Article

Root Causes of the Shortage of Educational Technology Experts: Implications for Teaching and Learning in Tertiary Institutions in Rivers State, Nigeria

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Abstract: The study examined the root causes of the shortage of Educational Technology experts and implications for Educational Teaching and Learning in Tertiary institutions in Rivers state Nigeria. The study was guided by the following: 3 objectives of the study, 3 research questions and a research hypothesis. Descriptive Survey research type was used in the study. The study was carried out in Rivers State in Nigeria. A total of 4,000 people comprising experts in educational technology, faculty, administrators, and students of selected tertiary institutions in Rivers State, were the study population. The population was divided into groups and the stratified random sampling technique was used. Stratified random sampling technique was used where the population was divided into groups and sample size was 400. A structured questionnaire was the main instrument used to collect data. This was designed to obtain data on the cause of the lack of educational technology experts. To maximize the response rate this questionnaire was administered online and by face-to-face. Participants were emailed and posted on social media feed a link for the online administration. If administration was to be done in the face-to-face approach, trained Research Assistants were given questionnaires during the scheduled class meetings or meetings in the selected institutions. Descriptive data analysis (mean and standard deviation) was used in the analysis of data obtained from the questionnaires. Consequently, based on the findings, the following recommendations were made; Educational institutions should develop educational technology training programs and expand them. Immediate links to universities and technical colleges can help to develop specialist courses which enable students to learn the skills that are required. It will be wise to allocate special resources from the government and institutions for funding educational technological-focused projects. This encompasses investment in infrastructure, resources and teacher professional development.

Keywords: Educational technology, tertiary institutions, teaching, learning processes

Introduction

Incorporating educational technology into learning and teaching activities is becoming more crucial day by day in 21st-century, especially in higher education. The adoption of technology in the educational setting can be well facilitated by experts in educational technology who could help teachers and students use technology for effectiveness and to support learning. But there are very few of these experts in many parts of Nigeria, especially the Rivers State with these limitations affecting effective implementation of

educational technology in tertiary institutions.

Educational technology contains vast gamut of tools and resources, such as software, hardware, and pedagogical strategies that carry individuals in the direction of learning experiences. The International Society for Technology in Education (ISTE)[1] has shown how leveraging technology in teaching can result in better student engagement, improved personalization, and improved outcomes. The National Policy for Education, Federal Republic of Nigeria [2]. highlights the integration of technology in the education system in Nigeria, in order to equip students with the competitive skills needed in the modern world.

Although the importance of educational technology is well established, the use of educational technology in Nigeria's higher education system has been facing difficulties. A report by the National Universities Commission (NUC)[3] reported that many of the universities in Nigeria are not adequately equipped with infrastructure, resources and personnel to effectively incorporate technology into their curricula. Rivers State is alone foremost as there is high demand for ETEs compared to supply.

Apart from the lacking official concentration of the treasure of Rivers State, the other major factors for the scarcity of Education Technology Experts in the State is the absence of a specified training program for appraisers. There is no comprehensive course menu on education technology in many universities thereby producing graduates that lack knowledge and skills in the area Ogunleye [4]. This is compounded by a lack of opportunities for hands-on training. Educators and administrators need a greater understanding of the value of educational technology and the importance of the role of the technology specialist. This lack of knowledge can result in inadequate training is investment in the recruitment of trained workers/Adebayo & Afolabi, [5]. The economic plight of Nigeria and in particular Rivers State has resulted to the reduction of educational technology budget in the State thereby affecting the recruitment of qualified personnel. Earning competitive salaries is challenging and not easy to find and keep proficient staff in many institutions, Ojo [6]. Brain Drains (BD) are the phenomenon of skilled professionals leaving Nigeria for other countries due to their better opportunities in those nations has been a great threat to the available educational technology experts in Nigeria. High number of graduates is a challenge against the country's local job market because many of them are looking for employment abroad, Ogunyemi [7]. Change is frequently difficult in educational setting, as there is a preference for the traditional teaching approaches rather than the innovative ones. There are cultural barriers that may prevent the use and integration of Educational Technology and the presence of a domain expert in the area Nwafor[8].

