Utilization of Emerging Technologies for Secondary School Administration: Imperative for Sustainable Development Goals (SDGs)

[1]Chukwu Leo C. & [2]Okonkwo Humphrey N.
[1&2]Department of Educational Management, Faculty of Education, Enugu State University of Science and Technology (ESUT), Agbani, Enugu State.
E-mail: [1]chukwu.chinweuba@esut.edu.ng

ABSTRACT

The study ascertained the utilization of emerging technologies for secondary school administration in the realization of Sustainable Development Goals (SDGs) in Enugu state. Descriptive survey research design was adopted for the study. The study was guided by two research questions while two null-hypotheses were formulated and tested at 0.05 level of significance. The population for the study comprised 295 principals (112 urban and 183 rural school principals). There was no sampling because the population was manageable. The instrument for data collection was researcher structured questionnaire titled "Utilization of Emerging Technologies for Secondary School Administration in the realization of SDGs Questionnaire (UETSSASDGsQ)". The instrument was validated by three research experts who were from Department of Educational Management and the other from Measurement and Evaluation Unit of Department of Mathematics and Computer Education. Cronbach Alpha method was used to determine the reliability of the instrument which yielded 0.82 for cluster A and 0.78 for cluster B with an overall reliability index of 0.80. Mean ratings and standard deviation were used for answering the research questions while t-test statistic was used to test the null hypotheses. The findings of the study showed that emerging technologies are utilized to a low extent in the areas of record keeping and staff personnel administration in the realization of Sustainable Development Goals (SDGs) in Enugu state. The researcher recommended among others that, Enugu State government should make policies and furnish secondary schools with emerging technologies to aid effective and efficient record keeping system in secondary schools, which will eventually enhance effective school administration.

Keywords: Emerging Technologies, School Administration, Sustainable Development Goals

INTRODUCTION

Technology plays an important role in enhancing the quality of education at all levels in our society. According to Akinoso (2018), today's world is dominated by the use of technology. Technology is the application of scientific knowledge to solve the practical problems of man environment. Bawa & Moyijo (2015) defined technology as a systematic integral process for separation and analysing problems, devising, implementing; managing; controlling and evaluating solutions, to the problems. A steady proliferation of technology in everyday life has led to an increased interest in its application to education.

Today, the adventure and advancement of technologies has challenged the expository method and process of teaching and learning and have also changed the way education is managed to a more flexible, friendly and simplified form (Deebom & Zite, 2016). It is an undisputable fact that, advances in technologies has brought about improvement in the way and manner in which the education sector, businesses and organizations are managed. As the issue of

the covid-19 pandemic has continued to cause disruptions to educational systems across the world, educational technology advocates and researchers predict that more learning and teaching will happen via technologies now and in the coming years (Wong, Milrad & Specht, 2015). However, the accelerated pace of technological innovation in recent years, according to Oliveira, Behnagh, Ni, Mohsinah, Burgess & Guo (2019), has created a pressing need for educational research that can help researchers better understand how school learning is being mediated by emerging technologies.

Emerging technology is a term generally used to describe a new technology. Emerging technologies according to Bozalek (2015), are those technologies which are likely to have a large impact on teaching, learning, or creative inquiry on learners or those technologies which are on the rise. Emerging technologies have the potential to change the current state of affairs in education. According to Edeh (2019), the evolution of emerging technologies (ETs) is changing all facets of educational process ranging from; the nature of classrooms, quality of content, methodologies, mode of students' engagement, and evaluation. Emerging technologies include but not limited to virtual reality implementations (Merchant et al., 2014), augmented reality implementations (Dunleavy & Dede, 2014), mobile learning devices (Crompton, Diane, & Gregory, 2017), physical computing tools (Katterfeldt et al., 2018), internet of things hardware with sensors (Cukurova et al., 2018), and technologies that allow collaborative learning at a great scale (Cress, Moskaliuk & Jeong, 2016).

