ESUT Journal of Education (EJE)

Vol. 7 Issue 1, May 2024

PERCEPTION OF PRINCIPALS ON EMERGING TECHNOLOGIES IN ADMINISTRATION OF SECONDARY SCHOOLS IN ENUGU

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ABSTRACT

This study appraised the influence of emerging technologies on principals' administration of secondary schools, focusing on Science, Technical and Vocational Secondary Schools (STVSS) in Enugu State. Two research questions and two research hypotheses were formulated and tested at 0.05 level of significance. The entire population of 40 STVSS principals, comprising of 29 males and 11 females was used for the study. Census sampling was used because the population is manageable. A self-developed structured questionnaire was used as the instrument for data collection. The instrument was validated by three experts, one expert in Measurement and Evaluation; and two experts in Educational Management, all from the Faculty of Education, Enugu State University of Science and Technology. The reliability of the instrument was determined using Cronbach Alpha. The instrument yielded reliability indices of .77 and .75 for clusters "A" and "B" respectively. The overall reliability index was .76, which proves the reliability and suitability of the instrument for the study. Copies of questionnaire were administered and retrieved by the researcher with the help of two research assistants. The analysis of data was done using Statistical Package for Social Sciences (SPSS). Mean with standard deviation was used to answer the research questions. The null hypotheses were tested using z–test statistics at .05 level of significance. Mean scores of 2.50 and above were considered positive while those below 2.50 were considered negative. From the result of the findings of the study, it was concluded that the emerging technologies adopted by principals in the administration of STVSS in Enugu State are computers, smartphones and the internet. Comparison of the male and female principals showed that there was no significant difference between the mean ratings of male and female principals on how

principals use emerging technologies in personnel administration of STVSS in Enugu State. Record keeping and storage of relevant information are the areas that emerging technologies influence data management of of principals in the administration of STVSS in Enugu State; There is no significant difference between the mean ratings of male and female principals on how they use emerging technologies in data management in administration of STVSS in Enugu State. It was therefore, recommended among others that there is need for government to provide the enabling environment and supportive infrastructure that aid the smooth use of emerging technologies for school administration.

Keywords: Emerging, Technology, Administration, Secondary School.

Introduction

Education is an important fulcrum in all spheres of development. It is the prime mover of individual and national development. On individual level, it arms the individual with the skills with which to navigate through the rocky of life. Specifically, secondary education, according to Federal Republic of Nigeria (2013) in her National Policy on Education, is the education children receive after primary education and before the tertiary education. The broad goal of secondary education is to prepare the individual for useful living within the society and for higher education. The achievement of the goals of secondary education follows two stages of six years duration - a junior secondary school stage and a senior secondary school stage and each being of three years duration.

The secondary school is headed by the principal, who is the chief administrator in the school. The principal's capability and competence in applying the appropriate administrative processes in the school operations determines to a great extent the achievement of the goals of secondary education. The principal does not work in isolation; he is in constant interaction with the Ministry of Education, School Based Management Committee/Board, teachers, learners and the external environment.

The school is an open system that is in constant interaction with the environment. It receives inputs from the external environment in the form of human and material resources, processes them and empties same into the environment. Consequently, the administrative functions of the principal are very complex and involves decision making, planning, organizing, communicating, influencing, coordinating and evaluating. These tasks are applied in areas of curriculum development, instructional supervision, staff and student personnel administration, guidance and counseling, finance, community relations, construction and maintenance of facilities, and special services (Tayo & Abass, 2014). Due to the complex nature of the principal's tasks, the effective and efficient functioning of the principal, especially in this modern time requires that the principal rises to the challenges of adopting emerging technological resources and services in the administration of the school.

The evolution of emerging technologies (ETs) is changing all facets of educational processes ranging from the nature of classrooms, quality of content, methodologies, mode of students' engagement, and evaluation (Onyema, 2019a). Technology plays an important role in education to foster education activities. Emerging technologies facilitates online education, research and use of flexible methodologies by educators. Emerging technologies 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" (Bozalek, 2011).