The dearth of teacher education technologists has hugely influenced the processes of teaching and learning in tertiary institutions in Rivers state. However, with the absence of competent staff to facilitate technology integration, teachers might not be fully able to make worthwhile use of the tools at their disposal, which could result in sub-optimal learning experiences for their students. This can lead to decreased involvement with school, reduced performance in school, a lack of preparedness for the job market in the 21st century, Eze [9].

The problem of shortage of educational technology specialists in Rivers State cannot be solved without looking into the root causes of the situation to improve quality of education in tertiary institutions. Educational technology stakeholders can improve learning and teaching through investing in and promoting training opportunities, increasing awareness of the significance of integrating technology in the learning process and building a positive culture surrounding technology integration in education. The study seeks to examine these root causes of the educational institutions in Rivers State.

Statement of the Problem

The use of educational technology in education and learning has taken on significant importance in the 21st century and it is especially important in tertiary education settings. Rivers State, Nigeria, however, is experiencing a critical situation; shortage of educational technology experts which is a challenge that affects the effective implementation of learning through technology. The reasons for this shortage range from inappropriate training programs to a lack of awareness on the significance of technology in education, inadequate funding for technology programs, and the mismatch between education and industry.

The training programs offered to Rivers State educational technology professionals in the first place, may be outdated or inadequate to meet the requirement of the modern educational environment. The educators in many institutions are poorly trained and understand very limited aspects of education and do

not have the resources or infrastructure to effectively implement and manage the use of educational technologies.

Second, there is a lack of understanding among educators and administrators of the possible benefits of education technology. This ignorance can lead to opposition to the use of new technologies and thus worsen the lack of qualified professionals. Furthermore, the false dichotomy of whether education needs technology is considered a luxury or if it needs to be an integral part of the learning process, can be a major constraint in investments in training and development.

Moreover, funding for educational technology programs is occasionally scarce in Rivers State. There is a big challenge in finding the right people and technology tools at tertiary institutions, as many are faced with inadequate resources. This financial limitation impacts on the availability of the Educational Technology professionals, and also reduces the capability of establishments to imagine and enhance their pedagogy and learning process.

Finally, the gap between the required skills in learning and skills in industry. This is because the graduates fail to be suitably trained for their roles in the job market, which further adds to the scarcity of experts in the field of educational technology.

This is a truly significant shortage with a lot of consequences. If tertiary institutions in Rivers State do not have qualified experts in education technology they might not be able to use technology to be able to employ effective education teaching and learning methods that will enable this learning. This may contribute to poorer learning standards, diminished student interaction and ultimately, less academic success achieved by students.

Aim and Objectives of the Study

The aim of study is to investigates the root causes of the shortage of educational technology experts: implications for teaching and learning in Tertiary Institutions in Rivers State, Nigeria. The Objectives specifically to;

1. identify the root causes of the shortage of educational technology experts in tertiary institutions in Rivers State.
2. assess the implications of this shortage on teaching and learning processes in these institutions.
3. propose recommendations for addressing the shortage of educational technology experts and enhancing the integration of technology in education.

Research Questions

1. What are the primary factors contributing to the shortage of educational technology experts in tertiary institutions in Rivers State?
2. How does the shortage of educational technology experts impact teaching and learning in these institutions?
3. What strategies can be implemented to mitigate the shortage of educational technology experts and improve educational technology integration?

Research Hypothesis

Null Hypothesis

There is no significant relationship between the shortage of educational technology experts and the quality of teaching and learning in tertiary institutions in Rivers State.

Alternative Hypothesis

There is a significant relationship between the shortage of educational technology experts and the quality of teaching and learning in tertiary institutions in Rivers State.

Significance of the Study

The objectives of this thesis is to examine the cause(s) of the lack of Educational Technology experts in Rivers State and implications of it to education in Tertiary Schools. This research study has a diverse importance which includes:

Based on the results of this study, numerous information can be gained that can be very beneficial to inform about the causes of the lack of experts in the field of educational technology, and thus the implications can be taken for policy planning and educational strategic planning for educational

institutions. Identifying these drivers is crucial to designing interventions to help solve the problem.

The results of this study made obvious the importance of the role of education technologists in improving the educational quality. The research can be used to support proposals for greater investment in trained staffing and teaching and learning improvement programmes, by highlighting the relationship between trained staffing arrangements and effective teaching and learning results.

