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Emerging technologies as catalyst for youth empowerment at secondary level of education in Imo state, Nigeria

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Abstract
The study focused on emerging technologies as catalyst for youth empowerment at secondary level of education in Imo state. Three research questions and three hypotheses were posed to guide the study. The descriptive survey research design was adopted for the study with a population of 3,154 teaching staff in the 597 secondary schools in Imo State. The sample size was 824 representing 26.1% of the population drawn using proportionate stratified random sampling techniques. The research instrument was titled "Emerging Technologies as Catalyst for Youth Empowerment Questionnaire (ETCYEQ)", structured by the researchers and validated by experts with reliability co-efficient of 0.81 determined with Cronbach's Alpha statistics. The data collected were analyzed using descriptive statistics of mean and standard deviation to answer the research questions. The hypotheses were tested using z-test statistics at 0.05 alpha level. The study found among others that the following are the ways emerging technologies can foster youth empowerment: emerging technologies equip youths with skill sets for today's world of work; with emerging technologies the youths are empowered with new business ventures in every sector; technology empowers the youths by giving them ownership of how they learn, access information and preparing them for their futures; and so on. It was recommended among others that the State government with relevant policies should address the issue of youth empowerment through emerging technologies in educational institutions to enable the youths realize their potentials in the world of today.

Keywords: emerging technologies, youth empowerment and secondary education

Introduction

Globally, education has been recognized as a critical factor for sustainable development in any given society. Education is an inevitable tool for the actualization of both individual and societal development. Indeed, it is a vital instrument for engineering the citizens to master their social and cultural environment and compete for survival. It is in support of this that Okolo (2010) [7] pointed out that education is key to solid development of the individual for actualization of competencies necessary for self-development. It is the instrument par excellence for meeting the needs and solving the problems of society. The major role of the education enterprise in an economy is principally that of producing the various classes of manpower needed by the economy. The focus of this study is secondary education.

Secondary education is the level of education that comes between primary school education and tertiary education. It harbors and develops children who have completed the primary school for higher education. In a report on secondary education in Africa, Mastercard Foundation (2020) [5] opined that secondary education prepares youth for the future of work profile, innovative and promising practices for a useful living in the society. In general it is expected that secondary education is to equip the beneficiaries with skills, competencies and knowledge adequate for self-sustenance, and contribution to National development thereby reducing unemployment, illiteracy and poverty. Suffices it to say that, secondary education is a veritable platform for youth empowerment.

Youth empowerment is a means of equipping critical mass of young people with knowledge, skills and confidence to develop and embrace opportunities for a meaningful life in the society. According to Kolade *et al.* (2014) [4], youth empowerment is broadly employed to explain efforts aimed at providing coping skills and an enabling environment for youths to lead decent lives and contribute meaningfully to national development. Empowering young people therefore, entails engaging them to embrace opportunities and as well, take full responsibilities of their lives which will enable them live a satisfactory life, thereby adding value to the society. This is to say that one of the biggest impacts that youth empowerment can ever have on the youth is less dependence on others, instead, they identify the problem, create an opportunity, and empower themselves along with many others. One phenomenon that significantly empowers the youth in this era is emerging technologies.

Emerging technologies are those technologies which are on the rise in this digital era. Wikipedia (2021) [13] defined emerging technologies as the technologies whose development, practical applications, or both are still largely unrealized, such that they are figuratively emerging into prominence from a background of non-existence or obscurity. These technologies are generally new but include older technologies that are relatively underdeveloped in potential. Such technologies include but not limited to computers, laptop, the internet, tablet, multimedia projectors, and social media. Emerging technologies bring about paradigm changes, and these changes are taking place at a very rapid pace with respect to the digital world (Spector, 2012) [11]. The capabilities of these technologies are increasing at an exponential rate, and their potential for impact is becoming apparent in an increasingly diverse set of areas.

Undoubtedly, giving the youths opportunities to tap into the emerging technological prospects is the surest way of empowering them for life. This is in fact, one of the vital keys that will either open or lock the doors of opportunity for the youth in this era and beyond. It is within the education system to determine whether this generation is to experience the rewards of self-discovery, a higher quality of life, and empowerment derived from emerging technologies. To this effect, the management of secondary education has the onus to empower the youth through emerging technologies for personal advancement as well as the common good. On the basis of the above scenario, the study focused on emerging technologies as catalyst for youth empowerment at secondary level of education in Imo state.