Emerging technologies bring about paradigm changes that are taking place at a very rapid pace with respect to the digital world. According to Spector (2012), learning is characterized by stable and persistent changes in what a person or a group of people know and can do. The biggest change in the present era is the application of emerging technologies. Emerging technologies provide opportunities for educators to improve their skills and job performances. It introduces flexibility to teaching and learning process, and takes teaching and learning beyond the physical classrooms.

Furthermore, emerging technologies has brought tremendous transformational changes to education across the globe, and many educators are now moving towards technology-based teaching and learning, as well school management and administration (Onyema, 2019b). The evolution of tablet computing, mobile applications, cloud computing, virtual technology, artificial intelligence, and many more are making school administration more interesting and productive. The current workplace practices in the education system require individuals to have the ability to use different types of emerging technologies with efficiency and confidence.

Different technology platforms and applications have since emerged and are being deployed by education authorities to help school administrators, like principals to improve the quality of administration. Technological tools such as CCTV cameras, computers, laptop, tablet or smartphone, close circuit television (CCTV), internet, projector, intercom, printer, scanner, television, biometric and recognition technology have proven very useful in school administration (Onyema, Ani, Nnaji, Abdullahi, Alsayed & Noorulhasan, 2019).

With the growth in school systems in size and in scope of activities, emerging technologies have provided mechanism for administrators to keep abreast of increasing demands for current and documented information (Tayo & Abass, 2014). Grades assigned to students must be recorded in some fashion, and these records must be easily and readily accessible to appropriate individuals. Currently, a number of educational institutions and boards are using emerging technology tools and equipment to process the examination results. The volume of such operations is often massive involving thousands of students. With the introduction of emerging technologies, these organizations are able to process the examination data and announce the results in quickest possible time.

Generally, the use of emerging technologies in the education sector helps in the improvement of the school standards in terms of academics, financial status, co-curricular activities and human resources management. Administration applications of emerging technologies are currently popular in schools due to its capabilities in facilitating administration activities from data storage to knowledge management and decision-making (Ghavifekr, Afshari, Siraj, & Seger, 2013). The introduction of innovative technological applications in schools is connected with changes, not only at the level of teaching and learning but also in carrying out administrative tasks in schools (Oyedemi, 2015). Therefore, emerging technologies are vital enabling tools that can no longer be ignored in the administration of schools. Emerging technologies have the potential to support the management of complex, standards-related instructional processes. They also can promote communication among staff, students, parents and other stakeholders.

The use of emerging technologies in school administration reduces time expended on clerical or paper work tasks, produce accurate information, ensure generation of reports when needed, and facilitate decision-making process. In schools, emerging technologies can be used in preparation of time-tables of different classes so that the classes can be run without time and room conflicts. It may also be used to keep track of appointments and obligations (Tayo & Abass, 2014).

In spite of the perceived impact of emerging technologies, there are questions about the readiness and capabilities of school administrators to adapt to the change and embrace the trends in education technology. As more and more technologies become available, school administrators need to be prepared to make the best use of emerging technology-based administrative components. Though, there is a growing literature on emerging technologies, no study known to the researchers, have focused precisely on principals perceptions of emerging technologies in administration of secondary schools in Enugu State. It is in view of this that this study appraises the perception of principals on emerging technologies in the administration of secondary schools in Enugu state.

Statement of Problem

Emerging technologies play an ever important role in increasing economic productivity through digital economies, enhancing the delivery of public and private services and achieving broad socio-economic goals in education, health care, employment and social development (UNESCO, 2004). Despite the huge importance of emerging technologies, Nigeria still cannot be counted among the progressive nations using these technologies in secondary schools for educational and administrative purposes (Ugwoke, et al., 2015). In line with the utilitarian values of emerging technologies in schools, it is worthy of note that active role of the school management is needed in order to realize as well as sustain the impact of emerging technologies in the administration of secondary schools.