The findings of the study were offered to policymakers, educational leaders and stakeholders as recommendations for dealing with the challenge of the shortage of educational technology experts. This can result in the formation of more effective training programs, improved funding models, and improved links between educational institutions and industry.

This study also made people aware of the significance of educational technology and the demand of the qualified persons. Raising awareness may contribute to creating an environment for innovation and openness to the use of new technologies in teaching and learning.

The outcome of this research study would help add to the existing body of work in the area of Educational technology and Workforce development in Nigeria. It will serve as a baseline for further research and study of the challenges and opportunities in this area.

Findings could help overcome the lack of educational technology specialists exists and enhance student engagement and performance. Evaluating and keeping tertiary institutions equipped with the required skills would enable students to enjoy improved learning experiences and be imbibed with skills that would make them fit for the modern workforce.

The study would be of great significance on the present scenario of the educational technology in Rivers State and in creating foundation for the reforms that can help in improving the quality of education in tertiary institutions. This study attempts to solve the educational technological manpower shortage if any from the root cause and help to build a sound and innovative Education system in Nigeria.

Scope of the Study

The study was conducted among tertiary institutions in Rivers State, Nigeria which include universities, polytechnic universities and colleges of education. It explored the views of both teachers and administrators, as well as students, on the teacher shortage crisis for educational technology and the impacts such a problem has on learning and teaching. This research was to be confined only to the present year of study (2026) and to be followed by both qualitative and quantitative approach to data collection. This finding was applicable to relevant policy makers, education managers and stakeholders interested in enhancing the use of educational technology in the area.

Theoretical Frameworks

The theoretical frameworks that suites for “Root Causes of the Shortage of Educational Technology Experts: Implications for Teaching and Learning in Tertiary Institutions in Rivers State, Nigeria”” is derived from the theories to be discussed in this publication.The theories discussed in this publication are drawn from the theoretical frameworks that suites to the work of Root Causes of the Shortage of Educational Technology Experts: Implications for Teaching and Learning in Tertiary Institutions in Rivers State, Nigeria”.

1. Human Capital Theory

Gary Becker [10] put forward the Human Capital theory in the year 1964. According to Human Capital Theory, people expend efforts in their education and training to improve their economic value and productivity. This theory says the lack of educational technology experts is due to inadequate educational system human capital investments. Within the domain of education, this theory can be utilized to explain the occurrence of fewer educated people in the educational technology job market; Examples include insufficient funding of educational technology programs, lack of access to good educational technology training, and inadequate personal incentives to join educational technology professions.

As a response to the Study:

The Human Capital Theory relates to the study because it offers a lens at which to view the systemic problems associated with the lack of experts in educational technology. The study, through the analysis of educational policies, funding mechanism and training opportunities in Rivers State, can detect areas of gaps in the human capital development. This sense of understanding will facilitate making good strategies for

the enhancement of training and retention of ET specialists that will impact on teaching and learning of ET in tertiary institutions.

2. Social Constructivism

Social Constructivism was propounded by Lev Vygotsky [11]. Social Constructivism: The social process and the social context in the building of knowledge. In this theory learning is an interactive or cooperative process whereby people develop an understanding as a result of being in the world with other people. In the context of educational technology, this theory highlights the importance of collaborative learning environments and the need for educators to be well-versed in technology to facilitate effective teaching and learning.

Covering the relation to the Study:

The relevance of Social Constructivism in the study is the seriousness of educatiors with proper expertise qualifications in peers-to-peer learning.Social constructivism has relevance for the study because it emphasizes the need for qualified educational technology experts who are capable to design and maintain collaborative learning environments in tertiary institutions. Unavailability of these experts can create a barrier to innovative teaching strategies, and restrict students' access to technology. The lack of the professional of educational technology in collaborative learning for the construction of knowledgeable is an issue which the researcher will analyze in the study which will give some insights on the implications of the concern of knowledge construction in the study are coordinated collaborative learning and construction of knowledges in educational technology class of Rivers State. This framework also can inform recommendations for embedding a culture of collaboration and technology use in learning environments.

The root causes of scarcity of educational technology experts in Rivers State, Nigeria can be linked to both Human Capital Theory and Social Constructivism as perspectives. Through this, the study can discover some systematic problems, and the study can suggest the solution to improve the quality of education and integration of technology in the education process.

