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Technological Innovations as Correlate of Teachers' Job Performance in Public Secondary Schools in Abia State

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Abstract

This study investigated technological innovations as correlates of teachers' job performance in public secondary schools in Abia State. The design of the study was a correlational research design. Two research questions and two null hypotheses guided the study. The population consisted of 1,911 respondents. The sample of the study was three hundred and thirty-one respondents (331). This consisted of 43 principals and 288 teachers drawn from 43 sampled schools in the three education zones of the state. The sample size was determined using Taro Yamane formula. Two sets of questionnaires titled; Technological Innovations Questionnaire (TIQ) and Teachers Job Performance (TJP) were developed and used for data collection for the study. The data collected was analyzed using Pearson Product Moment correlation to answer research questions and to test the hypothesis at .05 level of significance. The strength of relationship of the variables was decided or interpreted using Rumsey (2016) correlation coefficient scale. The findings of the study revealed that the use of ICT tools to a positive high extent relates to teachers' Job performance and Internet Facilities to a positive high extent relates to teachers' Job performance. The study recommended that teachers' should adopt the use of ICT tools and Internet facilities as technological innovations for effective teaching and learning in public secondary schools in Abia State, principals should ensure adequate provision of technological innovations in schools among others.

Keywords: Technological Innovations, Teachers' Job Performance, Secondary Schools.

Introduction

The world is changing so fast with changes in technologies in Nigerian educational system. Secondary education which is the second rung of Nigerian educational system is not exempted in these changes. To this end, secondary schools are gradually adopting technology to support teaching and learning processes through technological innovations. With these innovations, teachers and students can access and obtain learning resources through the learning platform (Osakwe, 2021).

Technological innovation is the radical or incremental change in principles, procedures and operations of any service delivery organization in other to bring about the desired changes (Eya, 2018). Bingimlas (2019) explained that technological innovation involves exploiting new ideas through the use of technology that will lead to new processes or service in order to generate values and bring about significant changes in the educational system. With the introduction of technological innovations, the old method of teaching and learning in secondary schools has been abandoned paving way for the introduction of new technologies which offers efficiency, speed and quality delivery of instruction.

Evidently, Ojo (2021) posited that technological innovations create an enabling environment where students, teachers, principals and parents can easily communicate and collaborate with each other to achieve educational goals. Some examples of technological innovations are: information and communication technology (ICT) tools, internet facilities, artificial intelligence, and renewable energy among others. Omerue (2023) argued that many secondary schools around the world are at the centre of technological innovation, as such they need best practices from teachers in order to drive and put in place effective teaching and learning of instruction. In this study, the attention of the researcher is on some aspects of technological innovations such as ICT tools and internet facilities.

Information and Communication Technology (ICT) tools may be defined as that facet of technology which deals with the handling and processing of information, using all kinds of electronic devices to facilitating communication, demonstration and display of lesson contents to the learners (Ebelebe, 2020). Mbowheing (2023) viewed Information and Communication Technology tools as those facilities such as laptop, audio tape recorder, video tape recorder, television, cellular phones, desktop computer, video camera, interactive white board,

multimedia projector, electronic notice board and so on. Chandler and Mundey (2020) reiterated that ICT tool is an interactive learning method using technological aids to deliver instruction in accordance with learners' pedagogical needs. More so, Smith (2019) noted that ICT tool is integral in teaching and learning processes and should be utilized by teachers to improve academic performance of students, boost the image of the school and as well justify the investments the government, parents and other stakeholders make in secondary education.

Notably, Ogbonna (2018) asserted that teachers should be retrained to promote ICT tools for instructional delivery especially in this computer era. Thus, the knowledge of computer, would enable teachers to prepare students successfully for today information rich and technology driven world. This is because ICT tools like projector, videotaped instructional aids helps to brighten the classroom and bring variety in the class lesson. Bingimlas (2019) posited that ICT tools aid slow learners to brighten up and bright students to learn faster. They spur learners to be very inquisitive to learn and develop effective skills which tend to facilitate their quality service, in support of the above, Eya (2018) explained that ICT tools helps both teachers and students to overcome physical limitations during the presentation of subject matter. Hence, the use of videotaped slide tape and photographs in presenting information helps greatly in overcoming physical difficulties thereby promoting student's comprehension and retention.