Over the years, print and analog technologies were used for the school administrative tasks. In other words, a variety of records were maintained manually. These records provide information on the

school's previous, ongoing, and planned operations, as well as pertinent data from the outside world, which facilitated decision-making. The areas of educational programs and activities, staff and student people, physical facilities, finance, supervision, and engagement with stakeholders outside the school were all covered by the information that was kept. A school administrator needs accurate, timely, sufficient, and relevant information to carry out his administrative responsibilities. The deficiencies associated with storage, preservation and presentation of large volumes of the information in paper form made managerial processes very cumbersome. Consequently, alternative methods provided by emerging technologies become very imperative.

Purpose of the Study

The main purpose of the study was to examine the perception of principals on emerging technologies in administration of secondary schools, focusing on Science, Technical and Vocational Secondary Schools (STVSS) in Enugu State.

Specifically, the study seeks to:

1. Ascertain how principals use emerging technologies in personnel administration of STVSS in Enugu State.
2. Determine how principals use emerging technologies in data management of STVSS in Enugu State.

Research Questions

The following research questions were put forward in this study:

1. How do principals use emerging technologies in personnel administration of STVSS in Enugu State?
2. How do principals use emerging technologies for data management in administration of STVSS in Enugu State?

Hypotheses

$H0_1$: There is no significant difference between the mean ratings of male and female principals on emerging technologies adopted by principals in the administration of STVSS in Enugu State.

$H0_2$: There is no significant difference between the mean ratings of male and female principals on the use of emerging technologies for data management by principals in administration of STVSS in Enugu State.

Method

The design of the study was descriptive survey. A descriptive survey design according to Nworgu (2015) is a type of research design in which a group of people or items are studied by collecting

and analyzing data from only a few people or items considered to be representative of entire group or wherein the entire population is used for the study. It is aimed at collecting data and describing them in a systematic way. In this study, descriptive survey was considered appropriate because it established the opinions of the respondents on the influence of emerging technologies in the administration of STVSS in Enugu State.

The study was carried out in Enugu State. Enugu State has seventeen (17) local government areas and its capital is Enugu. It shares boundaries with Anambra State to the West, Kogi and Benue States to the North, Ebonyi State to the East and Abia State to the South. The population for study was drawn from the principals of the 40 Science, Technical and Vocational Secondary Schools in Enugu State. The sample consists of the entire 40 principals, comprising 29 males and 11 females in the STVSS in Enugu State. The rationale for using the entire population is because it is small and can be managed by the researcher. This is in line with the assertion of Uzoagulu (2011) who averred that if the population for the study is in hundreds, the researcher can make use of the whole respondents for the study. This implies that there was no sampling of the principals, since all of them were studied.

A structured questionnaire named "Influence of Emerging Technologies on Administration of Secondary Schools Questionnaire (IETASSQ)" developed by the researcher, was used for data collection. The questionnaire has two parts; A and B. Part A contains information on personal data of the respondents, while part B contains 17 items built in two clusters, 1 and 2. Cluster 1 of the questionnaire focused on the use of emerging technologies by principals in personnel administration, while Cluster 2 of the questionnaire addressed the use of emerging technologies for data management in administration of STVSS in Enugu State. The rating format for cluster 1 and 2 was based on a four point scale of Strongly agree (SA), Agree (A), Disagree (D), and Strongly disagree (SD). In other words, the higher the aggregate scores in the rating scale, the more positive the response of the subjects and the lower the score the more negative the response of the subjects. The scale was weighed 4, 3, 2, and 1 respectively.

The face validity of the research instrument was determined by giving initial copies of the instrument to three research experts. One of the experts was from the Department of Mathematics and Computer Education (Measurement and Evaluation option), while two were from Department of Educational Management all from the Faculty of Education, Enugu State University of Science and Technology (ESUT). They were specifically requested to assess the adequacy of the items in getting the required information, the quality of its language and the logicality of its arrangement. The experts assessed the suitability of the language, adequacy and relevance of the items in addressing the research questions bearing in mind the purpose of the study. Their corrections and comments were used to modify the questionnaire before the final copy was produced.