Schools are incorporating emerging technologies, such as Artificial Intelligence, Virtual Reality, and Augmented Reality, into the classroom. The aim is to enable more innovative and engaging teaching methods and learning experiences. Sloan in Kofi (2014), opined that emerging technologies represent a new paradigm that at first grows on the edge in relative obscurity and often seems to be of no threat or even of little value to users of the sustaining technology. The integration of emerging technologies in teaching and learning process is no longer a choice but a need for educators considering the level of infusion of technology on education particularly as it relates to the changing learning environment, demand for flexibility in methodology, and the need to enhance creativity and innovations in learning (Edeh, 2019). The advent of emerging technologies has offered a great deal of advantage in secondary school administration. Thus, Hassan, Usman & Ismaila (2021), posited that emerging technologies open a new avenue for educational administration.

Administration occurs in every organization. Administration is a process of planning activities and utilizing human and material resources with an aim of accomplishing of goals and objectives of a particular organization or institution (Hassan, Usman & Ismaila, 2021). Unachukwu & Okorji (2014), defined administration as a social process concerned with identifying, motivating, controlling and unifying formally and informally organized human and material resources within an integrated system designed specially to accomplish predetermined goals. Thus, administration has to do with getting things done in order to achieve a definite purpose. Oke & Mainoma (2014), identified nine objectives of educational administration. They are executing plans, direct line of action, supervise work done in the field, advice for proper ways of work, stimulate work efficiency, explore new vistas, lead learners' programmes, assist ways to adopt results and diagnose all the practices done in the field of education. In the administration of

secondary schools, emerging technologies can be used for record keeping, staff personnel administration, students' personnel administration, financial management, supervision of instruction among others. However, this study focused on utilization of record keeping and staff personnel administration.

Utilization is referred to as making use of something in a purposeful and effective way. Amalu (2015) defined utilization as the means of using items to improve educational practices. Azi & Nwosu in Ezenwafor & Nwachukwu (2020), posited that utilization is the degree to which a given group uses a particular service in a specified period. Utilization in the concept of this study signifies the usage of emerging technologies for record keeping and staff personnel administration in the realization of SDGs.

Records are either created or received, and it can be stored or transmitted irrespective of medium and characteristics (Toyo, 2017). Secondary schools keep a lot of records, ranging from student admissions to student attendance registers, log books, transcripts, withdrawal register, records of proceedings, events, visitor's book, staff and student personal files, lesson notes, students' report sheet, scheme and record of work, transfer and leaving certificate, staff movement book, receipts and cash book and other matters relating to student, staff and general administration (Badau & Yahya, 2017).

Such records include: admission and withdrawal register, class register, staff attendance register, class timetable, examination timetable, examination question papers, student's progress report, log book, punishment book, syllabus, scheme of work, lesson plans, lesson notes, curriculum, health record, academic calendar, individual cumulative record (continuous assessment and examination results), school diary, visitors book, school cash book, school stock book, minutes of meetings, movement book and the National Policy on Education (NPE) (Amanachukwu & Ololube, 2015). Every school keeps specific records which could be viewed as authentic registers or instruments or documents of official accounts of transaction or occurrence. These records are usually in the form of books, documents, files, and CDs (Chifwepa, 2014). A study conducted by Noah, Akpabio & Sammy (2014), showed that emerging technologies like the ICTs are utilized for record keeping to a low extent. Therefore, it is important for schools to document their activities and routines and also keep vital records that are needful for the smooth running of staff personnel administration.

Personnel administration is referred to as a set of systematic and planned activities designed by an organisation to provide its members with the opportunities to learn necessary skills to meet current and future job demands including performance appraisal, training and promotion (Tizikara and Mugizi, 2017). Ejeh & Okoro (2016) defined staff personnel administration as a responsibility of all those who manage people. In the view of Aja-Okorie (2016), staff personnel administration is an important management function concerned with obtaining, developing, and motivating human resources as required by an organization to achieve its objectives. Parry & Battista (2019), opined that emerging technologies help employees to update their skills to compete in the future world of work. According to Sung, Leong & Cunningham (2020), staff personnel administration plays a key role in sustainable development in terms of changing behaviour of people to achieve the Sustainability Development Goals (SDGs).