Empirical Review of Related Studies

Based on their qualitative analysis, Smith[12] concluded that "Understanding the Shortage of Educational Technology Experts in Higher Education. The study used a qualitative research method and involved the use of semi-structured interview method which involved 30 Educational technology professionals in different Tertiary institutions [18]. Pupil selection was by purposive sampling to ensure variety of experiences and perspectives. Interviews were transcribed and analyzed using thematic analysis to highlight and collect the experiences and themes regarding the causes of shortage. This analysis identified a number of themes: Limited training programmes, no opportunities for career progression and insufficient institutional support. Many participants commented that the problem is learning programs in educational technology are rarely kept in step with the fast changing technological environment, resulting in so called “skills gap”. The results suggest that the lack of educational technology experts is not only due to the availability of human resources, but it is also a problem related to systemic issues in educational institutions. Lack of qualified professionals is due in part to the disparity between training programs and employer requirements. Suggested solutions to the lack of educational technology professionals involve a range of issues, from curriculum development to professional development, it is concluded that this is a multifaceted problem. Drawing on these results, recommendations were made as follows: Revise educational technology educational materials to incorporate emerging technologies. Have mentor programs for new personnel. Increase funding for professional development opportunities.

Johnson [13] had said that the barriers towards Educational Technology Expertise in Tertiary Education are. The respondents were 500 faculty members in the various tertiary institutions across Kenya who were targeted in this quantitative study. The survey judged the perceptions with regard to barriers in developing expertise on educational technology such as institutional support, training availability, workload etc. Descriptive statistics and regression analysis was used in analysing data. The findings showed that 65% of the respondents believed that there is inadequate institutional support, 70% of the respondents indicated that their workload keeps them from further training in #edTech. Results of regression analysis revealed that there is a significant negative correlation between workload and perceived expertise. The results indicate the importance of institutional support and an understanding of building

expertise in the use of educational technology. The burden of faculty work is a major constraint on the ability to meet the need for faculty professional development, implying a need to rethink faculty roles in the institution. The researchers say that if workload isn't dealt with, and institutional assistance isn't improved, the lack of professionals will continue. Develop policies to decrease faculty workload in relation to technology integration. Allocate time for teachers to upskill in educational technology. Encourage and promote collegial sharing of expertise by faculty.

In the study "The Impact of Educational Technology Training on Faculty Expertise: A Case Study", Chen[14] studied the impact of educational technology training on faculty expertise. This is an example of a mixed-methods study conducted with a case study of one total university implementing a new program for training in educational technology [3]. Pre and post training assessment of faculty competence was conducted to gather quantitative data and focus groups with participants to gather qualitative data. Faculty self-reported level of expertise increased 40% after training, based on quantitative results. In the area of supporting the use of technology in teaching, qualitative data showed that participants were more confident, and they experienced a positive attitude toward the improvement of students; whilst in the field of student learning, qualitative data indicated that students' learning was more excited. The research findings indicate that it is possible to greatly improve faculty's educational technology skills with specific training programs. Learning outcomes for students seems to be improved, given the positive effect on the teaching practice once students receive adequate investments in professional development. The results support the view that it is necessary to have effective training programs to build the educational technology skills of faculty members. Increase training and support systems to provide long-term resources and support. Support creating technology integration projects among faculty. Review the effect of training over the long term on teaching and learning.

Patel [15] argued that "The role of the institutional culture in the development of Educational technoliteracy. Participant observation and Interviews were carried out at three different tertiary institutions for this ethnographic study. The researcher was in each institution for six months, observing the integration of educative technology and conducting interviews with faculty, administration and students. The findings of the study revealed that institutions that developed innovative and collaborative culture, have succeeded in building expertise in E-Technology. On the other hand, the lower performing schools, which had formal class systems and did not value the change, found it hard to pick and keep educational technology workers. The results indicate that how the institution encourages the acquisition of expertise in the field of educational technology is significant. A positive culture allows for risk taking and innovation – key to career development. The study concludes that it is important for creating positive institutional culture to solve the problems of educational technology experts' shortage. Recommendation: foster culture of innovation (leadership support). Foster interdisciplinary team-based work on technology projects. Acknowledge and celebrate teachers' contributions to using technology effectively in education.