Relatively, Selwood and Pilkington (2015) reiterated that ICT tools has many potential benefits for teachers, including helping to reduce their workload thereby enabling them to spend more time on other activities. More so, Okafor (2014) identified the tremendous benefits of ICT tools as: provides opportunity for more student-centered teaching, promotes greater exposure to vocational and workforce skills for students, offers opportunities for multiple technologies delivered by teachers, enhances greater opportunity for teacher-to-teacher and student-to-student communication and collaboration, creates greater enthusiasm for learning amongst students, prepares learners' for the real world, provide teachers with new sources of information and knowledge, promotes distance learners county-wide with online educational materials, provide learners with additional resources to assist resource-based learning and fosters the delivery of equitable quality education. ICT tools might be very effective if complimented with internet facilities.

Internet facilities is one of the most important contributions of technological innovations because it is convenient and easily accessed to aid learning. Osakwe (2021) opined that internet facilities have removed distance and space barriers in teaching and learning processes. As such, with the help of internet facilities, students can now learn through e-library, zoom, google meet, whatsapp, telegram, facebook among other online teaching and learning (Abubakar & Bello, 2020). More so, Wee (2019) posited that students can also have easy access to resource persons, mentors, experts, researchers, professionals, and peers-all over the world. Shavinina (2021) asserted that the use of the internet has been known to have a number of advantages such as; fostering students to play a more active role, promoting detailed discussions of courses, encouraging students to become more independent, ensuring free-flow of communication between students and teachers, encouraging students to easily process new student-based education material, developing student skills, and the hierarchical structure between teachers and students will be more flexible. Corroborating this assertion, Colley and Maltby (2018) opined that students would also be able to access information pertaining their courses and activities from different sources quickly and without difficulty, and also evaluate these sources and synthesize them.

Similarly, the importance of technological innovations in effective teaching and learning in secondary schools cannot be overemphasized. This is because when technology is properly integrated into teaching and learning, it offers students the opportunity to communicate with their teachers in near real-time. More so, it provides a more efficient communication method among students (Osakwe, 2021). Thus, there is need for teachers to improve in their technological advancement to meet up with the 21st century teaching and learning. However, in an attempt to improve teachers' job performance, one may wonder the extent technological innovations such as ICT tools and internet facilities serve as correlates of teachers' job performance in public secondary schools in Abia State. It is against this backdrop that the study sought to examine technological innovations as correlates of teachers' job performance in public secondary schools in Abia State.

Statement of problem

Technological innovations have become a global cultural phenomenon. In this regard, teaching and learning in this digital age has exceeded mere talk and chalk lecture and as such, teachers are expected to go beyond the conventional teaching method by adopting technological innovations.

Unfortunately, these researchers observed that the use of technological innovations in public secondary schools in Abia State is very poor. It seems these schools do not have adequate ICT tools or internet facilities and while few who does, do not frequently allow students to have access to the technologies. One wonders if technological innovations are yet to be formerly recognized as a means of improving teachers' job performances, thus informed the reason why one cannot find any of such things in most public secondary schools in Abia State. This situation is worrisome and needs urgent attention.

Regrettably, available literature to the best of the researchers' knowledge did not provide adequate information on technological innovations as correlates of teachers' job performance in public secondary schools in Abia State. This created a gap in knowledge which this study filled. It is on this basis that the problem of the study put in question form is: To what extent does technological innovations serve as correlates of teachers' job performance in public secondary schools in Abia State?

Purpose of the study

The purpose of this study is to examine technological innovations as correlates of teachers' job performance in public secondary schools in Abia State. Specifically, the study sought to:

1. ascertain the extent to which ICT tools relate to teachers' job performance in public secondary schools in Abia State.
2. determine the extent to which Internet facilities relate to teachers' job performance in public secondary schools in Abia State.

Research questions

The following research questions guided the study:

1. What is the extent ICT tools relate to teachers' job performance in public secondary schools in Abia State?
2. To what extent do Internet facilities relate to teachers' job performance in public secondary schools in Abia State?

Hypotheses

The following null hypotheses were formulated to guide the study and were tested at 0.05 level of significance:

1. There is no significant relationship between ICT tools and teachers' job performance in public secondary schools in Abia State.
2. There is no significant relationship between Internet facilities and teachers' job performance in public secondary schools in Abia State.