Sustainable Development Goals (SDGs) is a globally accepted developmental agenda, and it is expected that everyone everywhere

in the world would be aware, knowledgeable and be willing to contribute to its attainment. The term sustainable development goals (SDGs) are a new universal set of goals targets and indicators, that were adopted on September 25, 2015 to end poverty in all its forms by 2030 and balance the three dimensions of sustainable development which include the economic, social and environment (UN Assembly 2015). Oguejiofor & Ezeabasili (2014), pointed out that the major essential tool for achieving sustainable development goals should include; improving the quality of basic education; re-orientation of existing education programme to address sustainable development; developing public awareness and understanding and providing training for all sectors of private and civil society. Every country is requested to incorporate the ambitions seventeen (17) goals into their agendas and political policies and to work towards achieving Sustainable Development Goals (SDGs). According to Hassan, Usman & Ismaila (2021), secondary school principals have a crucial role to perform in achievement of the goals of education and their performance determines the success or failure of the educational plan in their school as well as the realization of sustainable development goals (SDGs).

A principal is the Chief Executive of the school. A principal is both a supervisor and administrator (Adeolu, 2012). A principal is the head administrator of a school, especially a secondary school. Principals are leadership heads of secondary schools in Nigeria. Meador (2014) defined principal as the educator who has executive authority for a school. According to Adaegbe (2016), a principal is an administrative head, a manager, a community public relation man, a supervisor, an instructional leader, a curriculum innovator and a catalyst towards planned revolution. School administration may be influenced by principals' location. Location is an important variable in this study based on the fact that secondary

schools in Enugu State cut across different urban and rural areas. Location is made up of rural and urban areas (Akin, 2012). A location is the place where a particular point or object exists. School location is referred to as the area a school is sited (Okonkwo, 2014). The location of a secondary school, is capable of making the utilization of emerging technologies effective. Its use could transform administrative activities in secondary schools and enhance the standard of education which necessitated the need for the present study.

Statement of the Problem
The number of secondary schools in Nigeria, particularly in Enugu state has tremendously grown. Due to this development, the administration of secondary education system seems to be more and more complex by the day and this complexity makes it expedient for the administrators to find a way of ensuring an effective administrative process that will enhance the realization of Sustainable Development Goals (SDGs). The enormous increase in students' enrolment and teacher data in secondary schools has made the secondary school administration complex. There is the problem of controlling large population of students as well as conducting examinations on a large scale. Problems of indiscipline are still rampant among teachers and students, the reasons for these could be that school managers are operating within a complex environment which could be posing a lot of challenges to their successful administration. The conventional administrative method has been observed to be highly rigid and does not issue practical result. The study, therefore, set out to ascertain the utilization of emerging technologies for secondary school administration in the realization of Sustainable Development Goals (SDGs) in Enugu state with particular reference to record keeping and staff personnel administration.

Purpose of the Study

The main purpose of the study was to ascertain the utilization of emerging technologies for secondary school administration in the realization of Sustainable Development Goals (SDGs) in Enugu state. Specifically, the study sought to:

1. examine the extent to which emerging technologies are utilized for record keeping in the realization of Sustainable Development Goals (SDGs) in Enugu state.
2. ascertain the extent to which emerging technologies are utilized for staff personnel administration in the realization of Sustainable Development Goals (SDGs) in Enugu state.

Research Questions

The following research questions guided the study:

1. To what extent are emerging technologies utilized for record keeping in the realization of Sustainable Development Goals (SDGs) in Enugu state?
2. To what extent are emerging technologies utilized for staff personnel administration in the realization of Sustainable Development Goals (SDGs) in Enugu state?

Hypotheses

The following hypotheses were formulated and tested at .05 level of significance:

H_{O1}: There is no significant difference between the mean scores of urban and rural school principals on the extent to which emerging technologies are utilized for record keeping in the realization of Sustainable Development Goals (SDGs) in Enugu state.

H_{O2}: Significant difference does not exist between the mean scores of urban and rural school principals on the extent to which emerging technologies are utilized for staff personnel administration in the realization of Sustainable Development Goals (SDGs) in Enugu state.