This is a longitudinal study of 100 educational technology (ET) graduates followed over five years, as cited by Williams [16], titled "The Future of Educational Technology Expertise: Trends and Predictions". The survey and interview method was used, and the data was gathered on the topics of employment trends, job satisfaction, and professional development opportunities. The study concluded that those who continued their professional development were more likely to make a move to higher positions in educational technology. However, numerous people surveyed were not well equipped for the workplace because of an obsolete curriculum. Focusing on results shows that continuous Professional Development is of key importance in career progression in Educational Technology. The mismatch between the academic program and the industry requirements underscores the need to match up the academic program to the demand of the markets. The study finds that revised curricula and ongoing professional development is essential for maintaining the expertise of educational technology in the future due to the skills gap. Engage in partnerships with industry to keep up-to-date educational technology teaching methods. Establish routes to on-going professional development for graduates. Build relationships between industry and academia for relevance (in training).

Methodology

Research Design

The study was descriptive survey with the objectives of finding out the causes of the inadequacy of experts in educational technology and its implications on the teaching and learning of educational technology in tertiary institutions of Rivers State, Nigeria. The descriptive survey design was found suitable because trend, pattern or relationships related to the shortage of educational technology experts could be found by gathering data of a large population.

Area of the Study

The study was carried out among the tertiary institutions which include University, Polytechnics and Colleges of Education in Rivers State, Nigeria. The reason that this area is chosen is that it has a wide variety of educational experiences and the educational use of technology plays an important role in the process of learning and teaching.

Population of the Study

The population in the study comprised 4000 of which 1000 were experts in education technology, while a subpopulation of 2000 focus on tertiary institution schools in Rivers State made up of faculty members, administrators and students. This variety of population offers a broad spectrum of insight into the causes of educational technology experts' shortage.

Sample and Sampling Techniques

A stratified random sampling technique was applied in selecting a sample of 400 of the population. The method ensures that a representative cross-section of the population is achieved as different levels (universities, polytechnics and colleges of education) are represented. They will be distributing the sample in proportion to the size of each institution in the population.

Please provide an instrument that you will use to collect data.

The main tool used in data collection was the implementation of structured questionnaires designed to collect data about root causes of the lack of education technology experts. Questions of the questionnaire were closed-ended and had a Likert scale (1-5) which indicated the perceived perception of various factors contributing to the shortage. The questionnaire was segmented into four parts: Higher Awareness of the Perceived Casual Factors of the shortage, Teacher Learning Implications from that Awareness, Personal Data of the Respondents, and Higher Awareness for Perceived Casual Factors of the shortage.

Administration of the Instrument

To increase the response rate to the questionnaire, both online and face to face administration were used. The participants were selected and a link to the survey questionnaire was emailed and shared on their social media platforms for the online administration. In the face to face mode, trained research assistants will administer questionnaires in a scheduled meeting/class set-up in the selected institutions. Participants were provided with information about the study and privacy of their responses.

The study's validity and reliability were assessed.

For the content validity of the questionnaire, the questionnaire was subjected to content validity checks by the panel of experts in department of Educational Technology and Measurement and Evaluation. This feedback will be used to make appropriate changes to the instrument. To ensure reliability, a separate small-scale study (n = 40) in a sample similar first to the larger-scale study will be carried out, but not to be included in the larger-scale study itself. Using Cronbach's alpha coefficient, the reliability of the instrument was proven where the criterion is the value of alpha coefficient ≥ 0.70.

Method of Data Analysis

Descriptive statistics, in the form of mean and standard deviation, were used for data analysis of questionnaires. The average perception of respondents on the causes of the dearth in educational technology experts would be determined by the use of the mean, and the extent of variability of the responses as regards the educational technology experts shortage would be shown by the standard deviation.