Significance of the study

The findings of this study would be of great benefit to teachers, students, principals, and future researchers. To the teachers, the findings of this study would exposed them to technological innovations such as ICT tools and internet facilities which may enhance their teaching methodology and technical proficiency, resulting in the improvement of quality instruction, increased productivity.

To the students, the findings of the study would help them to improve on their learning outcomes resulting to accelerated academic performance.

To the principals, the findings of this study would enable them know the extent to which technological innovations relate to teachers' job performance, thereby ensuring the availability of these technological innovations in schools in order to ensure successful accomplishment of educational goals and objectives.

Finally, to future researchers, the findings of the study would be of immense benefit to them in that it will serve as a source of literature in their research endeavour. It will also provide them with ready tools, guidance and direction to carry out their further studies.

Methodology

The study employed a correlational survey research design. The population of the study is 1,911. It is made up of 248 principals and 1,663 teachers in 248 public secondary schools in Abia state (Abia State Secondary Education Management Board, (ASSEMB, 2022). The use of principals and teachers was informed by the fact that they are in a better position to give useful information and also have good knowledge on technological innovations and teachers' job performance. The sample of the study is three hundred and thirty-one respondents (331). This consist of 43 principals and 288 teachers drawn from 43 sampled schools in the three education zones of the state. The sample size was determined using Taro Yamane formula.

Two sets of questionnaires were developed by the researcher which were used for data collection for the study. The first questionnaire titled; Technological Innovations Questionnaire (TIQ) was designed to collect information on technological innovations and it contained 14 items. The questionnaire was built on four (4) point rating scale of: Very High Extent (VHE)-4points, High Extent (HE)-3points, Low Extent (LE) 2points and Very Low Extent (VLE)-1point. The second questionnaire titled: Teachers' Job Performance Questionnaire (TJPQ) contained 10 items. The questionnaire was built on four (4) point rating scale of: Strongly Agree (SA)-4points, Agree (A)-3points, Disagreed (D)-2points and Strongly Disagreed (SD)-1point. The researcher with the help of three research assistants administered the questionnaire directly to the 331 respondents in the sampled secondary schools in each of the Education Zones. The data collected was analyzed using Pearson Product Moment correlation to answer research questions and to test the hypothesis at .05 level of significance. The strength of relationship of the variables was decided or interpreted using Rumsey (2016) correlation coefficient scale. The extent or strength of relationship of the variables were decided or interpreted using Rumsey (2016) correlation coefficient scale, which stated that: ±.70 to 1.00 = Strong/High Extent Relationship, ±.40 to 0.69 = Moderate/Medium Extent Relationship and ±.00 to 0.39 = No correlation/Weak/Low Extent Relationship. To this end, Rumsey (2016) asserted that correlation coefficients can range from -1.00 to +1.00 with positive numbers used to identify a positive relationship and negative numbers being used to identify a negative relationship while no association is indicated with a correlation coefficient of 0.00.

RESULTS

Research Question 1

What is the extent to which ICT tools relate to teachers' job performance in public secondary schools in Abia State?

Hypothesis 1

$H0_1$: There is no significant relationship between ICT tools and teachers' job performance in public secondary schools in Abia State.

Table 1: Correlation Matrix of ICT tools and Teachers' Job Performance in Public Secondary Schools in Abia State

		ICT Tools	Teachers' Job Performance
ICT Tools	Pearson Correlation	1	.74*
	P-value		.11
	N	331	331
Teachers' Job Performance	Pearson Correlation	.74*	1
	R^2	0.55 (55%)	
	P-value	.110	
	N	331	331

*. Correlation is significant at the 0.05 level (2-tailed), N = Number of respondents.

Table 1 showed a correlation index of .76 which is positive and within ± 70 to 1.00 correlation coefficient of Rumsey (2016). This indicates that ICT tools relate to teachers' job performance to a high extent. The coefficient of determination (R^2) 0.55 indicates that ICT tools contribute to 55% of the variance observed in teachers' job performance. The table also showed a p-value of .11 which is greater than the alpha value of .05. Therefore, the hypothesis that there is a significant relationship between ICT tools and teachers' job performance was not rejected. This implies that ICT tools significantly relate to teachers' job performance.