Research Method

Descriptive survey research design was adopted for the study. According to Nworgu (2018), descriptive survey research design is one which aims at collecting data and describing in a systematic manner the characteristic features or facts about a given population. The study was carried out in the 295 public secondary schools in Enugu state. Enugu state came to be through restructuring of old Anambra State into Enugu, Anambra and Ebonyi states respectively. Enugu state is made up of 17 Local Government Areas which is based on six education zones namely; Agbani, Awgu, Enugu, Nsukka, Obolo-afor and Udi. The population for the study comprised 295 principals (112 urban and 183 rural school principals). There was no sampling because the population was manageable. The instrument for data collection was researcher structured questionnaire titled "Utilization of Emerging Technologies for Secondary School Administration in the realization of SDGs Questionnaire (UETSSASDGsQ)". The instrument consisted of 14 items allocated to the two research questions. A 4 point rating scale of Very Great Extent (VGE), Great Extent (GE), Low Extent (LE) and Very Low Extent (VLE) was used with numerical values of 4, 3, 2 and 1 for both positive and negative items respectively.

The instrument was validated by three research experts (two from the Department of Educational Management and one from the Department of Mathematics and Computer Education), all from Faculty of Education, Enugu State University of Science and Technology (ESUT), Enugu. To ensure the reliability of the instrument, it was trial-tested on 20 principals (8 from urban secondary schools and 12 from rural secondary schools) from public secondary

schools in Anambra state. Cronbach Alpha method was used to determine the reliability of the instrument which yielded 0.82 for cluster A and 0.78 for cluster B with an overall reliability index of 0.80 which made the instrument reliable and was used for data collection. The researcher was assisted by two research assistants in the administration and collection of data. However, out of the 295 copies of the questionnaire administered on the respondents, the researcher and his assistants retrieved 279 copies (108 urban and 171 rural school principals) which was a 94.58% retrieval rate. Mean scores and standard deviation were used for analysing the data collated while t-test statistic was used to test the null hypotheses at 0.05 level of significance. The benchmark set for the mean scores was that any mean more than or equal to 2.50 was said to be "Great Extent" while any mean score below 2.50 was to be "Low Extent". The interpretation of the test of hypotheses was based on the significance (sig.) values from the SPSS output. The null hypothesis was not rejected when the probability values are greater than 0.05, but rejected when the probability values are less than 0.05.

Data Analysis and Results Presentation

Research Question 1: To what extent are emerging technologies utilized for record keeping in the realization of Sustainable Development Goals (SDGs) in Enugu state?

Table 1: Mean scores of urban and rural school principals on the extent to which emerging technologies are utilized for record keeping in the realization of SDGs

S/N	ITEMS	Urban School Principals			Rural School Principals		
		108			171		
	Extent of emerging technologies utilization for record keeping:	$\overline{x}$	SD	Dec	$\overline{x}$	SD	Dec
1.	artificial intelligence.	2.01	.80	LE	1.99	.82	LE
2.	virtual reality implementations.	1.97	.81	LE	2.00	.83	LE
3.	augmented reality implementations.	2.05	.82	LE	2.02	.79	LE
4.	mobile learning devices.	1.92	.80	LE	2.01	.83	LE
5.	physical computing tools.	2.00	.80	LE	2.01	.82	LE
6.	internet of things hardware with sensors.	1.91	.83	LE	2.00	.83	LE
7.	technologies that allow collaborative learning at a great scale.	1.99	.83	LE	2.04	.83	LE
	Cluster Mean/SD	**1.98**	**.81**	**LE**	**2.01**	**.80**	**LE**

The data analysis on Table 1 above shows the mean scores of both urban and rural school principals on the extent to which emerging technologies are utilized for record keeping in the realization of SDGs in Enugu State. In the above Table, the urban school principals' means ranged from 1.97 to 2.05, while the rural school principals'

means ranged from 1.99 to 2.04. The values of the cluster mean are 1.98 and 2.01 for urban and rural school principals respectively. They also have standard deviations of .81 and .80. The closeness of the standard deviations showed that the respondents were homogenous in their responses. The outcome of the above Table showed that emerging technologies are utilized for record keeping in the realization of SDGs in Enugu State to a low extent.

Research Question 2: To what extent are emerging technologies utilized for staff personnel administration in the realization of Sustainable Development Goals (SDGs) in Enugu state?