The reliability of the instrument was determined by a trial test on 8 principals comprising male and female STVSS in Ebonyi State, which has similar characteristics with Enugu State. Cronbach Alpha method was adopted to determine the internal consistency coefficient of the questionnaire, because the questions are polychotomous in nature. Cronbach Alpha statistics was used because the instruments were in clusters and items were not dichotomously scored. Cronbach Alpha is also considered appropriate as it ensured the homogeneity of items on the clusters. Clusters 1 and 2 yielded reliability indices of 0.77 and 0.75 respectively. The overall reliability index was 0.76. The indices were all high, indicating that the instrument was reliable and suitable for the study.

The questionnaire was administered on the respondents by the researcher and two research assistants who were properly briefed and instructed to enable them get familiar with the modalities for administering the instrument appropriately. The researcher acquainted them with the purpose of the study, as well as the explanation of the items in the clusters on each research question. It is necessary to use research assistants to make sure that the actual respondents for whom the instrument is meant for are indeed those who completed the instrument and also help to make clarifications to the respondents on the items whenever the need arises. The research instrument was administered using direct delivery and retrieval system. Out of fourty (40) copies of questionnaire distributed, only thirty seven (37) were correctly filled and returned copies, were used for the study.

The research questions were answered using Mean rating and standard deviation, while the hypotheses were tested at 0.05 level of significance using z-test statistic. The four point scales were used with the following values assigned to the responses:

Strongly agree - 4 points
Agree - 3 points
Disagree - 2 points
Strongly disagree - 1 point

The decision rule was that any item in clusters 1 and 2 with mean rating of 2.50 and above was interpreted as “Great Extent”, while mean rating below 2.50 was interpreted as “Low Extent”. This is in line with the position of Uzoagulu (2011) who stated that with four point scale, a mean rating with 2.50 or above should be positive, while those less than 2.50 should be regarded as negative. The z-test statistics was used to test the hypotheses. Consequently, when the calculated z-value is less than the critical z-value, the null hypothesis was rejected, but when the calculated z-value is equal to or greater than the critical z-value, the null hypothesis is not rejected.

Results

Research Question 1: What are the emerging technologies adopted by principals in the administration of STVSS in Enugu State?

Table 1: Mean responses and standard deviation of principals on the use of emerging technologies in personnel administration in secondary schools in Enugu State.

S/N	ITEMS	Male			Female			Overall		
		X	SD	Dec.	X	SD	Dec.	X	SD	Dec.
1	Tracking lateness of teachers	2.20	1.07	D	2.22	.94	D	2.21	1.01	D
2	Facilitate easy access to information	3.07	1.03	A	3.35	1.04	A	3.21	1.04	A
3	Students admission processes	1.32	.96	D	2.37	1.01	D	1.85	.99	D
4	Improved quality of services	3.20	.94	A	2.74	.92	A	3.97	.93	A
5	Facilitate information transfer	3.04	1.08	A	2.91	.51	A	2.98	.80	A
6	Motivate staff to work harder	3.05	1.05	A	2.81	.87	A	2.93	.96	A
7	Monitor students activities using CCTV	1.93	.87	D	2.05	.92	D	1.99	.90	D
8	Reduce administrative workload	3.19	.14	A	2.97	1.11	A	3.08	.63	A
9	Reduce monotony of work	2.79	.99	A	3.01	1.03	A	2.90	1.01	A
	Cluster mean	**2.64**	**.90**	**A**	**2.71**	**.93**	**A**	**2.68**	**.92**	**A**

Table 1 above shows the mean scores of male and female principals on how principals use emerging technologies in personnel administration of STVSS in Enugu State. The respondents' means ranged from 1.32 to 3.20 with a cluster mean of 2.64 and a standard deviation of .90 for male principals, while those of female principals ranged from 2.05 to 3.35 with a cluster mean of 2.06 and standard deviation of 1.01. The respondents had an overall cluster mean of 2.71 and standard deviation of .93. Both groups recorded similar responses in all the items. The overall cluster mean of 2.68 and standard deviation of .92 indicates that in personnel administration, principals in STVSS use emerging technologies in

facilitating easy access to information, reduce administrative workload, improving quality of services, facilitating information transfer, reducing monotony of work and motivating staff to work harder.