Statement of the problem

Youth empowerment is the need of today's society. Youth empowerment offers tremendous potential in every youth to change positively by aligning specific individual strengths and contextual resources that, together, can optimize the life paths of a young person. Emerging technologies provide fundamental opportunities and changes to the lives of 21st century children, who are the most frequent users of emerging digital and online services. Therefore, having seen the major role emerging technologies play in the world of young people, it could be stated that the lack of them at secondary school education in Imo State is a very growing disadvantage to their emancipation and empowerment. Many commentators have argued that the high rate of crime in Nigeria is largely attributable to the poor level of youth empowerment. This has trickled down to youth restiveness, banditry, armed robbery, drug abuse and so on. Therefore, it is very pertinent to empower the youth through emerging technologies which is the focus of this study.

Purpose of the study

The purpose of the study was to determine the following

1. The ways emerging technologies can foster youth empowerment at secondary level of education in Imo State.
2. The barriers to using emerging technologies to foster youth empowerment at secondary level of education in Imo State.
3. The measures to tackle the barriers for emerging technologies to foster youth empowerment at secondary level of education in Imo State.

Research questions

The following research questions were posed to guide the study.

1. What are the ways emerging technologies can foster youth empowerment at secondary level of education in Imo State?
2. What are the barriers to using emerging technologies to foster youth empowerment at secondary level of education in Imo State?
3. What are the measures to tackle the barriers for emerging technologies to foster youth empowerment at secondary level of education in Imo State?

Hypotheses

The following hypotheses were tested at 0.05 alpha level.

1. There is no significant difference between the mean scores of principals and teachers on the ways emerging technologies can foster youth empowerment at secondary level of education in Imo State.
2. There is no significant difference between the mean ratings of principals and teachers on the barriers to using emerging technologies to foster youth empowerment at secondary level of education in Imo State.
3. There is no significant difference between the mean values of principals and teachers on the measures to tackle the barriers for emerging technologies to foster youth empowerment at secondary level of education in Imo State.

Literature review

Technology has a vital role to play in empowering young people who are ardent users. Positive impact that the technology sector can have for children and young people and their rights have been identified by literature. The study of Ramli *et al*. (2015) [8] on potential benefits of ICT usage for youth agro-based entrepreneurs found that the benefits offered from ICT to youth agro-based entrepreneurs include improving operational efficiency, increasing income, strengthening marketing aspects and creating new opportunities. In yet another study on potential benefits of ICT towards rural positive youth Development in Malaysia, Samsul *et al*. (2016) [9] found that ICT could be beneficial to the youth in the areas of social connection, development of competences, engage in productive activities, improve their self-worth and capacity, improve youths' empathy and identification with others, and engagement in civic activity and governance. Thioune (2003) [12] quipped that utilization of ICT by the youth could positively impact on their economic growth, education, communication, and mobility as well as providing opportunities for positive development.

Using emerging technologies (ETs) as catalyst for youth empowerment in secondary educational institutions seem to be unrealizable sequel to barriers. In the study of Edeh (2019) [3] on integration of emerging technologies in teaching and learning process in Nigeria: the challenges, the findings proved that the integration of ETs in teaching learning process are often constrained by number of challenges which include: epileptic power supply, insufficient skills or expertise, availability and accessibility issues, funding, poor professional development, resistance to change, poor internet connections, and affordability issues. The study of Adebanjo (2013) [1] on information and communication technology in the Nigerian education system: Imo State secondary schools in focus, found the barriers to include: irregular power supply, lack of funds, lack of ICT facilities, lack of clear guideline and curriculum, lack or inadequate security mechanism to protect and ensure the safety of the ICT equipment within the school premises. Schoepp (2005) [10] submitted that integrating ICT into teaching and learning is a complex process and one that may encounter a number of difficulties.