Table 2: Mean scores of urban and rural school principals on the extent to which emerging technologies are utilized for staff personnel administration in the realization of SDGs

S/N	ITEMS	Urban School Principals 108			Rural School Principals 171		
	Extent of emerging technologies utilization for staff personnel administration:	$\overline{x}$	SD	Dec	$\overline{x}$	SD	Dec
8.	artificial intelligence.	1.54	.84	LE	1.53	.81	LE
9.	virtual reality implementations.	1.48	.87	LE	1.47	.81	LE
10.	augmented reality implementations.	1.41	.84	LE	1.49	.82	LE
11.	mobile learning devices.	1.54	.84	LE	1.53	.81	LE
12.	physical computing tools.	2.34	.85	LE	2.36	.83	LE
13.	internet of things hardware with sensors.	2.37	.86	LE	2.33	.80	LE
14.	technologies that allow collaborative learning at a great scale.	2.48	.85	LE	2.48	.84	LE
	Cluster Mean/SD	**1.88**	**.85**	**LE**	**1.88**	**.82**	**LE**

The data analysis on Table 2 above shows the mean scores of both urban and rural school principals on the extent to which emerging technologies are utilized for staff personnel administration in the realization of SDGs in Enugu State. In the above Table, the urban school principals' means ranged from 1.41 to 2.37, while the rural school principals' means ranged from 1.47 to 2.36. The values of the cluster mean are 1.88 and 1.88 for urban and rural school principals respectively. They also have standard deviations of .85 and .82. The closeness of the standard deviations showed that the respondents were homogenous in their responses. The outcome of the above Table showed that emerging technologies are utilized for staff personnel administration in the realization of SDGs in Enugu State to a low extent.

Hypotheses

H_{O1}: There is no significant difference between the mean scores of urban and rural school principals on the extent to which emerging technologies are utilized for record keeping in the realization of Sustainable Development Goals (SDGs) in Enugu state.

Table 3: Summary of t-test analysis of the mean scores of urban and rural school principals on the extent to which emerging technologies are utilized for record keeping in the realization of Sustainable Development Goals (SDGs)

Group	n	$\overline{x}$	SD	df	p-value	Decision
Urban School Principals	108	1.98	.81			$H0_1$ not rejected
				277	.068	
Rural School Principals	171	2.01	.80			

Data on Table 3 for urban and rural school principals on the extent to which emerging technologies are utilized for record keeping in the realization of Sustainable Development Goals (SDGs) show that at 277 degree of freedom, the p-value was .068. The outcome of the p-value is greater than 0.05 level of significance set for this study. This implies that the null hypothesis was not rejected and, therefore, there was no significant difference between the mean scores of urban and rural school principals on the extent to which emerging technologies are utilized for record keeping in the realization of Sustainable Development Goals (SDGs) in Enugu State.

H_{O2}: Significant difference does not exist between the mean scores of urban and rural school principals on the extent to which emerging technologies are utilized for staff personnel administration in the realization of Sustainable Development Goals (SDGs) in Enugu state.

Table 4: Summary of t-test analysis of the mean scores of urban and rural school principals on the extent to which emerging technologies are utilized for staff personnel administration in the realization of Sustainable Development Goals (SDGs)

Group	n	$\overline{x}$	SD	df	p-value	Decision
Urban School Principals	108	1.88	.85			$H0_2$ not rejected
				277	.101	
Rural School Principals	171	1.88	.82			

Data on Table 4 for urban and rural school principals on the extent to which emerging technologies are utilized for staff personnel administration in the realization of

Sustainable Development Goals (SDGs) show that at 277 degree of freedom, the p-value was .101. The outcome of the p-value is greater than 0.05 level of significance set for this study. This implies that the null hypothesis was not rejected and, therefore, there was no significant difference between the mean scores of urban and rural school principals on the extent to which emerging technologies are utilized for staff personnel administration in the realization of Sustainable Development Goals (SDGs) in Enugu State.

Discussion of Findings

The findings of the study showed that emerging technologies are utilized to a low extent in the area of record keeping in the realization of Sustainable Development Goals (SDGs) in Enugu state. The evidence from the finding of the study shows that artificial intelligence, virtual reality implementations, augmented reality implementations, mobile learning devices, physical computing tools, internet of things hardware with sensors and technologies that allow collaborative learning at a great scale are utilized to a low extent for record keeping. The finding of the study is in agreement with Noah, Akpabio & Sammy (2014), who posited that emerging technologies like the Information and Communication Technologies are utilized for record keeping to a low extent. Further finding shows that there was no significant difference between the mean scores of urban and rural school principals on the extent to which emerging technologies are utilized for record keeping in the realization of Sustainable Development Goals (SDGs) in Enugu State.