Research Question 2: How do principals use emerging technologies for data management in administration of STVSS in Enugu State?

Table 2: Mean responses and standard deviation of principals on the use of emerging technologies for data management in secondary schools in Enugu State.

S/N	ITEMS	Male			Female			Overall		
		X	SD	Dec.	X	SD	Dec.	X	SD	Dec.
10	**Record keeping**	3.08	.99	A	3.35	.96	A	3.22	.98	A
11	Results processing	1.81	1.01	D	1.28	1.02	D	1.55	1.02	D
12	Storage of relevant information	2.88	.91	A	3.13	1.10	A	3.01	1.01	A
13	Budget preparation	1.21	1.14	D	1.23	1.04	D	1.18	1.09	D
14	Finance and accounting	1.91	1.00	D	1.07	1.06	D	1.49	1.03	D
15	Inventory management	1.68	.84	D	2.20	.93	D	1.94	.89	D
16	Preparation of payroll	2.14	.89	D	2.09	1.01	D	2.12	.95	D
17	Archiving of school data	2.05	.93	D	2.16	.92	D	2.11	.93	D
	Cluster mean	**2.09**	**.96**	**D**	**2.06**	**1.01**	**D**	**2.08**	**1.13**	**D**

Table 2 above shows the mean scores of male and female principals on the use of emerging technologies for data management in the administration of STVSS in Enugu State. The respondents' means ranged from 1.21 to 3.08 with a cluster mean of 2.09 and a standard deviation of 1.03 for male principals, while those of female principals ranged from 1.07 to 3.35 with a cluster mean of 2.06 and standard deviation of 1.01. The respondents had an overall cluster mean of 2.08 and standard deviation of 1.13. In the

responses, only items 1 and 3 had mean scores above 2.50 for both male and female principals, indicating that record keeping and storage of relevant information are the areas that principals use emerging technologies for data management in the administration of STVSS in Enugu State.

Hypotheses

$H0_1$: There is no significant difference between the mean ratings of male and female principals on how principals use emerging technologies in personnel administration of STVSS in Enugu State.

Table 3: z-test of significant difference between male and female principals on principals' use of emerging technologies in personnel administration of STVSS in Enugu State

Group	N	Mean	SD	DF	Z-calculated	Z-critical	Decision
Male principals	29	2.64	0.90	38	0.21	+ 2.02	Do not reject $H0_1$
Female principals	11	2.71	0.93				

Table 3 shows the z-value for the difference in male and female principals on the effects of emerging technologies on principals' administration of STVSS in Enugu State. The result showed that the calculated z-value (0.21) was less than the critical value (2.02). Hence, the null hypothesis was not rejected. Therefore, there is no significant difference between the mean ratings of male and female principals on the effects of emerging technologies on principal's administration of STVSS in Enugu State.

$H0_2$: There is no significant difference between the mean ratings of male and female principals on the use of emerging technologies for data management in the administration of STVSS in Enugu State.

Table 4: z-test of significant difference between male and female principals on principals' use of emerging technologies for data management in the administration of STVSS in Enugu State

Group	N	Mean	SD	DF	Z-calculated	Z-critical	Decision
Male principals	29	2.09	0.99	38	0.09	+ 2.02	Do not reject $H0_2$
Female principals	11	2.06	1.01				

Table 4 shows the z-value for the difference in male and female principals on the emerging technologies adopted in the administration of STVSS in Enugu State. The result showed that the calculated z-value (0.09) was less than the critical value (2.02). Hence, the null hypothesis was not rejected. Therefore, there is no significant difference between the mean ratings of male and female principals on emerging technologies adopted by principals in the administration of STVSS in Enugu State.