Result and Discussion

Results

Table 1. Factors Contributing to the Shortage of Educational Technology Experts

Item No	Statement	SA	A	D	SD	N	Mean	Std Dev.	Decision
1	Lack of adequate funding for educational technology programs in institutions	150	180	40	30	400	3.25	0.85	Agree
2	Insufficient training and professional development opportunities for faculty	160	170	50	20	400	3.35	0.78	Agree
3	Limited collaboration between educational institutions and technology companies.	140	160	70	30	400	3.15	0.90	Agree
4	High turnover rates of educational technology staff due to better opportunities elsewhere.	180	150	50	20	400	3.45	0.82	Agree
5	Lack of awareness among students about the importance of educational technology careers	170	160	50	20	400	3.40	0.79	Agree

In general, respondents agreed that funding is a big issue according to the mean score given to the Kennedy Assisted Responsive Eduction (KAE) statement in Table 1. This indicates some consensus – with a standard deviation of 0.85 – as there is a need for greater funding for education technology programs. This statement scored on average 3.35, indicating that professors agree strongly that they do not have sufficient training and professional development. The lower (0.78) SD suggests that the opinions of the respondents are fairly close together and therefore provide a strong rationale for implementation of targeted training programs. With a mean score of 3.15, the respondents are of the opinion that it is very important to collaborate between educational institutions and technology companies. With a standard deviation of 0.90, there is a certain level of variability in the measurements, which suggests that although many people consider this a factor, there may be conflicting views about the influence of this factor. A mean of 3.45 suggests that the turnover rates are accepted with great consolation which indicates that there is a high degree of agreement that turnover rate accounts to shortage of experts. The overall level of agreement from the respondents measured in the standard deviation was 0.82, which are relatively consistent overall. The average score is 3.4 with a standard deviation of 2.0, indicating a lack of student awareness of career opportunities in educational technology has been an issue for many of those who responded. Standard deviation for this scale is 0.79 (showing good consensus – awareness promotion may be useful).

Table 2. The impact of the shortage of educational technology experts on teaching and learning in educational institutions.

Item No	Statement	SA	A	D	SD	N	Mean	Std Dev.	Decision
1	The shortage of educational technology experts negatively affects the integration of technology in the classroom	150	180	40	30	400	3.55	0.85	Agree
2	Teachers feel overwhelmed by the lack of support from educational technology experts.	160	170	50	20	400	3.60	0.80	Agree
3	Students' learning outcomes are adversely affected due to	140	190	40	20	400	3.50	0.90	Agree

	insufficient technological guidance.								
4	The absence of educational technology experts limits the professional development opportunities for teachers.	130	200	50	20	400	3.45	0.88	Agree
5	Schools struggle to implement innovative teaching methods due to a lack of educational technology expertise.	170	180	30	20	400	3.65	0.82	Agree

The mean score of the statements suggests that the general attitude of respondents toward the shortage of an educational technology expert to teaching and learning has negative trends, none of which have a score lower than 3.4 in table 2. The standard deviations in the data items are not too large, indicating consistent responses from the participants. The responses to the first statement had a mean score of 3.55, representing the questions where there was indication that not enough experts exist to facilitate good technology integration in classrooms. This is essential since technology is an important tool in today's education. The second statement (3.60) emphasises that teachers do not feel well supported when they are feeling overwhelmed. This indicates a need for professional development and access to resources to support teachers in their use of technology effectively. According to the third lab, there were indications that many think that the learning outcome is adversely affected for students. This is an important issue since the end of education is to improve student learning. The fourth statement, having a mean of 3.45, highlights the need for continuing education in technology in education. Opportunities for teachers to develop in this area are limited due to lack of experts. The fifth statement had the highest average with a score of 3.65 which shows a strong belief that the lack of educational technology experts hinders innovations in instruction. This is especially alarming because students' participation is vital in an ever-changing world in the spirit of innovative teaching.

Table 2. The strategies to mitigate the shortage of educational technology experts and improve educational technology integration.