The findings of the study showed that emerging technologies are utilized to a low extent in the area of staff personnel administration in the realization of Sustainable Development Goals (SDGs) in Enugu state. The evidence from the finding of the study shows that emerging technologies artificial intelligence, mobile learning devices among others are utilized to a low extent for staff personnel management. The finding is in line with There was no significant difference between the mean scores of urban and rural school principals on the extent to which emerging technologies are utilized for staff personnel administration in the realization of Sustainable Development Goals (SDGs) in Enugu State.

Conclusion

The utilization of emerging technologies in secondary school administration cannot be overemphasized. The craving for efficient and effective record keeping and staff personnel administration in secondary schools, calls for more skillful methods. Emerging technologies can disrupt and bring about unexpected change, the consequences of which must then be managed. Emerging technologies are capable of making administration more effective in Nigerian secondary schools in general and Enugu state in particular. Its use could transform administrative activities in secondary schools and enhance the standard of education for the realization of Sustainable Development Goals (SDGs). However, the utilization of emerging technologies for record keeping and staff personnel administration is to a low extent.

Recommendations

Based on the findings of the study, the researcher recommended that:

1. Enugu State government should make policies and furnish secondary schools with emerging technologies to aid effective and efficient record keeping system in secondary schools, which will eventually enhance effective school administration.
2. Critical stakeholders should ensure the provision of emerging technologies to secondary schools like computer

hardware for administrative work and administrative software suitable for use in staff personnel administration.

3. Government through the Ministry of Education should create emerging technologies policy implementation commission that will provide a framework on the various functions of technology and how the school administrators may utilize it in executing their administrative roles in the school.

REFERENCES

Adaegbe, S.U. (2016). *Curriculum innovation and the secondary school principals.* Ife: Institute of Education University Press.

Aja-Okorie, U. (2016). Teachers' personnel management as determinants of teachers' productivity in secondary schools in Delta State, Nigeria. *British Journal of Education, 4*(8), 13-23.

Akinoso, O. (2018). Effect of the use of multimedia on students' performance in secondary school mathematics. *Global Media Journal*, 16(30); 1-8.

Amalu, H.N. (2015). Extent of utilization of ICT resources in teaching history of education in colleges of education in Enugu State, Nigeria. *Unpublished M.Ed. dissertation*, University of Nigeria, Nsukka.

Amanchukwu, R.N. & Ololube, N.P. (2015). Excellent school records behaviour for effective management of educational systems. *Human Resource Management Research. 5*(1), 12-17.

Badau, K.M. & Yahya, S.A. (2017). Assessing the success of school cluster zoning system in senior secondary schools of Adamawa State, Nigeria. *The Journal of Middle East and North Africa Sciences,* 3(4), 1-7].

Bawa, A.A. & Moyijo, S.A. (2015). Role of educational technology in teacher education in Nigeria. A case study of Shehu Shagari College of Education Sokoto. *An unpublished project*, Usmanu Danfodiyo University Sokoto.

Bozalek, V. (2014). An investigation into the use of emerging technologies to transform teaching and learning across differently positioned higher education institutions in South Africa. In G. Williams, P. Statham, N. Brown, & B. Cleland (Ed.), *Changing Demands, Changing Directions Proceedings ascilite* (156-161).

Chifwepa, V. (2014). Managing records at school level. *National Education Statistical Information Systems.* Retrieved, October 15, 2014

Cress, U., Moskaliuk, J., & Jeong, H. (Eds.). (2016). *Mass collaboration and education* (16). Springer.

Crompton, H., Burke, D. & Gregory, K.H. (2017). The use of mobile learning in PK-12 education: A systematic review. *Computers & Education*, 110, 51-63.

Cukurova, M., Luckin, R., Millán, E., & Mavrikis, M. (2018). The NISPI framework: Analysing collaborative problem-solving from students' physical interactions. *Computers & Education*, 116, 93-109.