The barriers, however, could be surmountable following specific measures that must be accomplished if secondary education is to play out this role of empowering the youth through emerging technologies. A broad range of measures that can influence the use of technology in learning has been mentioned in the literature. Amiaya (2014) [2] investigated challenges and strategies for utilizing information and communication technology among office technology and management educators in Nigerian polytechnics and the study found the following strategies: adequate provision of ICT facilities and infrastructure; organization of ICT training and retraining programmes for lecturers; adequately

sensitizing lecturers to own personal computers and laptops; encouraging and supporting lecturers financially to participate in ICT-based professional development programmes; periodic evaluation of lecturers on the extent of ICT utilization; adequate funding of OTM programmes by government and private sector on ICT-based curriculum; effective management and maintenance of ICT facilities; making the acquisition and maintenance of ICT facilities tax free to reduce cost; provision of automatic alternative source of electricity supply; increasing the time allocated for ICT instructions, training and practice; encouraging lecturers to search and share ideas and information on ICT with experts, colleagues and peers; institutions partnering with professional and corporate bodies for adequate technical support; periodic organisation of workshops, seminars and conferences on ICT for lecturers and motivating the lecturers with adequate incentives. Edeh (2019) [3] asserted that in no doubt, the provision of appropriate infrastructures/facilities, trainings, funding, enabling environment, and attitudinal change are significant towards the smooth integration of emerging technologies in the teaching and learning process. Mingaine (2013) [6] surmised that to successfully implement ICT in schools, access to good quality electricity is a primordial provision, equipping school with relevant infrastructure like building, retrofitting physical facilities, purchases of hardware and software and the like must be considered, and professional development of teachers through in-service courses should be well planned.

Methodology

The study adopted the descriptive survey research design with a population of 3,154 teaching staff in the 597 secondary schools in Imo State. The sample size was 824 representing 26.1% of the population drawn using proportionate stratified random sampling technique. The research instrument was titled "Emerging Technologies as Catalyst for Youth Empowerment Questionnaire (ETCYEQ)". The instrument was structured by the researchers and validated by experts with reliability co-efficient of 0.81 determined with Cronbach's Alpha statistics. The data collected were analyzed using descriptive statistics of mean and standard deviation to answer the research questions. The hypotheses were tested using z-test statistics at 0.05 alpha level. An item with a calculated mean value equal or greater than 2.50 was accepted while an item with the calculated mean value less than or equal to 2.49 was rejected.

Results

Research Question One

What are the ways emerging technologies can foster youth empowerment at secondary level of education in Imo State?

Table 1: Mean and Standard Deviation Analysis of Respondents on the Ways Emerging Technologies can foster Youth Empowerment at Secondary Level of Education in Imo State.

S. No.	Ways emerging technologies can foster youth empowerment	X	SD	Remarks
1	Emerging technologies equip youths with skill sets for today's world of work.	3.13	0.97	Agreed
2	With emerging technologies, the youths are empowered with new business ventures in every sector.	3.02	0.71	Agreed
3	Technology empowers the youths by giving them ownership of how they learn, access information and preparing them for their future.	3.11	0.79	Agreed
4	With technology, the youth are inspired to become problem-solvers, critical thinkers, collaborators, and creators.	3.09	0.84	Agreed
5	Technology boosts their economic potential as it equips them with crucial ICT and life skills.	3.07	1.07	Agreed
6	Emerging technologies can be as incentives to the youths in productive activities for their involvement.	3.00	0.92	Agreed
7	Emerging technologies can empower the youths in increasing their expectations.	2.99	0.87	Agreed
8	Emerging technologies can empower the youths by boosting their social connections.	3.15	0.59	Agreed

Table 1 shows that all the items have mean values above the criterion mean of 2.50. The data indicated that all the items are the ways emerging technologies can foster youth empowerment at secondary level of education.

Research Question Two

What are the barriers to using emerging technologies to foster youth empowerment at secondary level of education in Imo State?

Table 2: Mean and Standard Deviation Analysis of Respondents on the Barriers to using Emerging Technologies to foster Youth Empowerment at Secondary Level of Education in Imo State.