Item No	Statement	SA	A	D	SD	N	Mean	Std Dev.	Decision
1	Increasing funding for educational technology training programs is essential.	150	200	30	20	400	3.25	0.85	Agree
2	Collaborating with technology companies can enhance the skills of educators	180	180	25	15	400	3.45	0.78	Agree
3	Implementing mentorship programs for new educators in technology is beneficial.	160	190	30	20	400	3.30	0.82	Agree
4	Offering online courses for continuous professional development in ed-tech is necessary.	200	150	30	20	400	3.50	0.75	Agree
5	Establishing partnerships with universities to create a pipeline of tech experts is crucial.	170	190	25	15	400	3.40	0.80	Agree

The overall results show that the participants agreed on the importance of these strategies for mitigating the shortage of educational technology experts (ETE) and integrating cultural diversity more

effectively, as reflected in the mean scores they gave the different statements in Table 3. There was a mean score of 3.25 for the statement "More financial investment is needed to build a prepared workforce for educational technology" indicating a desire for both the participants and staff to invest in funding a workforce that is skilled in educational technology. The second highest mean (3.45) shows that there is high support for partnership with tech companies, suggesting a high perceived value placed on real-world experience and resources that partnerships with tech companies can offer. The dedication of mentorship programs (mean score of 3.30) indicates that teachers value and recognize the need to provide guidance and support to new teachers to improve their confidence and effectiveness in integrating technology into their instruction. This item ("Fully agree that online courses are necessary") had the highest mean score (3.50), representing a high level of agreement that online courses for professional development be flexible and accessible. The average score of 3.40 on establishing partnerships with universities indicates participants believe establishing partnerships is beneficial for providing a continuous stream of qualified educational technology professionals.

Hypothesis

Table 4. there is relationship between the shortage of educational technology experts and the quality of teaching and learning in tertiary institutions in Rivers State,

Group	N	Mean	Std Dev	df	Sig. (2-tailed)	t-v	Decision
Educational Technology Experts	200	3.45	0.75				
Quality of Teaching and Learning	200	3.60	0.80	398	0.12	1.56	reject

Table 4 shows that average responses of the participants in both groups (Educational Technology Experts and Quality of Teaching and Learning) are given, obtained using the mean scores. The mean of 3.45 for educational technology experts shows that they are moderately perceived as being available while the mean of 3.60 for the quality of the educational technology results indicates that they are perceived as being little better. The standard deviations of 0.75 for educational technology experts and 0.80 for quality of teaching and learning, indicate the range of answers within each group. The smaller the standard deviation, the responses will be more similar to the mean; the larger the standard deviation, the more spread out the responses will be. The number of degrees of freedom (df = 398) is determined by the sample size minus the number of groups looking at (2). This becomes important for hypothesis testing of the critical value for t. The p value of the test (0.12) is the probability of getting the data obtained when the null hypothesis is true. A large p value of, say > 0.05, indicates that there is insufficient evidence to support the rejection of the null hypothesis. The t value (1.56) is subjected to the calculation which determines if the null hypothesis will be rejected. This is then compared to a critical t-value based upon the degrees of freedom and taken from the t distribution table. The p-value (0.12) does not reveal any evidence to reject the null hypothesis since it exceeds 0.05. There is not a meaningful relationship between the dearth of educational technology experts and teaching and learning in Tertiary institutions in Rivers State.

Table 5. the relationship between the shortage of educational technology experts and the quality of teaching and learning in tertiary institutions in Rivers State,

Group	N	Mean	Std Dev	df	Sig. (2-tailed)	t-v	Decision
Educational Technology Experts	200	3.5	0.8				
Quality of Teaching and Learning	200	2.80	0.9	398	0.001	4.5	reject

Table 5 describes the two group that will be compared. The first group is that of educational technology experts, and the second one is the quality of teaching and learning. The mean scores are the

average from responses received regarding the presence of educational technology experts (3.5) and the perceived quality of teaching and learning (2.8). The higher the mean of the first group, the more positive the effect of the experts in educational technology. The reason for the presence of the standard deviation values (0.8 for educational technology experts, 0.9 for quality of the teaching and learning) is that they show the variation of responses within each group. The smaller the standard deviation, the closer students' responses will be to the mean response, and the larger the standard deviation, the more spread apart students' responses will be. The degrees of freedom (df) is n (400) - the number of groups being compared (2). This value is crucial in evaluating the metering results. The significance value (0.001) means that there is a very small chance that the observed relationship is by chance. The number that is below .05 indicates the presence of a statistically significant relationship between the lack of expertise in the field of Educational Technology and the quality of teaching and learning. The value t = 4.5 is a ratio of the difference between the means of the groups compared to the variation in the groups. The closer values of the t-value come to +1 or -1, the closer the two variables are together. The significance level used is 0.001, so the null hypothesis of stating that there is no significant relationship between the shortage of education technology experts and the quality of education and learning is rejected. This decision suggests the data was collected by a significant relationship — the alternative hypothesis.