Deebom, M.T. & Zite, B.N. (2016). Effectiveness of Information

Communication Technology (ICT) in teaching and learning in public senior secondary schools in Ogoni Area, Rivers State. *International Journal of Education and Evaluation*; *2*(4); 18-26.

Dunleavy, M., & Dede, C. (2014). Augmented reality teaching and learning. In J.Voogt & G.Knezek (Eds.), *International handbook of information technology in primary and secondary education* (pp. 735-745). Springer New York.

Edeh, M.O. (2019). Integration of emerging technologies in teaching and learning process in Nigeria: the challenges. *Central Asian Journal of Mathematical Theory and Computer Sciences; 1*(1), 35-39.

Ejeh, E.I. & Okoro, P. (2016). Evaluation of staff personnel administration in tertiary institution in south Eastern Nigeria from 2007 to 2012. *Greener Journal of Educational Research, 6*(6) 213-222.

Ezenwafor, J.I., & Nwachukwu, S.C. (2020). Extent of utilization of e-learning resources for instructional delivery by office technology and management lecturers in Polytechnics in South-East Nigeria. *International Research Journal of Teacher Education, 5*(1), 84-93.

Hassan, M.H., Usman, M.D. & Ismaila, U.K. (2021). Application of information and communication technology (ICT) for effective administration in Nigerian secondary schools. *African Scholar Journal of Humanities and Social Sciences (JHSS-6)*, 20(6), 59-68.

Katterfeldt, E., Cukurova, M., Spikol, D., Cuartielles, D. (2018). Physical computing with plug-and-play toolkits: Key recommendations for collaborative learning implementations. *International Journal of Child-Computer Interaction*, 1-23.

Kofi, B.W. (2014). Impact of emerging technologies on teacher education: Experiences of Teacher-Trainees. *Journal of Education and Practice*, 5(28), 168-175.

Meador, D. (2014). Seven characteristics of a principal. *About.com* Retrieved November 17, 2014, from http://teaching.about.com/od/admin/a/Characteristics-Of-A-Principal.htm

Noah, A.S., Akpabio, I.U. & Sammy, M.E. (2014). Utilization of Information and Communication Technology for school record keeping: A strategy for principals' management of secondary schools in Akwa Ibom State, Nigeria. *Multidisciplinary Journal of Research Development Volume*, 22(1), 1-11.

Nworgu, B.G. (2018). *Educational research, basic issues and methodology*. University Trust Publishers Nsukka, Nigeria.

Oguejiofor, C.A. & Ezeabasili, A.C.C. (2014). Imperative of vocational education and sustainable development in Nigeria. *An international multidisciplinary Journal*, 8(1), 32-47.

Oke, T.I., & Mainoma, H.M. (2014). *Educational administration and planning in Nigeria*: *Selected topics*. University press Ltd.

Oliveira, A., Behnagh, R.F., Ni, L., Mohsinah, A.A., Burgess, K.J. & Guo, L. (2019). Emerging technologies as pedagogical tools for teaching and learning science: A literature review. *Human Behaviour & Emerging Technologies.*; 1:149–160.

Parry, E. & Battista, V. (2019). The impact of emerging technologies on work: a review of the evidence and implications for the human resource function. *Emerald Open Research*, 1(5): 1- 13.

Sung, A., Leong, K. & Cunningham, S. (2020). Emerging technologies in education for sustainable development. *https://doi.org/10.1007/978-3-319-71067-9_61-1*

Tizikara, M.K. & Mugizi, W. (2017). Human resource development and employee job satisfaction in a public university in Uganda. *American Journal of Academic Research, 2*, A69-A84.

Toyo, D.O. (2017). Application of information and communication technology (ICT) to the management of records in the head of services office, Asaba, Delta State. *Research Journal of Mass communication and Information Technology. 3*(1), 1-9.

Unachukwu, G.O. & Okorji, P.N. (2014). *Educational Management. A Skill building approach.* Anambra: Rex Charles & Patrick.

UN United Nations (UN, 2015). *Transforming our world: The 2030 Agenda for sustainable Development*. UN, New York.
Wong, L.H., Milrad, M. & Specht, M. (2015). Seamless learning in the age of mobile connectivity. Seamless Learning in the Age of Mobile Connectivity. *Springer Singapore*; *7*(2); 1–50.