S. No.	Barriers Variables	X	SD	Remarks
9	Non-availability of technology facilities in schools	3.10	0.56	Agreed
10	High cost of acquisition and maintenance of technology equipment.	3.12	1.00	Agreed
11	Negative attitudes towards technologies on the part of many teachers.	3.01	0.73	Agreed
12	Lack of adequate funding to provide technological tools in the schools.	3.17	0.45	Agreed
13	Inadequate knowledge of technology use by teachers	3.03	0.92	Agreed
14	Lack of interest and commitment on the part of school leaders to drive the implementation.	2.49	1.09	Disagreed
15	Inadequate security mechanism to protect and ensure the safety of the technology equipment within the school premises.	3.06	0.67	Agreed

Table 2 reveals that except item 14 with a mean score of 2.49, all the other items have mean scores above the criterion mean of 2.50. The data showed that items 9, 10, 11, 12, 13 and 15 are the barriers to using emerging technologies to foster youth empowerment at secondary level of education.

Research Question Three

What are the measures to tackle the barriers for emerging technologies to foster youth empowerment at secondary level of education in Imo State?

Table 3: Mean and Standard Deviation Analysis of Respondents on the Measures to tackle the Barriers for Emerging Technologies to foster Youth Empowerment at Secondary Level of Education in Imo State.

S. No.	Measures Variables	X	SD	Remarks
16	Making technological tools available and accessible in schools.	3.20	0.42	Agreed
17	Adequate funding for acquisition and maintenance of technology equipment.	3.21	0.41	Agreed
18	Reorienting teachers' attitude towards emerging technologies.	3.04	1.02	Agreed
19	Educators must be properly trained and supported through ongoing professional development.	3.09	0.64	Agreed
20	Employ technical support staff who will assist staff in using and maintaining different technologies.	3.11	0.70	Agreed
21	Adequate security mechanism must be put in place to protect and ensure the safety of the technology equipment within the school premises.	3.19	0.82	Agreed

Table 3 indicates that all the items have mean ratings above the criterion mean of 2.50. The data revealed that all the items are the measures to tackle the barriers for emerging technologies to foster youth empowerment at secondary level of education.

Hypothesis One

There is no significant difference between the mean scores of principals and teachers on the ways emerging technologies can foster youth empowerment at secondary level of education in Imo State.

Table 4: z-test Analysis of Difference between the Mean Scores of Principals and Teachers on the Ways Emerging Technologies can foster Youth Empowerment at Secondary Level of Education in Imo State.

Respondents	N	X	SD	df	Z-cal	Z-crit	Decision
Principals	240	3.05	0.87	822	0.56	1.96	Accepted
Teachers	584	3.09	0.82				

Table 4 shows that the calculated z-value is 0.56 at 822 degrees of freedom and 0.05 alpha level. The calculated z-value of 0.56 is less than the critical z-value of 1.96. Since the calculated z-value of 0.56 is less than the critical z-value of 1.96, the study failed to reject the null hypothesis.

Hypothesis Two

There is no significant difference between the mean values of principals and teachers on the barriers to using emerging technologies to foster youth empowerment at secondary level of education in Imo State.

Table 5: z-test Analysis of Difference between the Mean Ratings of Principals and Teachers on the Barriers to using Emerging Technologies to foster Youth Empowerment at Secondary Level of Education in Imo State.

Respondents	N	X	SD	D f	Z-cal	Z-crit	Decision
Principals	240	3.04	0.74	822	1.35	1.96	Accepted
Teachers	584	2.95	0.81				

Table 5 reveals that the calculated z-value is 1.35 at 822 degrees of freedom and 0.05 alpha level. The calculated z-value of 1.35 is less than the critical z-value of 1.96. Since the calculated z-value of 1.35 is less than the critical z-value of 1.96, the study retained the null hypothesis.

Hypothesis Three

There is no significant difference between the mean ratings of principals and teachers on the measures to tackle the barriers for emerging technologies to foster youth empowerment at secondary level of education in Imo State.

Table 6: z-test Analysis of Difference between the Mean Values of Principals and Teachers on the Measures to tackle the Barriers for Emerging Technologies to foster Youth Empowerment at Secondary Level of Education in Imo State.

Respondents	N	X	SD	df	Z-cal	Z-crit	Decision
Principals	240	3.17	0.64	822	0.97	1.96	Accepted
Teachers	584	3.11	0.70				

Table 6 indicates that the calculated z-value is 0.97 at 822 degrees of freedom and 0.05 alpha level. The calculated z-value of 0.97 is less than the critical z-value of 1.96. Since the calculated z-value of 0.97 is less than the critical z-value of 1.96, the study upheld the null hypothesis.