Research Question 2

What is the extent to which internet facilities relate to teachers' job performance in public secondary schools in Abia State?

Hypothesis 2

$H0_2$: There is no significant relationship between internet facilities and teachers' job performance in public secondary schools in Abia State.

Table 2: Correlation Matrix of internet facilities **and teachers' job performance in public secondary schools in Abia State.**

		Internet Facilities	Teachers' job Performance
Internet Facilities	Pearson Correlation	1	.76*
	P-value		.19
	N	331	331
Teachers' Job Performance	Pearson Correlation	.76*	1
	R^2	0.578 (58%)	
	P-value	.19	
	N	331	331

*. Correlation is significant at the 0.05 level (2-tailed), N = Number of respondents.

Table 2 revealed a correlation index of .76 which is positive and within ± 70 to 1.00 correlation coefficient of Rumsey (2016). This indicates that internet facilities relate to teachers' job performance to a high extent. The coefficient of determination (R^2) 0.624 indicates that internet facilities contribute to 58% of the variance observed in teachers' job performance. Table 2 also showed a p-value of .19 which is greater than the alpha value of .05. Therefore, the hypothesis that there is a significant relationship between internet facilities and teachers' job performance was not rejected. This implies that internet facilities significantly relate to teachers' job performance.

Discussion of findings

Findings of the study in table 1 revealed that ICT tools to a positive high extent relate to teachers' job performance. The corresponding hypothesis affirmed that there was a positive significant relationship between ICT tools and teachers' job performance. This implies that ICT tools significantly relate to teachers' job performance in public secondary schools in Abia State. The findings of this study is in agreement with the findings of Chandler and Mundey (2020) whose findings revealed that ICT tool is an interactive learning method using technological aids to deliver instruction in accordance with learners' pedagogical needs. The finding corroborates the findings of Bingimlas (2019) who posited that ICT tools aid slow learners to brighten up and bright students to learn faster. They spur learners to be very inquisitive to learn and develop

effective skills which tend to facilitate their quality service. In support of the above, Eya (2018) explained that ICT tools helps both teachers and students to overcome physical limitations during the presentation of subject matter. Selwood and Pilkington (2015) reiterated that ICT tools has many potential benefits for teachers, including helping to reduce their workload thereby enabling them to spend more time on other activities. More so, Smith (2019) noted that ICT tool is integral in teaching and learning processes and should be utilized by teachers to improve academic performance of students, boost the image of the school and as well justify the investments the government, parents and other stakeholders make in secondary education.

The finding of the study as indicated in table two revealed that internet facilities to a high extent positively relates to teachers' job performance in public secondary schools in Abia State. The correspondents' hypothesis affirmed that internet facilities significantly relates to teachers' job performance in public secondary schools in Abia State. The finding of this study is in consonance with the findings of Osakwe (2021) opined that internet facilities have removed distance and space barriers in teaching and learning processes. As such, with the help of internet facilities, students can now learn through e-library, zoom, google meet, whatsapp, telegram, facebook among other online teaching and learning (Abubakar & Bello, 2020). More so, Wee (2019) posited that students can also have easy access to resource persons, mentors, experts, researchers, professionals, and peers-all over the world. Shavinina (2021) asserted that the use of the internet has been known to have a number of advantages such as; fostering students to play a more active role, promoting detailed discussions of courses, encouraging students to become more independent, ensuring free-flow of communication between students and teachers, encouraging students to easily process new student-based education material, developing student skills, and the hierarchical structure between teachers and students will be more flexible. Corroborating this assertion, Colley and Maltby (2018) opined that students would also be able to access information pertaining their courses and activities from different sources quickly and without difficulty, and also evaluate these sources and synthesize them.

Conclusion

The study concluded that if teachers are exposed to technological innovations such as ICT tools and internet facilities, it would result in improving teachers' job performance and technical proficiency of teachers and students, resulting to increased productivity and accelerated development.

Recommendations

The following recommendations were made based on the findings of the study:

1. Teachers should adopt the use of ICT tools and Internet facilities as technological innovations for effective teaching and learning in public secondary schools in Abia State.
2. Principals should ensure adequate provision of technological facilities in schools.
3. The ministry of education should make provisions for capacity building of teachers so as to equip them with technological competencies.

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