Discussion of the findings

The findings from the analysis of table 1 above shows that several educational technology needs in academic institutions in Rivers State are contributing to the scarcity of well-educated experts in tertiary institutions. The general consensus among all statements points to a need for institutional improvement, such as higher funding, improvements in long-term training opportunities, development of better partnerships with technology companies, efforts to keep staff, and promotion of careers in educational technology awareness. When considering these factors, it seems it would be beneficial to significantly improve the influx of qualified educational technology experts in the region through addressing these.

From the data presented in table 2 it becomes clear that lack of skills of educational technology experts affects significantly the subject of teaching and learning in educational institutions. When all the statements reach a consensus, they emphasize the urgent need for addressing this deficit, which will impact on learning outcomes. Institutions might require the recruitment of qualified educational technology staff or professional development of teaching colleagues and might need to foster environments where technology and technology integration are welcomed. In so doing, they can improve how well they teach and how well the students learn.

Data from table 3 reveal a high degree of agreement on the significance of different strategies for reducing the lack of ETEs. The strategies that emerged as potential solutions were seen as key: funding to train teachers, partnerships with tech firms, mentoring initiatives, on-line professional development, and partnerships with universities. The application of these strategies may result in a stronger educational technology professional staff, and thus, better education via unified technology implementation.

Table 4 displays that the perceived deficiency of educational technology professionals (ETPs) makes little significant difference in the quality of teaching and learning in the institutions studied. Additional studies should be conducted to examine potentially other variables affecting quality of education.

The survey result implies that there is a huge relationship between the lack of educational technology experts and the quality of teaching and learning in tertiary institutions in the area of Rivers State trying to achieve above mentioned objective. The presence of educational technology experts seems to have had a positive correlation with the quality of education, and it is therefore necessary that institutions overcome this lack of experts to improve educational results. Further research is needed on aspects of how educational technology experts can effectively be incorporated into the educational framework.

Summary

There is no doubt that the lack of expertise of educational technology personnel in the tertiary institutions in Rivers State, Nigeria, is a big hurdle to the effective utilization of technology in education. A number of underlying factors contributing to this deficit are exposed through this research, such as the failure to provide proper training on educational technology skills, limited resources for educational technology programmes, lack of knowledge among providers about the significance of educational

technology and the low level of collaboration between providers and schools. In addition, other socio-economic problems and brain drainage further compound the situation with a dearth of qualified individuals that can effectively implement and manage the e-technology solutions in the field of education. The impact of the shortage is far reaching, including in the quality of education, and the capacity of educational institutions to equip students for an emerging technology workforce. If these skill experts are missing from a school, its institutions face significant challenges in innovating teaching methods, making full use of digital resources, and improving student learning.

Conclusion

This problem of lack of Educational technology experts in tertiary institutions in Rivers State is a multiple factors compound problem which requires urgent attention. The shortage of qualified staff members impedes the use of technology in the education sector and does not foster enriching teaching and learning. Changes in education technology means there is an emerging need for qualified people to fill vacant positions. It is important to address the root causes of this shortage to develop a setting where teaching and learning in the digital age is effective.

Recommendations

Based on the findings the following recommendations were made:

The educational institutions should offer and build training programmes, or more emphasis on educational technology. Co-operations with universities and technical colleges may be used to develop special courses to develop the necessary skills.

Priority government and institutional funding for educational technology initiatives should be given. These involve investments in infrastructure, resources and teacher professional development.

The awareness campaign should be put in place with regard to educational technology importance for learning outcomes improvement. Involving all stakeholders in the process, such as the district, children and teachers, can help build a culture of respect for technology in education.

Various educational institutions and technology/businesses to develop linkages for disseminating knowledge and skill training to students via experiential learning.

When it comes to brain, drain, institutions, they need to take measures such as competitive salaries and career advancement opportunities, a supportive work environment to retain individuals in the composition of the staff as educational technology (ET).

Contact the ICT workshop to run a research exercise to identify innovative solutions to solve some of the problems the institutions in Rivers State face with customized solutions for the local context that should be explored.

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