Discussion of findings

The study showed that the following are the ways emerging technologies can foster youth empowerment at secondary level of education: emerging technologies equip youths with skill sets for today's world of work; with emerging technologies, the youths are empowered with new business ventures in every sector; technology empowers the youths by giving them ownership of how they learn, access information and preparing them for their future; with technology the youths are inspired to become problem-solvers, critical thinkers, collaborators, and creators; technology boosts their economic potential as it equips them with crucial ICT and life skills; emerging technologies can be as incentives to the youths in productive activities for their involvement; emerging technologies can empower the youths in increasing their expectations; and emerging technologies can empower the youths by boosting their social connections. The study indicated no significant difference between the mean scores of principals and teachers on the ways emerging technologies can foster youth empowerment at secondary level of education in Imo State. The finding is consistent with the findings of Ramli *et al.* (2015) [8] and Samsul *et al.* (2016) [9]. These researchers have in their studies found these variables as positive impact that the technology sector can have on children and young people. The findings are in accordance with Thioune (2003) [12] who quipped that utilization of ICT by the youth could positively impact on their economic growth, education, communication, and mobility as well as providing opportunities for positive development.

The study also revealed non-availability of technology facilities in schools; high cost of acquisition and maintenance of technology equipment; negative attitudes towards technologies on the part of many teachers; lack of adequate funding to provide technological tools in the schools; inadequate knowledge of technology use by teachers; and inadequate security mechanism to protect and ensure the safety of the technology equipment within the school premises as the barriers to using emerging

technologies to foster youth empowerment at secondary level of education in Imo State. The hypothesis showed no significant difference between the mean ratings of principals and teachers on the barriers to using emerging technologies to foster youth empowerment at secondary level of education in Imo State. The results are in tandem with Edeh (2019) [3] and Adebanjo (2013) [1]. These researchers have in their studies found these variables as barriers to integration of emerging technologies in teaching and learning process. The result is in accord with the submission of Schoepp (2005) [10] that integrating ICT into teaching and learning is a complex process and one that may encounter a number of difficulties.

The study equally indicated that the measures to tackle these barriers for emerging technologies to foster youth empowerment at secondary level of education in Imo State are: making technological tools available and accessible in schools; adequate funding for acquisition and maintenance of technology equipment; reorienting teachers' attitude towards emerging technologies; educators must be properly trained and supported through ongoing professional development; employ technical support staff who will assist staff in using and maintaining different technologies and adequate security mechanism must be put in place to protect and ensure the safety of the technology equipment within the school premises. The study established that there is no significant difference between the mean values of principals and teachers on the measures to tackle these barriers for emerging technologies to foster youth empowerment in secondary schools in Imo State. The finding is in conformity with the strategies found by Amiaya (2014) [2]. The finding is in line with Edeh (2019) [3] who asserted that in no doubt, the provision of appropriate infrastructures/facilities, trainings, funding, enabling environment, and attitudinal change are significant towards the smooth integration of emerging technologies in the teaching and learning process. The result also corroborates Mingaine (2013) [6] who surmised that to successfully implement ICT in schools, access to good quality electricity is a primordial provision, equipping school with relevant infrastructure like building, retrofitting physical facilities, purchases of hardware and software and the like must be considered, and professional development of teachers through in-service courses should be well planned.

Conclusion

The conclusion drawn based on the findings of the study was that there are numerous ways emerging technologies can empower the youth, there are a number of barriers to using emerging technologies to foster youth empowerment and the barriers are surmountable following specific measures identified.

Recommendations

On the basis of the findings, the study recommended the following

- The State Government with relevant policies should address the issue of youth empowerment through emerging technologies in secondary educational institutions to enable the youths realize their potentials in the world of today.
- The Government, teachers and stakeholders should put hands on desk to tackle the barriers identified, so as to encourage youth empowerment through emerging technologies in secondary educational institutions.
- The State Government and secondary school administrators should proactively adopt the measures identified to ensure youth empowerment through emerging technologies in secondary schools.

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