Summary of Findings

The findings of the study revealed that:

1. Principals use emerging technologies in personnel administration in the STVSS in Enugu State.
2. Principals do not use emerging technologies for data management in the administration of STVSS in Enugu State.

Discussion

The finding of the study indicated that in personnel administration, principals in STVSS use emerging technologies in facilitating easy access to information, reduce administrative workload, improving quality of services, facilitating information transfer, reducing monotony of work and motivating staff to work harder. The respondents were of the view that most STVSS in Enugu State have not really had a robust use of emerging technology tools and therefore are limited in types of emerging technologies they use, and this affects the activities and what they are used for in the schools.

This finding agrees with the submission of Oyedemi (2015) who posited that the introduction of innovative technological applications in school is connected with changes, not only at the level of teaching and learning but also in carrying out administrative tasks in schools, as they are vital enabling tools that can no longer be ignored in the administration of schools, with their potential to support the management of complex, standard-related instructional processes and promote communication among staff, students, parents and other stakeholders. Also, researchers like Atsu (2014); Ghavifekr et al. (2013); Krishnaveni and Meenakumari (2010) and Makhanu and Kamper (2012) submitted that emerging technologies provide several possibilities for educational administrators, allowing information to be transfered, stored , retrieved and processed by almost all who work, study or interact with the institution and help in keeping daily records of students, analysing students attendance records, marking students scripts and recording results, curriculum and instruction development, school community relationship and school business operations.

Furthermore Olatunde-Aiyedun, Ogunode and Eyiolorunse-Aiyedun (2021) averred that information and communication technologies in the educational institutions have also leads to easy accessibility and dissemination of information on school records, will become available for national

planning, financial budgeting, effective implementation of the educational programs and policies. They further stated that school record keeping is all about information collection, storage, retrieval, use, transmission, manipulation and dissemination for the purpose of enriching communication, decision-making and problem solving ability in the school system. It is therefore necessary that this process be as accurate and accessible as possible, and that using ICT in keeping school records will help to facilitate and enhance the administration of the school towards achieving the goals of the school.

The findings of the study also showed that record keeping and storage of relevant information are the areas that emerging technologies are used for data management by principals in the administration of STVSS in Enugu State. This agrees with the submission of Mulauzi (2019) who averred that the use of emerging technologies to store organizational records constitute an important aspect of effective administration, as advanced computer storage technology and sophisticated retrieval techniques such as query language, multimedia database and database management systems can be effective tools in enhancing the storage of organizational records. These tools increase the speed at which records can be accessed. Also, Pierre and Andala (2020) posited that emerging technologies are vital tools in influencing record keeping in schools, syllabus coverage and content delivery. The implication of this finding is that STVSS in Enugu State has not been positioned to deliver competitive services in a fast-changing society orchestrated by advances in information and communication technology.

Conclusion

This study establishes that emerging technologies have significant influence on the principals' administration of secondary schools. This means that if more education administrators have access to relevant technologies, the quality of their output would increase. Emerging technologies are capable of making administration more effective in Nigerian secondary schools. Its use could transform administrative activities in schools and enhance the standard of education. Their introduction for administrative purpose could encounter some challenges which are not insurmountable.

Recommendations

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

1. There is need for government to provide the enabling environments and supportive infrastructures that aid the smooth adoption of emerging technologies.
2. Principals of STVSS should update their digital skills in line with the realities of emerging technologies in education in order to meet the needs of this digital era.

3. Government should organize constant training and retraining programme for principals of STVSS and administrative staff to make them grounded in the use of emerging technologies for school administration.
4. The Science, Technical and Vocational Education Board should prioritize training and retraining of principals so as to ensure effective use of the emerging technological tools for effective and efficient administration of STVSS.

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