponding standard deviations of 0.98, 0.91, 1.07, 0.78 and 0.77 respectively. Since the mean rating of all the five items were above the cut-off value of 2.50, it implied that, the shift to online learning affect students' academic performance because they are not conversant with it, tertiary education system do not have the technical knowhow for e-learning, all state tertiary education system have functional wi-fi for connections to the web, most students have knowledge about on line learning, and students in the rural areas are not conversant to the web/ICT. The cluster mean of 3.29 and standard deviation of 0.91 implies that emerging technologies **(**on-line learning) have impacted on teaching and learning in state tertiary education in Benue State.

Hypothesis 1: Emerging technologies (computers) has no significant impact on teaching and learning in state tertiary education in Benue State.

Table 3: Chi-square on Impact of Emerging Technologies (Computers) on Teaching and Learning in State Tertiary Education in Benue State.

Responses mode	Observed frequency	Expected frequency	Df	Sig level	$\chi 2$	P.Value	Decision
SA	101	10.0	1	0.05	140.84	.000	Rejected
A	100	10.0					
D	34	10.0					
SD	65	10.0					
Total	300						

Table 4: Chi-square on Impact of Emerging Technologies (On-line Learning) on Teaching and Learning in State Tertiary Education in Benue State.

Responses mode	Observed frequency	Expected frequency	Df	Sig level	$\chi 2$	P.Value	Decision
SA	204	10.0	1	0.05	405.148	.000	Rejected
A	51	10.0					
D	31	10.0					
SD	14	10.0					
Total	300						

Table 3 shows that the $\chi^2$140.84, Df =1, P. Value of 0.00<0.05. The null hypothesis which states that emerging technologies (computers) has no significant impact on teaching and learning in state tertiary education in Benue State is rejected. This implies that emerging technologies (computers) have significant impact on teaching and learning in state tertiary education in Benue State.

Hypothesis 2: Emerging technologies (on- line learning) has no significant impact on teaching and learning in state tertiary education.

Table 4 shows that the x^2=405.14, Df =1, P.value of 0.00<0.05. The null hypothesis which states that emerging technologies (on-line learning) has no significant impact on teaching and learning in state tertiary education in Benue State is rejected. This implies that there is significant impact of emerging technologies (on-line learning) on teaching learning in state tertiary education in Benue State.

Discussion of Findings

The study revealed that emerging technologies (computers) have significant impact on teaching and learning in state tertiary education in Benue State. The result is in consonance with Microsoft Corporation (2017) report on its ICT initiatives in Africa acknowledged that computers (technology) alone does not drive development but enables it. In the report, it is asserted that computers offer special opportunities to stimulate growth and increase innovation in every local setting, thereby enabling individuals and institutions to interact more productively with the global economy and the wider world through its connection to ICTs. But to realize its potential, computer technologies must be part of a mix of productive changes and supporting capabilities. Resources must be matched by resourcefulness – combined with other initiatives by local leaders, educators and entrepreneurs to achieve individual and institutional objectives. Computers are therefore a gadjet used to distinguish the most constructive opportunities to apply technologies for growth and poverty reduction. This calls for a well-formulated and implemented national strategy and policy to avail the necessary resources for effective teaching and learning in state tertiary education in Benue State. Such strategy would match computers/ ICT opportunities with resourcefulness of different players

and stakeholders into meaningful national, social and tertiary education system development.

The second finding revealed that emerging technologies (on-line learning) has significant impact on teaching learning in tertiary education in Benue State. The study agrees with Mbahan & Rumun (2017), whom revealed that staff and students face challenges with regard to on line technological acceptance and adoption because there are some who find the remote learning environment too difficult. This means that some of them are not comfortable with the on line adoption of technology towards facilitating remote learning due to unfamiliarity thereby influencing technology acceptance behaviours on tertiary education system. Some of the students are not ready for the drastic changes in the tertiary education system design due to improved technology in state tertiary education system in Benue State. Also, Shambe (2015) accepted with the study saying, learning remotely can contribute to certain challenges for students who have issues with on line technology (i.e. poor or no internet connection) lack of knowledge on basic computer skills, overwhelming online assignments, online coursework and refusal to accept remote learning design, as a result of familiarity with the conventional classroom learning. Smalley (2020) has agreed saying several tertiary institutions have already moved to online or remote education but it is doing them no good as students are not exposed to the computer, on line, ICT and the web as it is difficult for them to start learning in few days. The question is, how many of our tertiary institutions have functional computer labs, on line services (internet) and space accommodation to handle the number of students enrolled in our institutions? How many staff or students are computer literate? How many are even ready to learn? The sudden emerging technological shift of education from the classroom (face-to-face learning) to the online classes has put the tertiary institutions into a confused state thereby affecting the staff and students negatively.

Conclusion

Based on the results of the study, it has been empirically established that emerging technology has great impact on teaching and learning in state tertiary education in Benue State. The study also concluded that variables of computer and on line learning have significant impact on teaching and learning in state tertiary education system in Benue State.

Recommendation

Based on the findings of the study, the following recommendations were made

1. State tertiary institutions should include computers as basic requirement for admission and to extend physical teaching and research activities to online network. Conducting teaching seminars online may jointly solve new problems that may arise in the teaching and learning process.

2. Tertiary institutions should consider improving their technology infrastructure to strengthen internet capabilities in order to initiate policies regarding the introduction of online education in Benue State.

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